PROPAN UND AMMONIAK
ANLAGEN SALZGITTER

FITTINGS CATALOGUE

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PROPAN UND AMMONIAK ANLAGEN SALZGITTER

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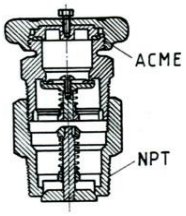
Filling and withdrawal fittings

Group 1

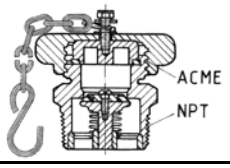
Filling valve with double check disc and protective cap, with certificate

Order no.	Container connection	Filling connection	Fisher	RegO	P&A	Weight
1.00100	3/4" NPT	1 3/4" ACME	--------	--------	PA-F1one-piece	0.5
1.00200	1 1/4" NPT	1 3/4" ACME	--------	--------	S+R one-piece	0.6
1.00300	2" NPT	2 1/4" ACME	D 140	EC 6587	PA-F2	2.5
1.00400	3" NPT	3 1/4" ACME	D 141	3197 C	PA-F3	6.2



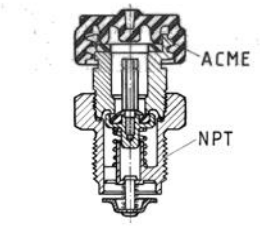
Filling valve with single check disc and protective cap, with certificate

Order no.	Container connection	Filling connection	Fisher	RegO	P&A	Weight
1.00600	2" NPT	2 1/4" ACME	D 138	6584 C	------	1.5
1.00700	3" NPT	3 1/4" ACME	D 139	3194 C	PA-F4	4.5



Gas pendulum valve with pipe break valve and protective cap,

Order no.	Container connection	Pendulum connection Fisher		RegO	P&A	Weight
1.00900	3/4" NPT	1 1/4" ACME	-------	DC 7573	-------	0.3
1.01000	1 1/4" NPT	1 3/4" ACME	-------	AC 3183	PA-G1	0.9
1.01100	2" NPT	2 1/4" ACME	-------	--------	PA-G2	2.5
1.01200	2" NPT	2 1/4" ACME	-------	--------	PA-G3 without RBV	2.5

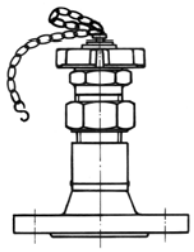


Filling or pendulum valve with flange connection, PN 25, type P&A

consisting of: Flange with socket (welded, individual parts with certificate) incl. sealed-in filling valve or pendulum valve, with pressure test and dealer's certificate

*** without** pipe break valve or double check disc **** with** pipe break valve or double check disc

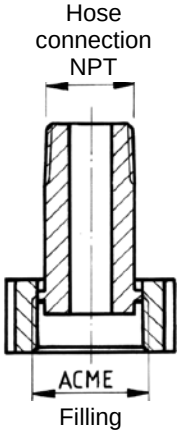
Order no.	Flange with socket		Pendulum valve		Filling valve		Weight
1.01300**	DN 20 x 3/4" NPT		3/4" NPT x 1 1/4" ACME		----------		1.5
1.01400**	DN 32 x 1 1/4" NPT		1 1/4" NPT x 1 3/4" ACME		----------		3.1
1.01500**	DN 32 x 1 1/4" NPT		----------		1 1/4" NPT x 1 3/4" ACME		3.3
1.01600*	DN 50 x 2"	NPT	----------		2"	NPT x 2 1/4" ACME	6.0
1.01601**	DN 50 x 2"	NPT	----------		2"	NPT x 2 1/4" ACME	6.0
1.01700*	DN 50 x 2"	NPT	2"	NPT x 2 1/4" ACME	----------		6.0
1.01701**	DN 50 x 2"	NPT	2"	NPT x 2 1/4" ACME	----------		6.0
1.01800*	DN 80 x 3"	NPT	----------		3"	NPT x 3 1/4" ACME	13.5
1.01801**	DN 80 x 3"	NPT	----------		3"	NPT x 3 1/4" ACME	13.5



Coupling for filling valve, PN 25

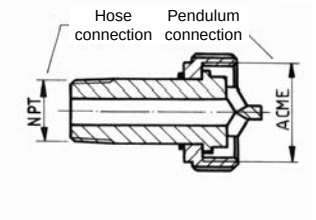
on one side "NPT male", on the other side "ACME union nut", with certificate

Order no.	Hose connection		Filling connection	Fisher	RegO	P&A	Mat.	Weight
1.01900	1/2"	NPT	1 3/4" ACME	M 110	3175 B	PA-K1	Ms	0.3
A1.02000	3/4"	NPT	1 3/4" ACME	--------	A3175	PA-K2	St	0.4
1.02100	3/4"	NPT	1 3/4" ACME	M 111	3175	PA-K3	Ms	0.4
1.02200	1"	NPT	1 3/4" ACME	M 112	--------	PA-K4	Ms	0.4
A1.02300	1"	NPT	1 3/4" ACME	M 631-8	A3175A	PA-K5	St	0.4
1.02400	1 1/4"	NPT	2 1/4" ACME	M 120	3185	PA-K6	Ms	0.8
A1.02500	1 1/4"	NPT	2 1/4" ACME	M 121	A3185	PA-K7	St	0.8
1.02600	2"	NPT	3 1/4" ACME	M 130	3195	PA-K8	Ms	2.0
A1.02700	2"	NPT	3 1/4" ACME	M 133	A3195	PA-K9	St	2.0
1.02800	3"	NPT	4 1/4" ACME	M 634-24	--------	PA-K10	Ms	3.5
A1.02900	3"	NPT	3 1/4" ACME	--------	--------	PA-K11	St	2.8



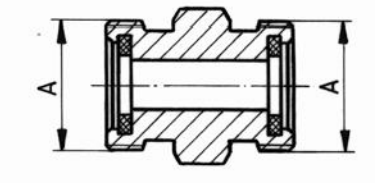
Coupling for gas pendulum valve, Material: Ms, with certificate

Order no.	Hose connection		Pendulum con. Fisher	Reg0	P&A	Weight
1.03100	1/2"	NPT	1 1/4" ACME	M 141	3171 A	PA-K12	0.2
1.03200	3/4"	NPT	1 3/4" ACME	M 150	3181	PA-K13	0.3
1.03300	1"	NPT	1 3/4" ACME	M 151	3181 A	PA-K14	0.35
1.03400	1 1/4"	NPT	2 1/4" ACME	M 160	3191	PA-K15	0.9



Coupling ACME male" on both sides, Material: brass, PN 25, with certificate

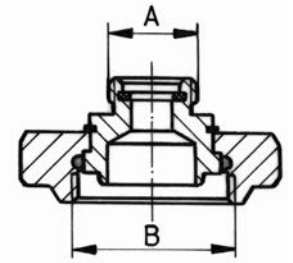
Order no.	Connecting A		Fisher	P&A	Weight
1.04000	1 1/4"	ACME	M 270	PA-K16	0.2
1.04100	1 3/4"	ACME	M 273	PA-K17	0.4
1.04200	2 1/4"	ACME	M 536-18	PA-K18	0.6
1.04300	3 1/4"	ACME	M 536-26	PA-K19	1.4
1.04400	4 1/4"	ACME	M 536-34	PA-K20	4.0



Reducing coupling PN 25, with certificate,

on the one side "ACME male", on the other side "ACME union nut".

Order no.	Connection A		Connection B		Fisher	RegO	P&A	Mat.	Weight
1.05000	1 3/4"	ACME	2 1/4"	ACME	M 611	--------	PA-R1	Ms	0.7
A1.05100	1 3/4"	ACME	3 1/4"	ACME	M 622	A 5776	PA-R2	Ms/St	2.3
1.05200	3 1/4"	ACME	4 1/4"	ACME	M 613	--------	PA-R3	Ms	3.5



Closure cap, with certificate,

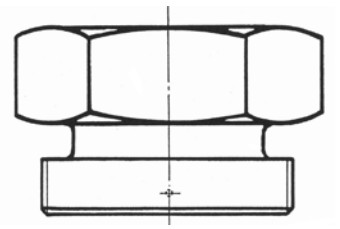
with "ACME female" and chain, Material: brass or steel

Order no.	Connection	Fisher	RegO	P&A	Mat.	Weight
1.05400	1 1/4" ACME	--------	--------	PA-V1	Ms	0.1
1.05500	1 3/4" ACME	--------	--------	PA-V2	Ms	0.2
A1.05600	1 3/4" ACME	M 219-1	--------	PA-V3	St	0.4
1.05700	2 1/4" ACME	M 431	3184-90	PA-V4	Ms	0.9
A1.05800	2 1/4" ACME	M 432	A3184-90	PA-V5	St	0.9
1.05900	3 1/4" ACME	M 441	3194-90	PA-V6	Ms	1.9
A1.06000	3 1/4" ACME	M 443	A3194-90	PA-V7	St	1.9
1.06100	4 1/4" ACME	M 605-34	--------	--------	Ms	3.0

Plug with ACME male thread, PN 25, with certificate,

Including Attachment chain and ring

Order no.	Connection		Material	Make	Weight
1.06500	1 1/4"	ACME	Ms	PA-S1	0.2
1.06600	1 3/4"	ACME	Ms	PA-S2	0.3
1.06700	2 1/4"	ACME	Ms	PA-S3	0.6
1.06800	3 1/4"	ACME	Ms	PA-S4	1.2
A1.06900	4 1/4"	ACME	Ms/St	PA-S5	2.8

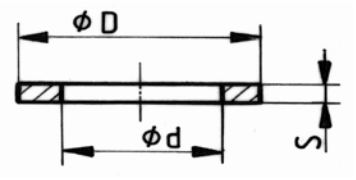


Aluminum wrench , suitable for "ACME" couplings

Order no.	ACME connection	Fisher	P&A	Weight
1.07000	2 1/4", 3 1/4", 4 1/4"	P 120 B	PA-S6	0.4

Gasket for filling valves and fittings

Order no.	Connection size	Outer ø D	Inner ø d	Thickness s
1.07500	1 1/4" ACME	23	13	3
1.07600	1 3/4" ACME	34	23	3
1.07700	2 1/4" ACME	46	36	3
1.07800	3 1/4" ACME	72	54	3
1.07900	4 1/4" ACME	94	73	3



Dip valve, 1/4" NPT male, PN 25, with WZ 2.2 according to EN 10204

Order no.	Warning plate	Dip tube	Ceodeux	Reg0	Material	Figure
1.08000	without	without	7155	3165	Ms	1
A1.08100	without	without	--------	TSS3169	V2A	2
1.08200	with	without	7155A	3165 P	Ms	3
1.08300	without	with	--------	3165 F	Ms	4
A1.08400	without	with	--------	TA3169 F	V2A	4
1.08500	with	with	--------	FP 3165	Ms	5

The length of the sighting tube for order no. 1.08300 to 1.08500 300 mm each.
Other lengths are available at an extra charge.


Figure 1


Figure 2


Figure


Figure 4 Figure 5

Gas outlet valve with overfill protection PN 25,

Material: brass, with manometer, dip valve, dip tube and test manometer connection M 20x1.5

Specify probe length when ordering!

Order no.	Container connection	Dispensing connection	Probe length	Weight
1.09000	3/4" NPT male	POL female	280 to 510 mm	1.0
1.09100	3/4" NPT male	POL female	Special length	1.0

Pressure gauge for gas dispensing valve, red line mark at 15.6 bar,

Brass or plastic housing

Order no.	Display range	Diameter	Connection	Weight
1.09500	0-25 bar	40mm	G 1/4" male	0.1

POL connection, PN 40, Material: brass, with WZ 2.2 according to EN 10204

Order no.	Connection A	Connection B	RegO Fisher		Figure
1.10000	POL female	1/4" NPT male	5761A	-------	1
1.10100	POL male	1/4" NPT male	970	M318	2
1.10200	POL male	1/4" NPT IT	2906A	-------	3
1.10300	POL male	1/2" NPT female	2906G	M357	3

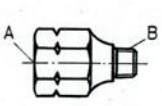


Figure 1

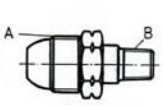


Figure 2

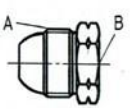
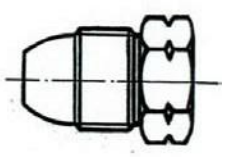


Figure 3

POL blind plug for gas dispensing valve, PN 40, make P&A

Order no.	Material
1.10700	Brass
1.10800	Plastic



Liquid dispensing valve in angle form, PN 25, with WZ 2.2 according to EN 10204,

Container connection 3/4" NPT male, dispensing connection 3/4" NPT female

Order no.	Pipe break valve	Type	Material	Weight	Figure
1.11000*	without	S+R484	Ms	0.6	1
A1.11100	without	A7550 P	St	0.6	2
1.11200	with	PX 7550	Ms	0.7	2
A1.11300	with	A7550 PX	St	0.7	2

* with blind plug

1.11400 **Blind plug**, 3/4" NPT, for liquid withdrawal valve, Ms

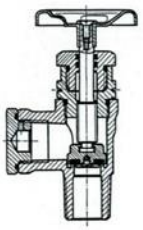


Figure 1

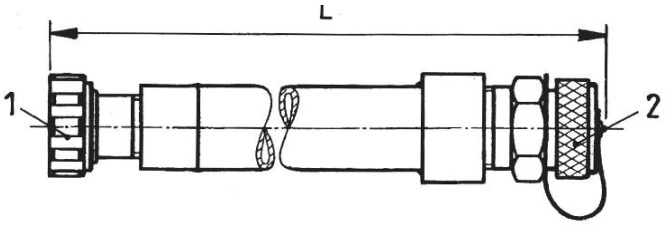
Figure 2

Filling valve extension PN 25, make P&A,

Required for underground tanks with a ground cover of more than 0.5 m, on one side filling coupling 1 3/4" ACME union nut, on the other side filling valve 1 1/4" NPT x 1 3/4" ACME, completely welded by a TÜV certified welder, welded parts with APZ 3.1 according to EN 10204, primed and painted

Order no.	Total length
1.11800	400 mm
1.11900	500 mm
1.12000	600 mm
1.12100	700 mm
1.12200	800 mm
1.12300	900 mm
1.12400	Acceptance according to Module A, Category I, PED 97/23/EC
1.12500	Special length

When ordering, be sure to state the exact length !



Extension for overfill prevention

Order no	
1.12600	Wall collar plug type CEE
1.12700	Connection collar coupling type CEE
1.12800	Complete extension set with plug, coupling and 1.5 m cable (LIYCY/EB 3 x 0.75 mm²)
1.12900	Surcharge per metre of cable (LIYCY/EB 3 x 0.75 mm ²)

Coupling for balloon cylinders, PN 25, with WZ 2.2 according to EN 10204

Order no.	Inlet	Outlet	Type	Figure
1.13000	3/8" NPT female	1 1/4" ACME male	RegO 7141M	1
1.13100	1 1/4" ACME female	1/4" NPT IT	RegO 7141F	2
1.13200	3/8" NPT female		TEMA3800	without Figure
1.13300	Transition piece from filling connector 1 3/4" ACME male to RegO- Balloon cylinder connection 1/4", with expansion valve, make P&A			
1.13400	Transition piece from filling connection 1 3/4" ACME male to TEMA-			
1.13500	Balloon cylinder connection 3/8", with expansion valve, make P&A additional check valve for Order No. 1.13300 and 1.13400			

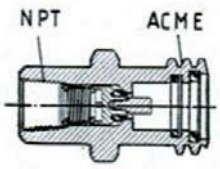


Figure 1

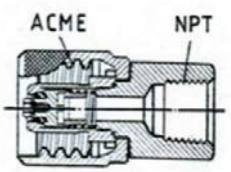


Figure 2

Safety filler neck with check valve, PN 25, with WZ 2.2 according to EN 10204

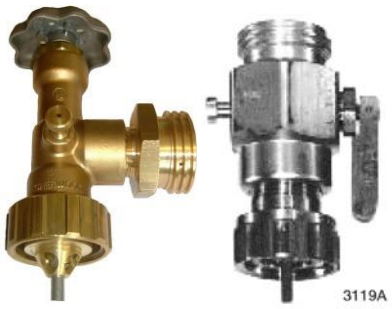
Mounted between the gun and the filling valve, this safety filling nozzle allows the pressure to be released via a dip valve when the filling process is complete.

Order no	Connection A	Connection B	RegO	weight
1.14000	1 3/4" ACME IG	1 3/4" ACME AG	7577V	0.5

Extraction connection PN 25, with certificate,

Suitable for emptying liquid gas containers from the gas phase

Order no	Container closure	Dispensing connection	Type	Weight
1.14500	1 3/4" ACME female	1 3/4" ACME male	P&A	1.1
1.14600	1 3/4" ACME female	3/4" NPT female	Fisher M450A	1.0
1.14700	1 3/4" ACME female	1 3/4" ACME male	RegO 3119A	1.0



P&A RegO

Filling gun PN 25, with certificate

with safety filling coupling and check valve

Order no.	Filling connection	Hose connection	Type	Application	Fig.
1.15000	1 3/4" ACME female	M30x1,5 left.	ZVG2-ACME-5-D*	without locking device - without magnet (PROPELLANT)	1
1.15100	1 3/4" ACME female	M30x1,5 lh.	ZVG2-ACME-5*	with locking device - without magnet (LPG)	1
1.15200	1 3/4" ACME female	M30x1,5 lh.	ZVG2-ACME-5-M*	with locking device - with magnet (PA TAP SLEEVE)	1
1.15400	Clamp connection	G 1" female	VPP02	with lock, without magnet (LPG)	2
1.15500	Brass connector for the VPP02 connection: 1" male to M30 x 1.5 left AG				
1.15600	Clamp connection	M30x1.5 left	ZVG2-DISH-5	with locking device - without magnet (LPG)	3
1.15700	Clamp connection	M30x1.5 left	ZVG2-DISH-5-M	with locking device - with magnet (PA dispensers)	3
1.15800	Bayonet connector	M30x1.5 left	ZVG2-BAYO-5-M	with locking device - with magnet (PA dispensers)	---
1.15900	EURO EN 13760	M30x1.5 left	ZVG2-EURO-5-M	with locking device - with magnet (PA dispensers)	4

FIGURE 1

FIGURE 2

FIGURE 3

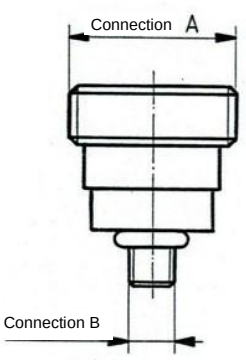
FIGURE 4

Adapter for LPG filling

Material: brass

For refuelling with a filling gun 1 3/4" ACME

Order No.	Connection A	Connection B
1.18000	1 3/4" ACME male	G 1/2" male
1.18100	1 3/4" ACME male	W 21.8 x 1/14"
1.18200	1 3/4" ACME male	M 22 x 1.5 female
1.18300	1 3/4" ACME male	M 10
1.18400	1 3/4" ACME male	M 12
1.18500	1 3/4" ACME male	M 14
1.18600	1 3/4" ACME male	M 22



Adapter for LPG filling

Material: Brass, suitable for refuelling with a filling gun with clamp connection (system France/Italy)
or a bayonet connection (System Netherlands)

Order No.	Connection A	Connection B
1.18700	Clamp connection (for ZVG2 and Nettuno filling guns, system France/Italy)	W 21.8 x 1/14" R
1.18800	1 3/4" ACME male (transition from clamp connection to ACME screw connection)	M 24x1.5
1.18900	Clamp connection (Connector from clamp connection - to ACME screw connection) *** Illustration "front and back" - Attention: only 1 piece will be delivered ***	1 3/4" ACME female
1.19000	Bayonet (NL) (connecting piece from NL bayonet to ACME screw connection)	1 3/4" ACME union
1.19100	Bayonet (NL)	M 10
1.19200	Bayonet (NL)	M 12
1.19300	Bayonet (NL)	W 21.8 x 1/14" R (short version)
1.19400	Bayonet (NL)	W 21.8 x 1/14" R (long version)

1.19500	**Compl. LPG adapter set** in a plastic box incl. spare seal and gloves 7 pieces (1.18000 - 1.18600)
1.19600	**Compl. LPG adapter set** in a plastic box incl. spare seal and gloves 10 pieces (1.18000 - 1.18900)
1.19700	**LPG adapter set Europe** M10 (ACME, DISH, bayonet)

1.19800	Gasket kit for LPG adapters for 7 piece case
1.19900	Gasket kit for LPG adapters for 10 piece case

7 - part
1.19500

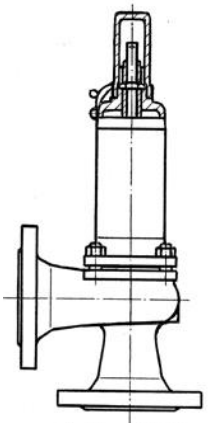
10 - part
1.19600

3 - part
1.19700

Proportional spring safety valve in angle form, PN 40, with **calibration certificate**, complies

with DGRL 97/23/EG, constructed and tested according to AD 2000-A2, EN ISO 4126-1, VdTÜV leaflet 100, flange connection according to DIN 2635, body made of cast steel GS-C25, seat and plug made of stainless steel, with gas-tight bonnet

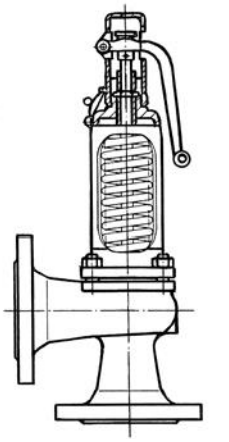
Order no. Without spring release H2	Order no. With spring release H4	Inlet	Outlet	Set pressure	Weight
2.00000	**2.02000**	20	20	12.1 bar	5 ,5
2.00100	**2.02100**	20	20	15.6 bar	5 ,5
2.00200	**2.02200**	25	25	12.1 bar	6, 0
2.00300	**2.02300**	25	25	15.6 bar	6 ,0
2.00400	**2.02400**	32	32	12.1 bar	7 ,5
2.00500	**2.02500**	32	32	15.6 bar	7 .5
2.00600	**2.02600**	40	40	12.1 bar	8 ,5
2.00700	**2.02700**	40	40	15.6 bar	8 ,5
2.00800	**2.02800**	50	50	12.1 bar	11 ,0
2.00900	**2.02900**	50	50	15.6 bar	11 ,0
2.01000	**2.03000**	65	65	12.1 bar	11 ,0
2.01100	**2.03100**	65	65	15.6 bar	14 ,0
2.01200	**2.03200**	80	80	12.1 bar	19 ,0
2.01300	**2.03300**	80	80	15.6 bar	19 ,0



W/o spring release

Full-stroke spring loaded safety valve in angle design, PN 40, with **calibration certificate**, according to DGRL 97/23/EG, constructed and tested according to AD 2000-A2, EN ISO 4126-1, VdTÜV-Sheet 100, inlet PN 40, outlet PN 16, body made of spheroidal graphite iron GGG-40.3, seat and plug made of stainless steel, gas-tight bonnet

Part no. Without spring release H2	Part no. With spring release H4	Inlet	Outlet	Set pressure	Weight
2.04000	**2.06000**	20	32	12.1 bar	8.5
2.04100	**2.06100**	20	32	15.6 bar	8.5
2.04200	**2.06200**	25	40	12.1 bar	9.0
2.04300	**2.06300**	25	40	15.6 bar	9.0
2.04400	**2.06400**	32	50	12.1 bar	12.0
2.04500	**2.06500**	32	50	15.6 bar	12.0
2.04600	**2.06600**	40	65	12.1 bar	15.0
2.04700	**2.06700**	40	65	15.6 bar	15.0
2.04800	**2.06800**	50	80	12.1 bar	21.0
2.04900	**2.06900**	50	80	15.6 bar	21.0
2.05000	**2.07000**	65	100	12.1 bar	32.0
2.05100	**2.07100**	65	100	15.6 bar	32.0
2.05200	**2.07200**	80	125	12.1 bar	54.0
2.05300	**2.07300**	80	125	15.6 bar	54.0



With spring release

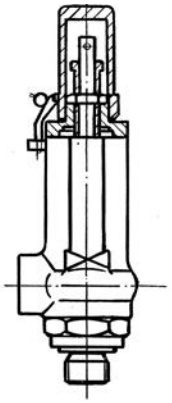
Proportional spring safety valve in angle form, PN 40, with **calibration certificate** , compliant with

DGRL 97/23/EG, constructed and tested according to AD 2000-A2, EN ISO 4126-1, VdTÜV leaflet 100, threaded connection, body made of spheroidal graphite cast iron GGG 40.3, seat and plug made of stainless steel, with gas-tight bonnet, without spring release.

Version A: Inlet and outlet threaded pipe

Version B: Inlet and outlet Threaded pipe, **frost-resistant -20°C**, inlet material 1.4571

Order no. Version A	Order no. Version B	Inlet	Outlet	Set pressure	Weight
2.08000	**2.09000**	G 1/2" male	G 1/2" female	15.6 bar	0.90
2.08100	**2.09100**	G 1/2" male	G 1/2" female	19.0 ba	0.90
2.08200	**2.09200**	G 1/2" male	G 1/2" female	25.0 bar	0.90
2.08300	**2.09300**	G 3/4" male	G 1/2" female	15.6 bar	0.90
2.08400	**2.09400**	G 3/4" male	G 1/2" female	19.0 bar	0.90
2.08500	**2.09500**	G 3/4" male	G 1/2" female	25.0 bar	0.90
2.09800	**Surcharge for APZ 3.1 according to EN 10204**				
2.09900	**Surcharge for NPT thread (per side)**				



Safety valves are also available with other setting pressures and nominal diameters TÜV inspections and repairs are carried out in our workshop

Safety valve, PN 40, with calibration certificate,

Material: brass, with rain cap, seal FPM, **medium propane and butane,** type 805,

complies with Pressure Equipment Directive 97/23/EC, Category IV, Module B and F.

Built and tested according to EN ISO4126-1, AD 2000, Leaflet A2 and VdTÜV Leaflet 100

Version A: with condensate drain hole (outdoor installation)

Version B: without condensate drain hole (installation in closed rooms)

Order no. Version A	Order no. Version B	Container connection	Set pressure
2.10000	**2.11000**	1/4" NPT male	15.6 bar
2.10100	**2.11100**	1/4" NPT male	25.0 bar
2.10200	**2.11200**	3/8" NPT male	15.6 bar
2.10300	**2.11300**	3/8" NPT male	25.0 bar
2.10400	**2.11400**	1/2" NPT male	15.6 bar
2.10500	**2.11500**	1/2" NPT male	25.0 bar
2.10600	**2.11600**	3/4" NPT male	15.6 bar
2.10700	**2.11700**	3/4" NPT male	25.0 bar
2.16000	**Surcharge for APZ 3.1 according to EN 10204**		

Safety valve, PN 40, with calibration certificate,

Material: stainless steel 1.4571, with rain cap, seal FPM, **medium propane and butane,** type 805

complies with Pressure Equipment Directive 97/23/EC, Category IV, Module B and F.

Built and tested according to EN ISO4126-1, AD 2000, Leaflet A2 and VdTÜV Leaflet 100

Version A: with condensate drain hole (outdoor installation)

Version B: without condensate drain hole (installation in closed rooms)

Order no. Version A	Order no. Version B	Tank connection	Set pressure
2.12000	**2.13000**	1/4" NPT male	15.6 bar
2.12100	**2.13100**	1/4" NPT male	25.0 bar
2.12200	**2.13200**	3/8" NPT male	15.6 bar
2.12300	**2.13300**	3/8" NPT male	25.0 bar
2.12400	**2.13400**	1/2" NPT male	15.6 bar
2.12500	**2.13500**	1/2" NPT male	25.0 bar
2.12600	**2.13600**	3/4" NPT male	15.6 bar
2.12700	**2.13700**	3/4" NPT male	25.0 bar
2.16000	**Surcharge for APZ 3.1**	**in accordance with EN 10204**	

Safety valve, PN 40, with calibration certificate

Material: stainless steel 1.4571, with rain cap, seal KALREZ, **medium ammonia, dimethyl ether**, type 805, Conforms to Pressure Equipment Directive 97/23/EC, Category IV, Modules B and F.

Built and tested according to EN ISO4126-1, AD 2000, Leaflet A2 and VdTÜV Leaflet 100. The sealing Material: "KALREZ" (Isolast) can be used for almost all known media.

Version A: with condensate drain hole (outdoor installation)

Version B: without condensate drain hole (installation in closed rooms)

Order no. Version A	Order no. Version B	Container connection	Set pressure
2.14000	**2.15000**	1/4" NPT male	15.6 bar
2.14100	**2.15100**	1/4" NPT male	25.0 bar
2.14200	**2.15200**	3/8" NPT male	15.6 bar
2.14300	**2.15300**	3/8" NPT male	25.0 bar
2.14400	**2.15400**	1/2" NPT male	15.6 bar
2.14500	**2.15500**	1/2" NPT male	25.0 bar
2.14600	**2.15600**	3/4" NPT male	15.6 bar
2.14700	**2.15700**	3/4" NPT male	25.0 bar
2.16000	**Surcharge for APZ 3.1 according to EN 10204**		

Other response pressures are available on request!

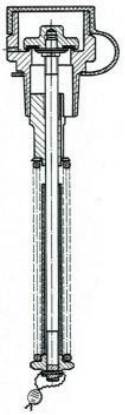
Safety valve, PN 40, with **calibration certificate** **Material: brass,** with rain cap, seal FPM, **medium propane and butane,** with condensate hole (outdoor installation),

Conforms to Pressure Equipment Directive 97/23/EC, Category IV, Module B and D (not to AD 2000, Leaflet A2)

Order no.	Container connection	Set pressure	Material	Type
2.17000	1/4" NPT male	15.6 bar	Brass	3127
2.17100	1/2" NPT male	15.6 bar	Brass	3129
2.17200	3/4" NPT male	15.6 bar	Brass	3131
2.17500	1/2" NPT male	15.6 bar	Stainless steel	AA3126
2.17600	3/4" NPT male	15.6 bar	Stainless steel	AA3130
2.18000	1/4" NPT male	25.0 bar	Brass	3127
2.18100	1/2" NPT male	25.0 bar	Brass	3129
2.18200	3/4" NPT male	25.0 bar	Brass	3131
2.18500	1/2" NPT male	25.0 bar	Stainless steel	AA3126
2.18600	3/4" NPT male	25.0 bar	Stainless steel	AA3130

Safety valve, PN 40, with **calibration certificate**

Internal Version, standard valve for 1.2 ; 2.1 and 2.9 to tanks**, connection 1" NPT**
Material: brass, with rain cap,



complies with Pressure Equipment Directive 97/23/EC, Category IV, Module B and F.
Built and tested according to EN ISO4126-1, AD 2000, Leaflet A2 and VdTÜV Leaflet 100

Order no.	Tank connection	Set pressure
2.19000	1" NPT MALE	12.1 bar liftable
2.19100	1" NPT MALE	15.6 bar liftable

Other contact pressures are available on request!

Adapter for connection of the exhaust line, with certificate

Order no.	Connection	for safety valve	Material:	Fig.
2.20000	1/2" NPT	GOK/RegO 3128, 3129	Ms	1
2.20100	1/2" NPT	Witt A-12/22/23/24/26 and SV-805	Ms	1
A2.20200	1/2" NPT	Witt A-12/22/23/24/24 and SV 805	St	1
A2.20300	1/2" NPT	Witt SV 805	Stainless steel	1
2.20400	G1 1/2"	S&R - 486	Ms	2

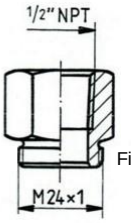


Figure 1

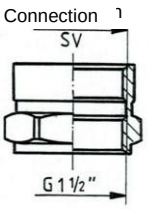
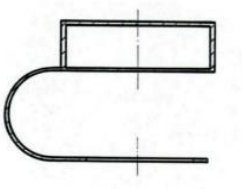


Figure 2

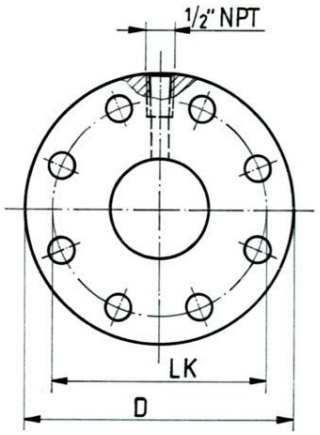
Rain caps for safety valves

Order no.	Material	suitable for safety valve	Type
2.30000	Plastic	SV-A 22,23,24,14-ES 805	Kapsto U23
2.30100	Plastic	SV 741 and SV486	GOK / SRG
2.30200	Plastic	SV-A3	Kapsto U33
2.30300	Rubber	RegO 3127-3129	7545-40 with fastening, black
2.30400	Rubber	RegO 3131	3131-40 without fastening, black
2.30500	Rubber	RegO AA 3126	7545-40 without fastening, black
2.30600	Rubber	RegO AA 3130	AA 3130 - 40P, without fastening, red



Intermediate piece for installation between two DIN flanges, PN 25,

with connection 1/2" NPT IT for installation of an expansion or safety valve, 36 mm thick Material: steel, primed, with **certificate**



Order no.	Nominal width	D	LK
2.40000	DN 15	95	65
2.40100	DN 20	105	75
2.40200	DN 25	115	85
2.40300	DN 32	140	100
2.40400	DN 40	150	110
2.40500	DN 50	160	125
2.40600	DN 65	185	145
2.40700	DN 80	200	160
2.40800	DN 100	235	190
2.40900	DN 125	270	220
2.41500	Additional price for a 2nd threaded connection e.g. 1/2" NPT		

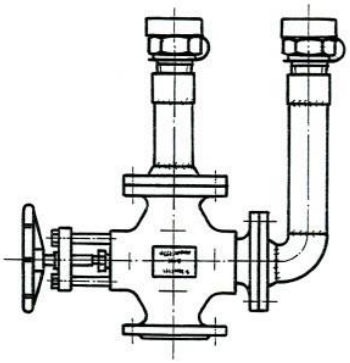
DN 15 to DN 50 = 4 holes **DN 65 to DN 125 = 8 holes**

Safety valve unit, PN 25, make P&A,

with pressure and leak test and certificate,

consisting of:

1 piece shuttle valve PN 40, flange acc. to DIN 2635, cast steel housing
2 internal safety valves with calibration certificate Connection 1" NPT ET, response pressure 12.1 or 15.6 bar
2 pieces welded parts PN 40, to accommodate the safety valves
completely welded, assembled, primed and painted



Order no.	Tank connection	Set pressure	Weight
2.50000	25	12.1 bar	16
2.50100	25	15.6 bar	16
2.50200	32	12.1 bar	22
2.50300	32	15.6 bar	22
2.50400	40	15.6 bar	26
2.50500	50	15.6 bar	30

Safety valve unit, PN 25, make P&A,

with pressure and leak test and certificate,

consisting of:

1 piece 3-way ball valve PN 40, forged steel, flange acc. to DIN 2635 or NPT male thread
2 internal safety valves with TÜV approval, connection 1" NPT, response pressure 12.1/15.6 bar
completely welded, assembled, primed and painted

Order no.	Tank connection	Set pressure	Weight	Figure
2.51000	25	12.1 bar	7.0	1
2.51100	25	15.6 bar	7.0	1
2.51200	32	12.1 bar	7.0	1
2.51300	32	15.6 bar	7.0	1
2.51400	40	15.6 bar	8.0	1
2.51500	50	15.6 bar	9.0	1
2.51600	1" NPT male	12.1 bar	7.0	2
2.51700	1" NPT male	15.6 bar	7.0	2
2.51800	1 1/4" NPT male	12.1 bar	7.0	2
2.51900	1 1/4" NPT male	15.6 bar	7.0	2

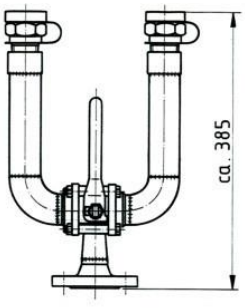


Figure 1

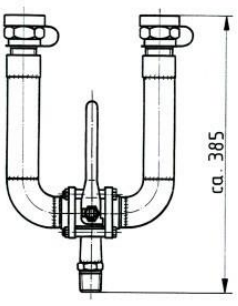
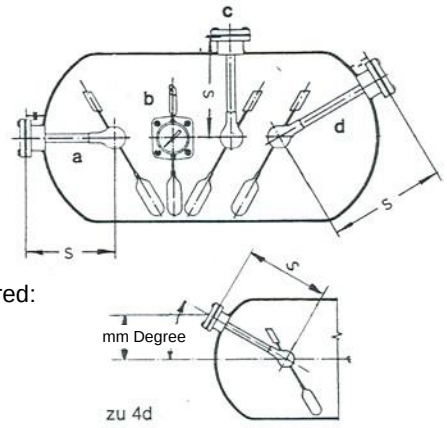


Figure 2

Safety valves with other setting pressures are available on request!

Content indicator

Float indicator with magnetic transmission and local indication of the tank content in %.

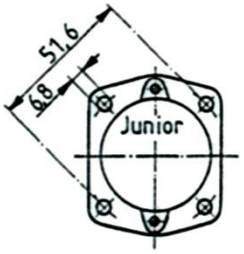


Please be sure to specify when ordering:

1) The type designation like "Junior", "Senior", "Magnetel" etc.
2) The container diameter
3) The installation method: a) Installation from above
   b) Installation from the front
   c) Sideways into the container shell
   d) At an angle in the container bottom or in the container jacket
4) For the dimensional determination of the content indicator, the following is also required:
   3a) Indication of the shaft length dimension "s
   3b) Indication of the shaft length dimension "s"
   3c) Dimension from the centre of the vessel to the block flange (= shaft length) 3d) Indication of the angle between the vessel axis and the block flange of the indicator in degrees and shaft length dimension "s"

Content indicator, PN 25, Rochester "Junior" type 6281,

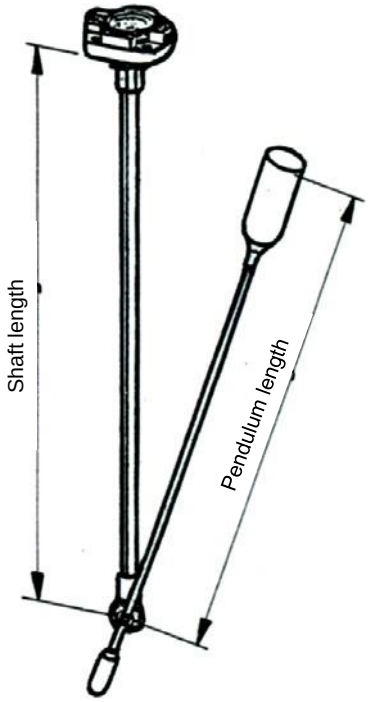
Complete with protective cap, seal and fastening screws
Installation from above (vertical)



Order no.	Container diameter	Shaft length
3.00000	800 mm	410 mm
3.00100	1000 mm	510 mm
3.00200	1250 mm	630 mm
3.00300	1250 mm	755 mm
3.00400	1250 mm	785 mm
3.00500	1250 mm	805 mm
3.00600	1600 mm	up to 900 mm
3.00800	Surcharge for special length	

Content indicator, PN 25, Rochester "Junior" type 6284,

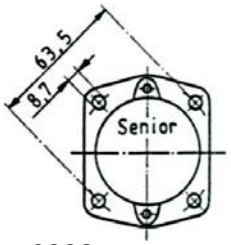
Complete with protective cap, seal and fastening screws
Horizontal installation



Order no.	Container diameter	Shaft length
3.02000	800 mm	approx. 300 mm
3.02100	1250 mm	approx. 300 mm
3.02200	1600 mm	approx. 300 mm
3.00800	Surcharge for special length	

Content indicator, PN 25, Rochester "Senior" type 6280,

Complete with protective cap, seal and fastening screws
Installation top (vertical)



Order no.	Container diameter	Shaft length
3.03000	up to 1600 mm	up to 1000 mm
3.03100	up to 2000 mm	up to 1200 mm
3.03800	Surcharge for special length	

Content indicator, PN 25, Rochester "Senior" type 6283,

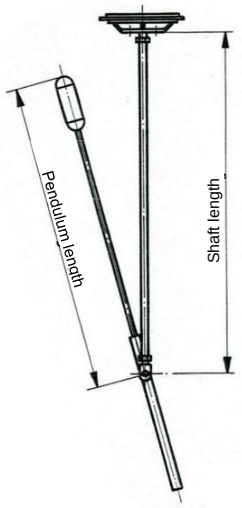
Complete with protective cap, seal and fastening screws
Horizontal installation

Order no.	Container diameter	Shaft length
3.04000	up to 1600 mm	approx. 300 mm
3.03800	Surcharge for special length	

Content indicator for large containers, make P&A, PN 25,

Screw holes outside the axle cross, incl. scale 8", fire-safe seal and V2A screws M 12x25,
Installation from above (vertical)

Version A: with WZ 2.2 according to EN 10204 (pressure part)
Version B: with APZ 3.1 according to EN 10204 (pressure part)

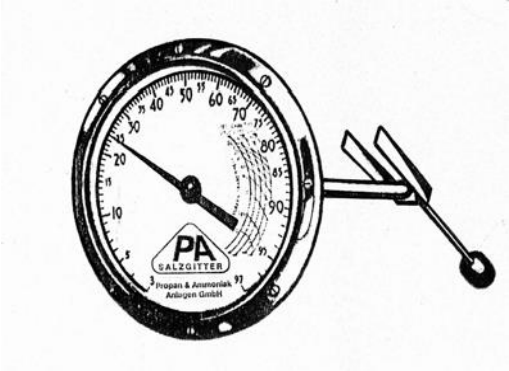


Order no. Version A	Order no. Version B	Container diameter		Shaft length
3.05000	**3.06000**		1600 mm	up to 1000 mm
3.05100	**3.06100**	up to	2000 mm	up to 1100 mm
3.05200	**3.06200**	up to	2500 mm	up to 1650 mm
3.05300	**3.06300**	up to	2900 mm	up to 1700 mm
3.05400	**3.06400**	up to	3200 mm	up to 1750 mm
3.05500	**3.06500**	up to	3600 mm	up to 2000 mm
3.05600	**3.06600**	up to	4000 mm	up to 2200 mm
3.05800	**3.05800**	Surcharge ammonia version		
3.05900	**3.05900**	Surcharge for different container diameters or shaft lengths		

Content indicator for large containers, make P&A, PN 25,

Screw holes outside the axle cross, incl. scale 8", fire-safe seal and V2A screws M 12x25,
Horizontal installation

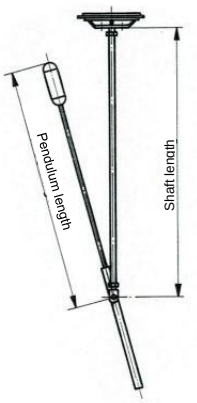
Version A: with WZ 2.2 according to EN 10204 (pressure part)
Version B: with APZ 3.1 according to EN 10204 (pressure part)



Order no. Version A	Order no. Version B	Container diameter		Shaft length
3.07000	**3.08000**		1600 mm	610 mm
3.07100	**3.08100**	up to	2000 mm	610 mm
3.07200	**3.08200**	up to	2500 mm	610 mm
3.07300	**3.08300**	up to	2900 mm	610 mm
3.07400	**3.08400**	up to	3200 mm	610 mm
3.07500	**3.08500**	up to	3600 mm	610 mm
3.07600	**3.08600**	up to	4000 mm	610 mm
3.05800	**3.05800**	Surcharge ammonia version		
3.05900	**3.05900**	Surcharge for different container diameters or shaft lengths		

Content indicator **for road tankers** with spring damping**,** make P&A, PN 25, screw holes outside the axle cross, incl. scale 8", fire-safe seal and V2A screws M 12x25, **horizontal installation, with certificate**

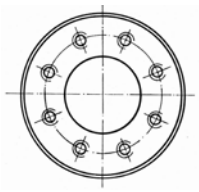
Version A: Scale 8"
Version B: Scale 4"

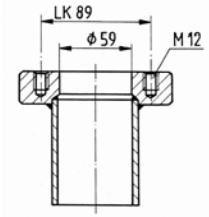


Order no. Version A	Order no. Version B	Container diameter		Shaft length
3.09000	**3.09600**		2000 mm	475 mm
3.09100	**3.09700**	to	2100 mm	475 mm
3.09200	**3.09800**	to	2200 mm	475 mm
3.09300	**3.09900**	to	2300 mm	475 mm
3.05900	**3.05900**	Surcharge for different container diameters or shaft lengths		

Flange for indicator large unit, PN 25, make P&A, with certificate

Order no	
3.10000	Block flange
3.10100	Blind flange
3.10200	Flange with spigot





Flange gaskets for content indicators

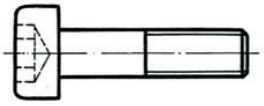
Order No.	Type	Material
3.11000	Junior	Perbunan (NBR)
3.11100	Senior	Perbunan (NBR)
3.11200	Magnetel	Perbunan (NBR)
3.11300	Magnetel	SIL 4430 Fire-Safe
3.11400	Magnetel	Metal with inlay

Scales for content indicators

Order No.	Type
3.12000	Junior and Schulz & Rackow (from 1996)
3.12100	Schulz & Rackow (before 1996)
3.12200	Senior
3.12300	Magnetel 8" - Make P&A

Screws for content indicator

Order. No.	Type	Dimension	Material
3.13000	Junior	M 6 x 25	V4A
3.13100	Senior	M 8 x 25	V4A
3.13200	Magnetel	M 12 x 25	V2A



Protective caps for content indicator

Order No.	Type
3.14000	Junior
3.14100	Senior
3.14200	Schulz + Rackow

Replacement glasses for large display units

Order No.	Type
3.15000	Magnetel 8"

Float with rod

Order. No.	Type
3.15500	for large display unit

Overfill protection, **make CMT,** CL system, with pre-alarm, **no redundant Version,** suitable for liquid gas systems of group A and B, with self and continuous monitoring as well as with TÜV, component testing and ATEX approval, PN 40, non-manipulable, fixed shut-off point with upstream operational switching point.

Overfill protection type CL (non-redundant) consisting of:

- Sensor with flange DN 50, PN 40, type CL-SRO-50, probe length up to 3000 mm
- Switching amplifier for group A and B systems (AK4), type CL-SLA1
- Transmitter, type CL-URO
- EEX-i power supply (2-channel), type Ex-SU 2
- Power supply unit 230 VAC/24 VDC, type CL-SU
- Rack or field housing with connection board, type CL-O1 or CL-11

Order No. 3.20000 Complete overfill protection (specify probe length) with rack
Order No. 3.20010 Complete overfill protection (specify probe length) with field housing

Accessories

Order no. 3.20700 TKW shutdown

Flange connections in DN 40, DN 65, DN 80, DN 100 and a senior head are also available on request!

Overfill protection for large containers - redundant Version in connection with one or two quick-acting shut-off valves in the filling line.
Especially to be used for liquid gas systems of group C and D.

In order to avoid overfilling of liquid gas containers and the resulting potential hazards, component-tested overfill protection devices are required.
The task of an overfill protection for liquid gas is to monitor the level of the medium and, when the permissible level in the container is reached, to interrupt the filling process and trigger a visual or acoustic alarm.
Testing requirements: VDTÜV leaflets "Overfill prevention" 100 Part 1-3
The following overfill prevention devices are in the sense of TRB 801 No. 25. Para. 6.1.4.2 for group C and D installations, can be used as two independent overfill prevention devices (redundant Version, self-monitoring). This means that only one probe or flange connection is required.

Make CMT, CL system, with pre-alarm

with self and continuous monitoring as well as TÜV and component testing and PTB approval, PN 40, non-manipulable, fixed shut-off point with upstream operational switching point.

Overfill protection type CL (redundant) consisting of:

- Sensor with flange DN 50, PN 40, type CL-SRO-50, probe length up to 3000 mm
- Switching amplifier for group C and D systems (AK6), type CL-SLC1
- Relay monitoring, time-limited (8 hrs.), type CL-CRC2
- Transmitter, type CL-URO
- EEX-i power supply (2-channel), type Ex-SU 2
- Power supply unit 230 VAC/24 VDC, type CL-SU
- Rack or field housing with connection board, type CL-O1 or CL-11

Order No. 3.23000 Complete **redundant** overfill prevention (specify probe length) with rack
Order No. 3.23010 Complete **redundant** overfill protection (specify probe length) with field housing

Accessories

Order no. 3.20700 TKW shutdown

Flange connections in DN 40, DN 65, DN 80, DN 100 and a senior head are also available on request!

Overfill protection with integrated remote level indicator

only one flange connection (e.g. DN 50) is required for this unit. Depending on the Version, the overfill protection can be ordered in non-redundant (group A and B) or redundant Version (group C and D).
For the remote content display, several switching points can be supplied on request, e.g. min. switching point for dry-running protection, etc.
Testing requirements: Pressure Vessel Ordinance, VDTÜV leaflets "Overfill prevention" 100 Part 1-3

Make CMT, CL system,

Overfill protection: with self and continuous monitoring as well as with TÜV, component testing and PTB approval, PN 40, non-manipulable, fixed switch-off point with upstream operational switching point **Remote level indicator:** continuous capacitive level measurement with 3 freely selectable switching points

Overfill protection type CL consisting of:

- Sensor with flange DN 50, PN 40, type CL-SRON-50, probe length up to 3000 mm (Fig. 1)
- Switching amplifier, type CL-SLA1 (simple overfill protection) or type CL-SLC1
- Relay monitoring, time-limited (8 hrs.), type CL-CRC2 (only for redundant version)
- Transmitter, type CL-URON
- EEX-i power supply (2-channel), type Ex-SU 2 (Fig. 2)
- Level indicator with 3 Outlets
- Power supply unit 230 VAC/24 VDC, type CL-SU
- Rack or field housing with connection board, type CL-O1 (Fig. 3) or type CL-11

Order no	**3.25000**	Complete **non-redundant overfill** protection with Remote content display (group A and B) and rack
Order no	**3.25010**	Complete **non-redundant overfill** protection with Remote content display (group A and B) and field housing
Order no	**3.25100**	Complete **redundant** overfill protection with Remote content display (group C and D) and rack
Order no	**3.25110**	Complete **redundant** overfill protection with Remote content display (group C and D) and field housing

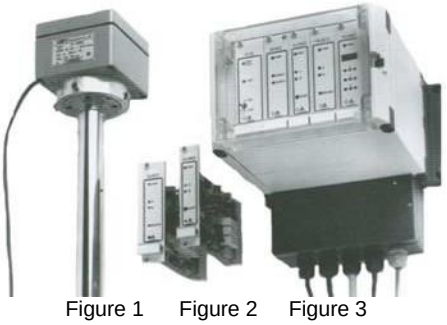


Figure 1 Figure 2 Figure 3

Accessories

Order no. **3.20700** TKW shutdown

Flange connections in DN 40, DN 65, DN 80, DN 100 and senior are also available on request!

Overfill protection with local content indicator, Type CMT- Multi FUS

The type CMT-Multi FUS is a modern electronic level monitor with integrated compatible overfill protection (also available without overfill protection) for liquid gas containers. This is a reliable system that can be used especially for small installations.
Features:

- Independent transducers for level and limit value
- Automatic self-adjustment for the fill level indicator
- continuous LCD display
- Long battery life
- Connection for external data processing
- Overfill protection with pre-alarm, switch-off via the tank truck
- According to VdTÜV leaflet 100

Order no. 3.26000	for **tanks smaller than 3 to**, group 0, brass probe with block flange Junior "S&R".
Order no. 3.26100	for **tanks smaller than 10 t**, group A, stainless steel probe, block flange Junior "S&R".
Order no. 3.26200	for **tanks smaller than 10 t**, group A, stainless steel probe, flange DN 40
Order no. 3.26300	for **tanks smaller than 10 t**, group A, stainless steel probe, flange DN 50
Order no. 3.26400	Additional non-explosion-proof second indicator for the container contents
Order no. 3.26500	Additional ex-protected second display for the container contents

Please state the required probe length when ordering.

Local and print remote display, PN 25, for liquid gas systems of group C,

approved for Ex zone 0, Version according to ATEX, consisting of:

Order no	**3.28000**	Complete local and remote pressure indication in Ex version
Order no	**3.28100**	Complete local and remote pressure indication (intrinsically safe circuit) Consisting of a pressure gauge 0-25 bar (without electrical contact) and a pressure transducer for remote pressure transmission incl. pressure part (antlers) for installation on the tank and digital indicator for installation in the control cabinet / control room
Order no	**3.28200**	Additional price for a built-in limit contact (e.g. for alarm)
Order no	**3.28300**	Surcharge for two built-in limit switches (e.g. for alarm)

Remote temperature display, PN 25, for liquid gas systems of group C,

Type of protection EEX IB IIC (intrinsically safe circuit), with PTB / ATEX approval, consisting of:

a) Screw-in resistance thermometer (PT 100) two-wire technology, stainless steel protection tube, length approx. 250 mm, special lengths on request) connection G 1/2" ET, temperature range -20° C to +60° C (Fig. 1)
b) Transmitter for galvanic isolation, type of protection EEX IB (IA) IIC (intrinsically safe), IP 65, temperature range -20° C to +60° C
c) Moving coil indicator for measuring range 0-20 mA, supply 10....32 VDC or 230 V Panel mounting housing, Inlet 0/4 ..... 20 mA, -20° C to +60° C (Fig. 2)
d) Power supply unit for transmitter, Inlet (EEX IB) IIB / IIC, supply 10. .....VDC 32 or 230 V, Inlet/Outlet 0/4. 20 mA, control circuit intrinsically safe,

Fig. 1

Order no	**3.29000**	Complete remote temperature display (pos. a - d)
Order no	**3.29100**	Additional price for an additional local temperature display
Order no	**3.29200**	Additional price for a built-in limit contact (e.g. for alarm)
Order no	**3.29300**	Surcharge for two built-in limit switches (e.g. for alarm)

Figure 2

Electronic dry-running protection for installation in the control cabinet

The dry-running protection monitors the systems electronically according to the principle of the "phase angle measurement". The electronic component is connected directly into the motor's supply line and housed in a control cabinet, for example.
Please state the existing voltage and motor capacity when ordering!

Order. No. 3.29700 **for engines up to 5 KW** **Fig. 1**

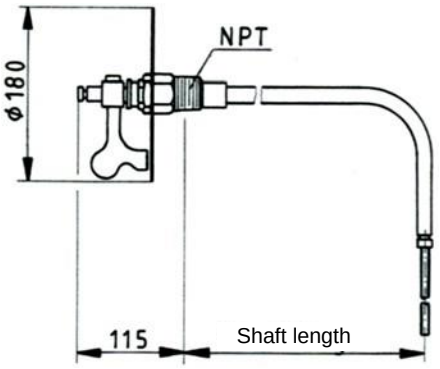
Order. No. 3.29800 **for engines over 5 KW** **Fig. 2**
(with current transformer)

Rotary dipstick tube, Connection 1" NPT male, PN 40, make P&A,

for stationary and mobile containers, complete with scale,
With certificate

Order no.	Shaft length	Type	Weight
A3.30000	490 mm	P&A	2.1
A3.30100	675 mm	P&A	2.4

Rotary dipstick tube, connection 1" NPT male, PN 25, for stationary and mobile tanks, complete with scale, make RegO or equivalent, **with certificate**



Order no.	Shaft length - normal -	Shaft length -reinforced-	RegO	Weight
A3.31000	490 mm	----------	A9091R	2.1
A3.31100	675 mm	----------	A9091R	2.4
A3.31200	915 mm	----------	A9093RS	2.7
A3.31300	----------	915 mm	A9093TS	3.0
A3.31400	----------	1050 mm	A9094TS	3.2
A3.31500	----------	1400 mm	A9095TS	3.8

Rotary dipstick tube, Connection 3/4" NPT male, PN 25,

with works certificate 2.2 according to EN 10204

Order no.	Shaft length	RegO	Weight
A3.32000	185 mm	2072	0.5

Spare parts for rotary sounding pipes

Order no.	Designation	Type	Material	Figure
A3.32500	Screw plug with seal	RegO	Steel	1
3.32600	Screw plug with seal	P&A	Brass	1
3.32700	Scale for rotary dipstick tube 1" NPT	RegO	Alu	
3.32800	Scale for rotary dipstick tube 1" NPT	P&A	Alu	

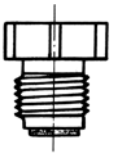
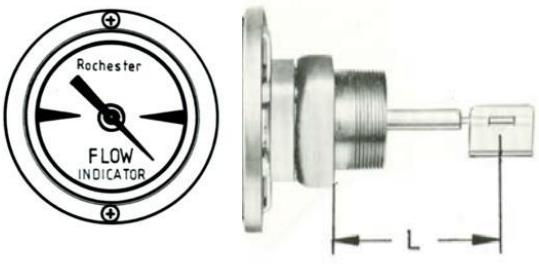


Figure 1

Flow indicator "Rochester", PN 25

This is not a measuring device, but a pure flow indicator which is installed in the pipeline (liquid phase).
Connection thread 2" NPT male, suitable for pipe DN 50 to DN 100, scale 4", **with certificate**

Order no.	Dimension L	Rochester	Weight
3.33000	55 mm	6286-325	1.0
3.33100	75 mm	6286-400	1.0
3.33200	125 mm	6286-475	1.0
3.33500	Spare scale 4" for flow indicator		



Pressure switch for fuel gas or compressed air, G 1/2

For the Ex area (Directive 94/9 EC - ATEX), the pressure switches are integrated into an "intrinsically safe circuit". Attention: Installation of the isolation amplifier outside the Ex zone. Gold contacts are used for the pressure switches because of the low voltages and currents in the additional function EX-i (ZF 513).

Version A: for compressed air - not suitable for use in hazardous areas
Version B: for fuel gas - not suitable for use in Ex-area, **with DIN-DVGW approval**
Version C: for fuel gas - suitable for use in Ex-area, **with DIN-DVGW approval**
Version D: for gas/liqu. - - Suitable for use in hazardous areas

Order. No. Version A	Order. No. Version B	Order. No. Version C	Order. No Version D	Adjustment range	Max. operating pressure
3.40000	----------	----------	----------	1.0 – 10,0 bar	25.0 bar
----------	**3.40500**	**3.41000**	----------	0.04 – 0.25 bar	0.8 bar
----------	**3.40600**	**3.41100**	----------	0.2 – 1.6 bar	3.0 bar
----------	----------	----------	**3.41500**	0.5 – 6.0 bar	20.0 bar
----------	----------	----------	**3.41600**	4.0 – 25.0 bar	25.0 bar

Suitable isolating switch amplifiers for Ex installation (230 V or 24 V) see page 115
The above-mentioned pressure switches can be used as min. and max. pressure switches. Pressure switches can be used as min. and max. pressure switches (rising or falling switching).

Min./Max. Pressure limiter, Connection G 1/2"

For the Ex area (Directive 94/9 EC - ATEX), the pressure switches are integrated into an "intrinsically safe circuit".
Attention: Installation of the isolation amplifier outside the Ex zone. Gold contacts are used for the pressure switches because of the low voltages and currents in the additional function EX-i (ZF 513).

Pressure limiters must be provided with a restart lock (RESET) in the control cabinet!

Order no.	Calibration range	Type	Max. operating pressure
3.42000	0.5 - 6.0 bar	PWR 625-513	25 bar
3.42100	4.0 - 25.0 bar	PWR 25-513	25 bar

Suitable isolating switch amplifiers for Ex installation (230 V or 24 V) see page 115
The above-mentioned pressure switches can be used as min. and max. pressure switches.
Pressure switches can be used as min. and max. pressure switches (rising or falling switching).

Safety pressure limiter Connection G 1/2", (special Version) for liquid gas systems, self-monitoring, especially suitable for pressure monitoring of liquid gas containers

For the Ex area (Directive 94/9 EC - ATEX), the pressure switches are integrated into an "intrinsically safe circuit".
Attention: Installation of the isolation amplifier outside the Ex zone. Gold contacts are used for the pressure switches because of the low voltages and currents in the additional function EX-i (ZF 513).

Order no.	Adjustment b.	Type	Lock.	max. operating dr.	TÜV test mark.
3.43000	5-16 bar	FD 16-326	external	25 bar	01-12-0109
3.43100	5-16 bar	FD 16-327	internal	25 bar	01-12-0110

Suitable isolating switch amplifiers for Ex installation (230 V or 24 V) see page 115

Differential pressure switch, 2x connection G 1/4" for systems with submersible pump, type DDCM 16-513

For the Ex area (Directive 94/9 EC - ATEX) the pressure switches are integrated into an "intrinsically safe circuit".
Attention: Installation of the isolation amplifier outside the Ex zone. Gold contacts are used for the pressure switches because of the low voltages and currents in the additional function EX-i (ZF 513).

Order no.	Adjustment range	Max. operating pressure
3.44000	3-16 bar	25 bar

Suitable isolating switch amplifiers for Ex installation (230 V or 24 V) see page 115

Pressure gauge with capsule spring according to EN 837,

Housing made of steel, measuring mechanism made of copper alloy, display accuracy: Class 1.6

Order no.	Display range	Housing Ø	Connection	Weight	Figure
3.45000	0 - 60 mbar	100 mm	G 1/2"	0.5	1
3.45100	0 - 100 mbar	100 mm	G 1/2"	0.5	1
3.45200	0 - 250 mbar	100 mm	G 1/2"	0.5	1
3.45300	0 - 400 mbar	100 mm	G 1/2"	0.5	1

Pressure gauge with Bourdon tube according to EN 837, with safety glass,

Housing made of steel, Ms or plastic, measuring mechanism made of copper alloy, class 1.6

Order no.	Display range	Housing Ø	Connection	Weight	Figure
3.46000	0 - 4 bar	40 mm	G 1/4" ET	0.1	1
3.46100	0 - 25 bar	40 mm	G 1/4" ET	0.1	1
3.46200	0 - 4 bar	40 mm	1/4" NPT male	0.1	1
3.46300	0 - 25 bar	40 mm	1/4" NPT male	0.1	1
3.46400	0 - 4 bar	63 mm	1/4" NPT male	0.1	1
3.46500	0 - 25 bar	63 mm	1/4" NPT male	0.1	1
3.46600	0 - 25 bar	63 mm	G 1/4" ET	0.1	1
3.46700	0 - 4 bar	63 mm	1/4" NPT male	0.1	2
3.46800	0 - 25 bar	63 mm	1/4" NPT male	0.1	2
3.46900	0 - 25 bar	63 mm	G 1/4" ET	0.1	2
3.47000	0 - 40 bar	63 mm	1/4" NPT male	0.1	2 **glycerine filled**

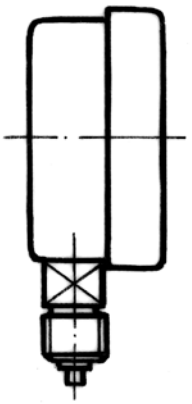


Figure 1

Connection radial

Pressure gauge with Bourdon tube according to EN 837, class 1.6,

Housing steel, measuring mechanism copper alloy, incl. pressure relief opening

Order no.	Display range	Housing Ø	Connection	Weight	Figure
3.48000	0 - 4 bar	100 mm	G 1/2" male	0.5	1
3.48100	0 - 25 bar	100 mm	G 1/2" male	0.5	1
3.48200	0 - 40 bar	100 mm	G 1/2" male	0.5	1
3.48300	0 - 25 bar	100 mm	G 1/2" male	0.5	2
3.48400	0 - 40 bar	100 mm	G 1/2" male	0.5	2
3.48500	0 - 25 bar	100 mm	G 1/2" male	1.0	1 **glycerine filled**
3.48600	0 - 40 bar	100 mm	G 1/2" male	1.0	1 **glycerine filled**
3.48700	0 - 25 bar	100 mm	G 1/2" male	1.0	2 **glycerine filled**
3.48800	0 - 40 bar	100 mm	G 1/2" male	1.0	2 **glycerine filled**

Pressure gauge with Bourdon tube according to EN 837 safety glass,

Housing and measuring unit made of stainless steel, incl. pressure relief opening, class 1.0

Order no.	Display range	Housing Ø	Connection	Weight	Figure
3.49100	0 - 25 bar	100 mm	G 1/2" male	0.5	1
3.49200	0 - 40 bar	100 mm	G 1/2" male	0.5	1
3.49300	0 - 25 bar	100 mm	G 1/2" male	0.5	2
3.49400	0 - 25 bar	100 mm	G 1/2" male	0.5	1 **glycerine filled**
3.49500	0 - 40 bar	100 mm	G 1/2" male	0.5	1 **glycerine filled**
3.49600	0 - 25 bar	100 mm	G 1/2" male	0.5	2 **glycerine filled**
3.49700	0 - 25 bar	160 mm	G 1/2" male	1.1	1
3.49800	0 - 40 bar	160 mm	G 1/2" male	1.1	1

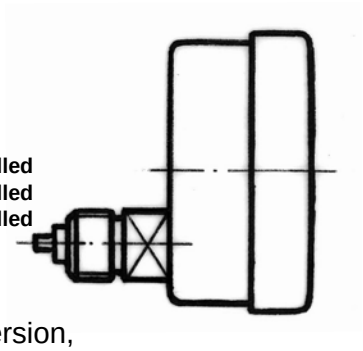


Figure 2

Axial connection

Pressure gauge with bourdon tube according to EN 837, calibratable version,

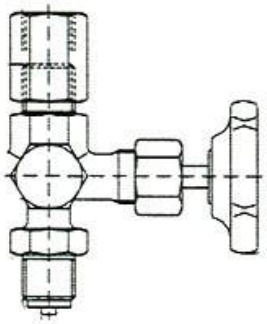
Housing and measuring mechanism made of steel, display accuracy: Class 0.6

Order no.	Display range	Housing Ø	Connection	Weight	Figure
3.50000	0 - 4 bar	160 mm	G 1/2" male	1.1	1
3.50100	0 - 16 bar	160 mm	G 1/2" male	1.1	1
3.50200	0 - 25 bar	160 mm	G 1/2" male	1.1	1
3.50300	0 - 40 bar	160 mm	G 1/2" male	1.1	1

Order No:	**3.51000**	Additional price for custody transfer
Order No:	**3.51100**	Additional price for red line mark according to specification

Pressure gauge shut-off valve, PN 40, connection thread G 1/2" male,

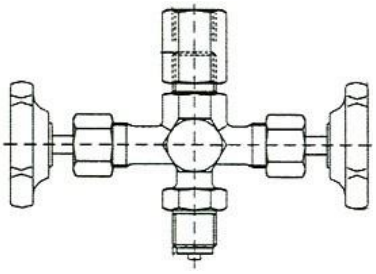
Version A: with works certificate 2.2 according to EN 10204:2004
Version B: with inspection certificate 3.1 according to EN 10204:2004



Order no. Version A	Order no. Version B	Material	Version	
3.53000	**3.54000**	Brass	**without** test connection	DIN 16270
3.53100	**3.54100**	Steel	**without** test connection	DIN 16270
3.53500	**3.54500**	Brass	**with** test flange	DIN 16271
3.53600	**3.54600**	Brass	**with** test pin	DIN 16271
3.53700	**3.54700**	Steel	**with** test flange	DIN 16271
3.53800	**3.54800**	V2A	**with** test flange	DIN 16271

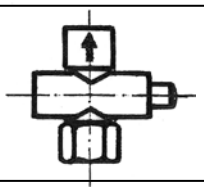
Pressure gauge double shut-off valve, PN 40, connection thread G 1/2" male

Version A: with works certificate 2.2 according to EN 10204:2004
Version B: with inspection certificate 3.1 according to EN 10204:2004



Order no. Version A	Order no. Version B	Material	Version	
3.55000	**3.56000**	Brass	**with** test flange	DIN 16272
3.55100	**3.56100**	Brass	**with** test pin	DIN 16272
3.55200	**3.56200**	Steel	**with** test flange	DIN 16272
3.55300	**3.56300**	V2A	**with** test flange	DIN 16272

Push button valve, PN 25, connection G 1/2" IT, nickel-plated

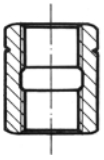


Order no. 3.56500

Union nut with weld-on socket, PN 40, with certificate

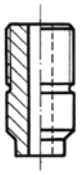
Order no.	Connection		Material
3.57000	G 1/2"	IG	Steel
3.57100	M 20x1,5	IG	Steel
3.57200	G 1/2"	IG	Steel, with APZ 3.1

Clamping sleeve made of steel, PN 40, internal thread, with certificate



Order no.	Connection A	Connection B
3.57500	G 1/2" left	G 1/2" right
3.57600	G 1/2" left	M20x1.5

Weld-on spigot, PN 40, DIN 16282, With certificate



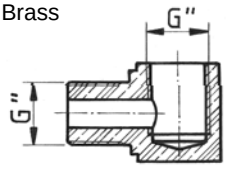
Order no.	Connection	Material
3.58000	G 1/2" left ET	C22.8
3.58100	G 1/2" left ET	C22.8, with APZ 3.1

Copper gasket for pressure gauge

Order no.	for threaded connection
3.58500	G 1/4"
3.58600	G 1/2"

Elbow for pressure gauge, PN 25, DIN 16284

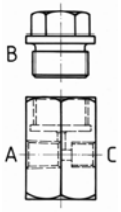
Order no.	Connection	Material
3.59000	G1/4" male / G1/2" female	Brass



Pressure gauge block, PN 25, Material: brass

Austrian Version, without POL connection
Connection A: 1/4" NPT (POLE) female
Connection B: Plug G 3/4" male
Connection C: G 1/4" for pressure gauge female

Order no. 3.59500



Pressure recorder, Industrial robot version

For recording pressure fluctuations in systems and pipelines, display accuracy +/-1 %.

Version A: Housing size 288 x 192 mm, pressure connection G 1/2", with mechanical clockwork (running time 8 days) paper feed 20 mm/h, incl. 1 clockwork and 2 housing door keys

Version B: With test case, incl. pressure gauge, pressure recorder, shut-off valve, test connection with Quick coupling and case, dimension 500x250x260 (LxWxH), running time 24 h

Order no. Version A:	Order no. Version B:	Measuring range
3.60000	**3.60500**	0 - 400 mbar
3.60100	**3.60600**	0 - 10 bar
3.60200	**3.60700**	0 - 40 bar

Accessories:

3.60800 Diagram roll L=16 m and 1 piece fibre pen

Bimetal pointer thermometer, PN 25

Housing and shaft made of stainless and acid-resistant steel, waterproof Display range -20°C to +60°C, display accuracy +/- 1 %, with certificate

Version A: Dive stem firmly attached to the housing
Version B: Immersion shaft fixed to the housing, "liquid-filled
Version C: with union nut and separate protective tube
Version D: with union nut and separate protective tube, "liquid-filled".

Order no.	Connection	Housing ∅	Diving depth	Weight	Version
3.62000	radial 1/2" NPT	100 mm	100 mm	0.6	A
3.62100	radial 1/2" NPT	100 mm	100 mm	0.8	B liquid filled
3.62200	radial G 1/2"	100 mm	100 mm	0.7	C
3.62300	radial G1/2"	100 mm	100 mm	0.9	D liquid filled
3.62400	axial 1/2" NPT	100 mm	100 mm	0.6	A
3.62500	axial 1/2" NPT	100 mm	100 mm	0.8	B liquid filled
3.62600	axial G 1/2"	100 mm	100 mm	0.7	C
3.62700	axial G 1/2"	100 mm	100 mm	0.9	D liquid filled
3.62800	axial 1/2" NPT	160 mm	100 mm	1.1	A
3.62900	axial 1/2" NPT	160 mm	250 mm	1.2	A
3.63000	radial G 1/2"	100 mm	100 mm	1.2	C calibrated

Spring dial remote thermometer with gas pressure filling, PN 25

Stainless steel housing, stainless steel fixing ring and capillary tube (L=1 m) with union nut and separate protection tube, indicating range -20°C to +60°C, indicating accuracy +/- 1.6 %, with works certificate 2.2 according to EN 10204

Order no.	Connection	Housing ∅	Immersion depth	Weight
3.64000	radial G 1/2"	100 mm	100 mm	1.2

Flow sight glass, PN 40,

Flange connection according to DIN 2635, housing made of GS-C25, sight glasses according to DIN 8902
With certificate

Order no.	Nominal width	Length	Weight
3.65000	DN 15	130 mm	3.5
3.65100	DN 20	150 mm	4.5
3.65200	DN 25	160 mm	5.5
3.65300	DN 32	180 mm	8.0
3.65400	DN 40	200 mm	9.0
3.65500	DN 50	230 mm	11.0
3.65600	DN 65	290 mm	16.0
3.65700	DN 80	310 mm	21.0
3.65800	DN 100	350 mm	27.0
3.65900	DN 125	400 mm	38.0 (PN 16 only)

Flow sight glass with NPT female thread, PN 25,

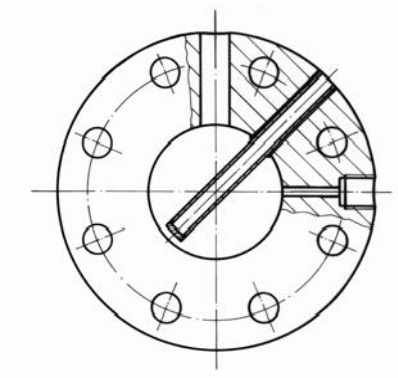
With certificate

Order no.	Connection	Length	Weight
3.67000	1/2"	100 mm	2.7
3.67100	3/4"	100 mm	2.9
3.67200	1"	130 mm	5.5
3.67300	1 1/4"	130 mm	5.5
3.67400	1 1/2"	150 mm	5.8
3.67500	2"	180 mm	9.0

Pressure and temperature measuring flange for measuring systems, PN 25, to accept pressure gauge and thermometer, installation between meter and pressure retaining valve **make P&A, with certificate**

Version A: without display instruments
Version B: with manometer 0-40 bar and thermometer -20°C/+60°C (calibratable)

Order no. Version A	Order no. Version B	Nominal width
3.68000	**3.69000**	DN 25
3.68100	**3.69100**	DN 32
3.68200	**3.69200**	DN 50
3.68300	**3.69300**	DN 80
3.68400	**3.69400**	DN 100



Complete volume measuring system, for stationary systems,

with PTB/EEC type approval, make P&A,

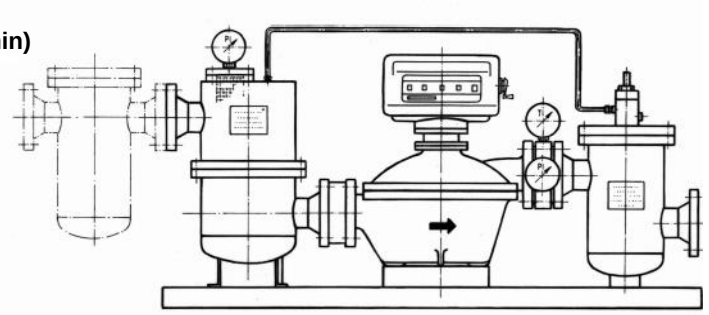
complies with Pressure Equipment Directive 97/23/EC, built and tested according to AD 2000, mounted on a steel base plate, including pressure and leak test

consisting of:

- Pressure retaining valve, make P&A, PTB/EWG type approval, with preliminary custody transfer test, TÜV **approval** and **APZ 3.1 according to EN 10204**
- Pressure and temperature measuring flange, type P&A, with pressure gauge, thermometer and APZ 3.1 according to EN 10204
- Liquefied gas meter with counter and receipt printer, with preliminary custody transfer test
- Check valve made of 1.4571, with soft seal, type approval and **APZ 3.1 according to EN 10204**
- Gas bubble separator, **make P&A, with TÜV approval and APZ 3.1 according to DIN 10204** (individual parts)
- Base plate made of steel, primed and painted
- Fine filter, **make P&A, with TÜV approval and APZ 3.1 according to EN 10204** (not included in the scope of delivery - see page 26, order no. 3.87000 - 3.88700)

Order no. PN 25	Order no. PN 40	Nominal width	Capacity (L/min)
3.70000	**3.70500**	25	5 - 80 l
3.70100	**3.70600**	50	80 - 400 l
3.70200	**3.70700**	80	100 - 800 l
3.70300	**3.70800**	80	100 - 1000 l

Surcharge for fine filter (see order no. 3.87000 - 3.88700)



Liquid gas meter PN 25

for tank trucks and stationary operation, make Bopp & Reuther or equivalent, **PTB-tested and pre-calibrated**, suitable for liquid gas

Attention: In order to keep the wear of the liquid gas meters as low as possible and thus extend their service life, the actual flow rate of the meter should only be utilised to 70 %. If the meter is to be used for custody transfer, a complete measuring system with pressure retaining valve, temperature measuring flange and gas bubble separator must be installed.
Standard version: Flow direction from left to right

Revolving pointer unit

Order no. PN 25	Order no. PN 40	Nominal width	Version	Capacity
3.71000	**3.72000**	25	Revolving hand movement	15 - 100 l/min
3.71100	**3.72100**	25	Roller counter and bond printing.	15 - 100 l/min
3.71200	**3.72200**	50	Revolving hand movement	80 - 400 l/min
3.71300	**3.72300**	50	Roller counter and bond printing.	80 - 400 l/min
3.71400	**3.72400**	80	Revolving hand movement	100 - 800 l/min
3.71500	**3.72500**	80	Roller counter and bond printing.	100 - 800 l/min
3.72800	Surcharge for APZ 3.1 according to EN 10204			

Roller counter and receipt printer

Mass measuring system, PN 40, for stationary systems and road tankers

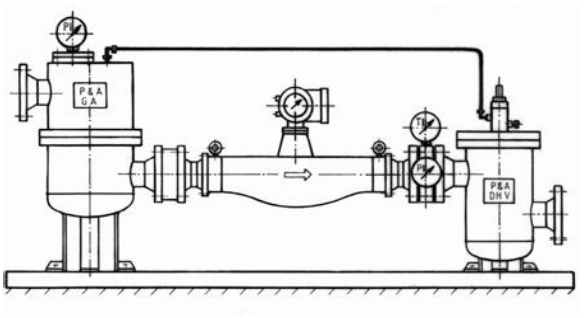
with PTB/EEC type approval, make P&A

The system Version conforms to the EC directives (97/23/EC - DGR, 98/37/EC - Masch.RL, 94/9/EC -ATEX-RL) as well as AD-2000 and TRG 404.

consisting of:

- Pressure retaining valve, **make P&A, PTB/EWG type approved**, with preliminary custody transfer test, TÜV approval and **APZ 3.1 according to EN 10204**
- Pressure and temperature measuring flange, type PA, with pressure gauge, thermometer and APZ 3.1 according to EN 10204
- Mass meter according to the Coriolis principle, with official calibration pre-testing
- Check valve with soft seal and **APZ 3.1 according to EN 10204**
- Gas bubble separator, **make P&**A, **with TÜV approval and APZ 3.1 according to EN 10204** (individual parts)
- Base plate made of steel, primed and painted
- Calibratable fuel dispenser and calibratable printer

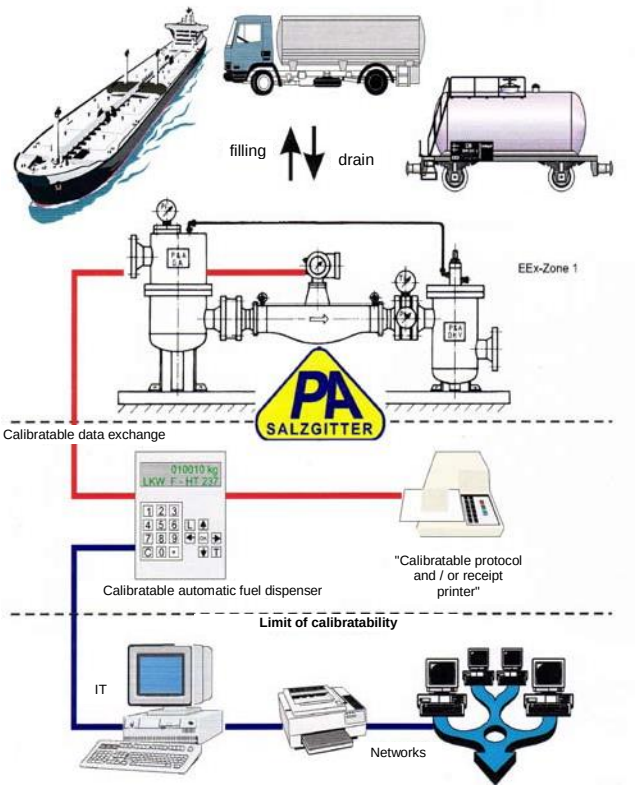
Order no.	Nominal size	Mass flow (kg/min) (related to 1.0 kg/dm³) Qmin	Qmax	Version
3.73000	DN 25	15	300	stationary anl.
3.73100	DN 40	5	700	stationary system.
3.73200	DN 50	50	1000	stationary system.
3.73300	DN 80	150	3000	stationary anl.
3.73400	DN 100	200	4500	stationary anl.
3.73600	DN 40	35	700	Road tanker



Surcharge for fine filter (see P&A article no. 3.87000 - 3.88700)

Advantages:

- Low maintenance costs (no wearing parts on the meter)
- Calibratable mass measurement with density and temperature recording
- Special calibration for volume possible
- Independent measurement of pressure, temperature and medium
- Very high accuracy
- Compact Version



Complete measuring systems with electronic quantity and data recording

- on request -

Electronic flow meter for non-custody transfer measurement,

PN 40, connection 3/4" NPT IT, only suitable for use in Ex-Zone II, battery operation, electronic display, 6-digit LCD display, flow rate range 8 - 80 l/min, any installation position,
Dimension 11 x 5 x 7 cm, protection class E Ex ia IIC T4

Attention: When used without a gas separator and pressure maintenance valve, measurement errors of more than 2 % are possible. The meter can therefore be inaccurate and can only be used down to -10° C.

Order no. 3.80000
Order no. 3.80100 Battery for electric flow meter, 3 V, 1400 mAh, 2 pieces required

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Turbine gas meter (Quantometer) for non-calibrated measurement of the gas phase PN 4 or PN 10, DN 25-100, with double Reed contact RK1 / RK2 and manipulation contact, housing made of aluminium/spheroidal cast iron GGG 40.3, compliant with Pressure Equipment Directive 97/23/EC.

Best. No.	Nominal size	Q.min m³/ h	Q.max	Connection
3.81000	DN 25	1.6	to 16	Thread 1"
3.81100	DN 25	2.0	to 20	Thread 1"
3.81200	DN 25	2.5	to 25	Thread 1"
3.81300	DN 25	3.3	to 65	Thread 1"
3.81400	DN 40	5.0	to 65	Thread 1 1/2"
3.81500	DN 50	6.0	Up to 100	Intermediate flange
3.81600	DN 80	10.0	Up to 160	Intermediate flange
3.81700	DN 100	20.0	Up to 400	Flange/intermediate flange

Liquid gas annular piston flow meter PN 25

Suitable for custody transfer measurements, use in hazardous areas (II 2G c T6)
Measuring range: 75 l/h to 3000 l/h, nominal load: 1500 l/h
Nominal size: DN 25, flange connection
Housing made of spheroidal graphite cast iron, **with APZ 3.1 to EN 10204**

Ordering code. **No. 3.82000**

Attention:
If the meter is to be used for custody transfer, it is essential to install a complete measuring system with pressure retaining valve, temperature measuring flange and gas bubble separator (see following pages for accessories).

Order. No. 3.82100 Assembly group with roller counter (not resettable) and inductive pulse generator (required when using a remote indicator)

Order No. 3.82200 Remote display/flow computer with two-line LCD display (can only be used outside the Ex area)

Order No. 3.82300 Remote display/flow computer with two-line LCD display (can be used within the Ex-area)

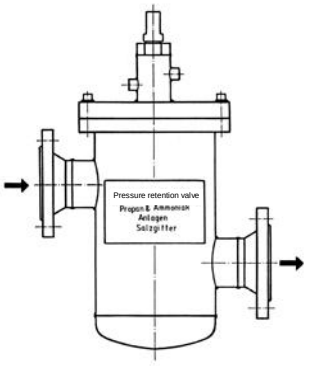
The remote display/flow computer can also be used as a filling controller (for coarse and fine dosages) can be used.

Please contact us if you require other measuring ranges/nominal widths or complete measuring systems or filling controls.

Pressure retaining valve, Make P&A, with PTB/EEC type approval,

Type DHV-PA, with preliminary, construction, pressure and leak test as well as TÜV acceptance,
Single parts with certificate,
compliant with Pressure Equipment Directive 97/23/EC, built and tested according to AD 2000, primed and painted,

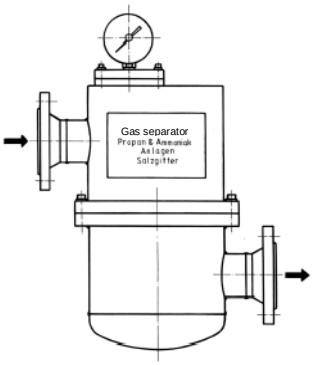
officially calibrated and sealed to a minimum differential pressure of 1 bar, Version according to calibration regulations



Order no.	Order no.	Nominal width
PN 25	PN 40	
3.85000	3.85600	DN 25
3.85100	3.85700	DN 50
3.85200	3.85800	DN 80
3.85300	3.85900	DN 100

Gas separator, Make P&A,

Type GA-PA, with preliminary, construction, pressure and leak test as well as TÜV acceptance,
with certificate,
Conforms to Pressure Equipment Directive 97/23/EC, built and tested according to AD 2000, primed and painted

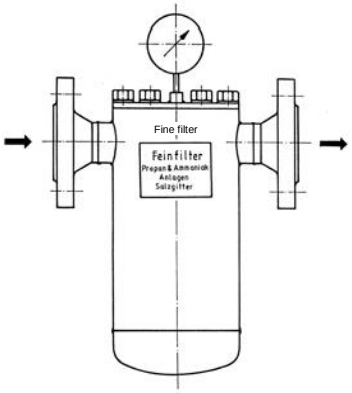


Order no.	Order no.	Nominal size	Effective volume
PN 25	PN 40		
3.86000	3.86600	DN 25	9 l
3.86100	3.86700	DN 50	23 l
3.86200	3.86800	DN 80	36 l
3.86300	3.86900	DN 100	36 l

Fine filter, Make P&A,

Type FF-PA, with preliminary, construction, pressure and leak test as well as TÜV acceptance,
with certificate,
Conforms to Pressure Equipment Directive 97/23/EC, built and tested according to AD 2000, primed and painted

The P&A fine filters are ideally suited for installation upstream of pump and measuring systems. The mesh size of the sieve (0.125 mm) corresponds to the recommendations of the pump manufacturers (complete with pressure gauge 0-40 bar)



Order no.	Order no.	Nominal width
PN 25	PN 40	
3.87000	3.88000	DN 25
3.87100	3.88100	DN 32
3.87200	3.88200	DN 40
3.87300	3.88300	DN 50
3.87400	3.88400	DN 65
3.87500	3.88500	DN 80
3.87600	3.88600	DN 100
3.87700	3.88700	DN 125

Low pressure regulator PN 2.5, Fisher make, with WZ 2.2 to EN 10204,

with built-in safety valve and connection for blow-out line, **"export version"**.

Capacity up to 150 kg/h Discharge line 1" NPT

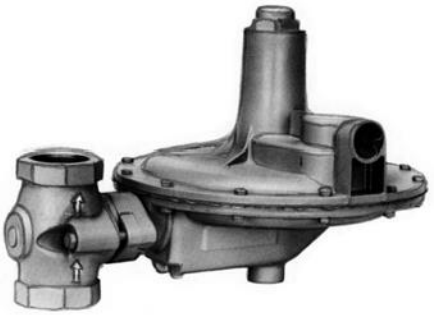
Order no.	Inlet pressure	Outlet pressure	Connection	Type
4.00000	up to 1.0 bar	30-70 mbar	1 1/4" NPT	S302G-FMC
4.00100	up to 1.0 bar	30-70 mbar	2" NPT	S302G-SMC

Capacity up to 180 kg/h Discharge line 1" NPT

Order no.	Inlet pressure	Outlet pressure	Connection	Type
4.00200	0.9-1.7 bar	30-70 mbar	1 1/2" NPT	S202G-BNC

Capacity up to 280 kg/h Discharge line 1" NPT

Order no.	Inlet pressure	Outlet pressure	Connection	Type
4.00300	0.9-1.7 bar	30-70 mbar	2" NPT	S202G-CNC



Type S202

Low pressure regulator PN 2.5, with DIN DVGW approval and WZ 2.2 according to EN 10204,

with safety shut-off valve **SAV** and safety blow-off valve **SBV** or leakage gas safety blow-off valve **PRV**

Outlet up to 12 kg/h

Order no.	Inlet pressure	Outlet pressure	Closing pressure	SAV Connection
4.01000	0.5 - 2.5 bar	50 mbar	90-110 mbar	G 1/2"
4.01100	0.5 - 2.5 bar	50 mbar	90-110 mbar	RVS 15
4.01200	0.5 - 2.5 bar	50 mbar	90-110 mbar	RVS 18

Outlet up to 24 kg/h

Order no.	Inlet pressure	Outlet pressure	Closing pressure	SAV Connection
4.02000	0.5 - 2.5 bar	50 mbar	90-110 mbar	G 1/2"
4.02100	0.5 - 2.5 bar	50 mbar	90-110 mbar	RVS 15
4.02200	0.5 - 2.5 bar	50 mbar	90-110 mbar	RVS 18

Capacity up to 60 kg/h at an inlet pressure of min. 1.5 bar

Order no.	Inlet pressure	Outlet pressure	Closing pressure	SAV Connection
4.03000	0.5 - 2.5 bar	50 mbar	90-110 mbar	G 3/4"

Outlet up to 70 kg/h

Order no.	Inlet pressure	Outlet pressure	Closing pressure	SAV Connection
4.04000	1.0 - 2.5 bar	50 mbar	90-110 mbar	G 3/4"

Capacity up to 85 - 100 kg/h (Q = 100 kg/h at an inlet pressure up to 1.0 bar)

Order no.	Inlet pressure	Outlet pressure	Closing pressure	SAV Connection
4.05000	0.5 - 2.5 bar	50 mbar	90-110 mbar	G 1"

Low pressure regulator, DIN-DVGW approved, PN 16,

Housing GGG 40.3, flange connection acc. to DIN 2635, max. inlet pressure 0.35 to 4.0 bar

Version A: with safety shut-off valve
Version B: with safety shut-off valve, **with** safety blow-off valve
Version C: with safety shut-off valve, **with** thermal release device
Version D: with safety shut-off valve, **with** safety blow-off valve, with thermal release device

Order no. Version A	Order no. Version B	Order no. Version C	Order no. Version D	Connection	Calibration range	Weight kg	Length L	Capacity
4.06000	**4.07000**	**4.08000**	**4.09000**	25	35- 70 mbar	6.0	160 mm	max. 80 kg/h
4.06100	**4.07100**	**4.08100**	**4.09100**	25	70-280 mbar	6.0	160 mm	max. 80 kg/h
4.06200	**4.07200**	**4.08200**	**4.09200**	25	140-420 mbar	6.0	160 mm	max. 80 kg/h
4.06300	**4.07300**	**4.08300**	**4.09300**	40	35- 70 mbar	11.0	200 mm	max. 300 kg/h
4.06400	**4.07400**	**4.08400**	**4.09400**	40	70-280 mbar	11.0	200 mm	max. 300 kg/h
4.06500	**4.07500**	**4.08500**	**4.09500**	40	140-420 mbar	11.0	200 mm	max. 300 kg/h
4.06600	**4.07600**	**4.08600**	**4.09600**	50	35- 70 mbar	14.0	200 mm	max. 550 kg/h
4.06700	**4.07700**	**4.08700**	**4.09700**	50	70-280 mbar	14.0	200 mm	max. 550 kg/h
4.06800	**4.07800**	**4.08800**	**4.09800**	50	140-420 mbar	14.0	200 mm	max. 550 kg/h

Pressure regulator, Regulator with air supply, DIN / DVGW - approved, PN 16,

Housing made of GGG 40.3, flange acc. to DIN 2635, minimum pressure difference 0.5 bar, inlet pressure max. 25 bar
with APZ 3.1 according to EN 10204, compliant with Pressure Equipment Directive 97/23/EC

Version A: without safety shut-off valve
Version B: with safety shut-off valve

Order no. Version A	Order no. Version B	Connection	Adjustment range	Weight kg	Length L	capacity
4.10000	**4.11000**	25	40 - 140 mbar	23 / 27	184 mm	approx. 560 kg/h at pe 2 bar
4.10100	**4.11100**	25	80 - 280 mbar	23 / 27	184 mm	approx. 1000 kg/h at pe 4 bar
4.10200	**4.11200**	25	0,1- 13 bar *	23 / 27	184 mm	approx. 1350 kg/h at pe 6 bar
4.10300	**4.11300**	50	40 - 140 mbar	32 / 39	254 mm	approx. 2900 kg/h at pe 2 bar
4.10400	**4.11400**	50	80 - 280 mbar	32 / 39	254 mm	approx. 4700 kg/h at pe 4 bar
4.10500	**4.11500**	50	0,1- 13 bar*	32 / 39	254 mm	approx. 6600 kg/h at pe 6 bar

* different springs and other settings possible on request!

Medium pressure regulator PN 25, **with DIN-DVGW approval**, and WZ 2.2 according to EN 10204,

with safety shut-off valve "**SAV"** and safety relief valve **"SBV**

Order no.	Max. capacity	Outlet pressure	Inlet	Outlet
4.20000	24 kg/h	2.0 bar	POL	G 1/2"
4.20100	24 kg/h	2.0 bar	G 1/2"	G 1/2"
4.20200	24 kg/h	2.0 bar	POL	RVS 18
4.20300	24 kg/h	0.7-4 bar	POL	G 1/2"
4.20700	40-60 kg/h	0,7-2,5 bar	G 1/2"	G 3/4"
4.20800	60 kg/h	0.7-2.0 bar	G 1/2"	G 3/4"
4.21000	100 kg/h	0.8 bar	RVS 28	RVS 28
4.21100	150 kg/h	1.5 bar	RVS 28	RVS 28

Medium pressure regulator Make Reg0, PN 25, with WZ 2.2 according to EN 10204,

with connection 1/4" NPT for pressure gauge, inlet pressure up to 16 bar, outlet pressure adjustable,
"Export version"

Order no.	Max. capacity	Outlet pressure	Connection	Type	Weight
4.23000	80 kg/h	0.4-3.5 bar	1/2" NPT	1584ML	0.8
A4.23100	45 m3/h NH3	0.4-3.5 bar	1/2" NPT	AA1584ML	0.7
4.23200	160 kg/h	0.4-3.5 bar	3/4" NPT	1586ML	1.3
A4.23300	70 m3/h NH3	0.4-3.5 bar	3/4" NPT	AA1586ML	1.3
4.23400	160 kg/h	0.4-3.5 bar	1" NPT	1588ML	1.3
4.23500	80 kg/h	0.4-8.5 bar	1/2" NPT	1584MH	0.9
4.23600	160 kg/h	0.4-8.5 bar	1" NPT	1588MH	1.3

Medium pressure regulator Fisher make, PN 25, with WZ 2.2 to EN 10204,

suitable for gaseous and liquid phase, with 1/4" NPT connection for pressure gauge, inlet pressure up to 16 bar, outlet pressure adjustable, **"export version"**.

Order no.	Max. capacity	Outlet pressure	Connection	Type	Weight
4.24000	80 kg/h	0.3-2.5 bar	1/2 "NPT	64/35	1.0
4.24100	80 kg/h	2.0-4.0 bar	1/2 "NPT	64/36	1.0

Liquid phase pressure reducer, PN 40, with APZ 3.1 according to EN 10204, diaphragm-controlled, spring-loaded proportional regulator for flow rates from 150 - 900 l/h, connection 1/2" NPT IT stainless steel body, adjustable outlet pressure

Order no.	Max. capacity	Outlet pressure	Connection	Type
4.24700	900 l/h	1.0 - 5.0 bar	1/2" NPT female	DM 505
4.24800	900 l/h	4.0 - 12.0 bar	1/2" NPT female	DM 505
4.24900	900 l/h	10.0 - 20.0 bar	1/2" NPT female	DM 505

Other pressure reducers, e.g. up to a capacity of 8000 l/h and versions with flange, are available on request!

Medium pressure regulator, PN 40, DIN-DVGW approved, with WZ 2.2 to EN 10204,

simple mechanics, robust Version, outlet pressure 0.7-7 bar (adjustable), standard setting 1.5 bar, housing made of GS-C 25, flange connection on both sides according to DIN 2635, DN 25, PN 40

Order no.	Type	Fitting length	Weight
4.25000	VR 75	160 mm	11.0
4.25500	**Surcharge for APZ 3.1 according to EN 10204**		

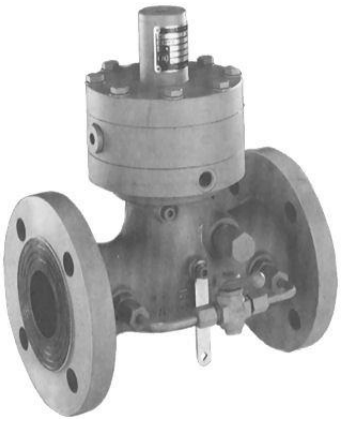
Performance data:

Inlet pressure pe	Outlet pressure pa	Capacity
2.0 bar	1.0 bar	approx. 130 kg/h
4.0 bar	1.0 bar	approx. 270 kg/h
6.0 bar	1.0 bar	approx. 400 kg/h
8.0 bar	1.0 bar	approx. 500 kg/h

Safety shut-off valve "SAV", DIN-DVGW approved,

with WZ 2.2 according to EN 10204, body GGG 40.3, adjustable shut-off ranges, with diaphragm rupture protection. As soon as a certain upper response pressure is reached, the gas flow is shut off by the safety shut-off valve (SSV). The SAV is opened manually.

Order no. PN 16	Order No. PN 40	Nominal size	Adjustment range	Fitting length	Weight
4.26000	**4.27000**	25	0.035 - 0.8 bar	160 mm	10.0 kg
4.26100	**4.27100**	25	0.6 - 6.6 bar	160 mm	10.0 kg
4.26200	**4.27200**	25	3.5 - 60.0 bar	160 mm	10.0 kg
4.26500	**4.27500**	50	0.035 - 0.8 bar	230 mm	10.0 kg
4.26600	**4.27600**	50	0.6 - 6.6 bar	230 mm	15.0 kg
4.26700	**4.27700**	50	3.5 - 60.0 bar	230 mm	15.0 kg
4.28000	**4.28000**	**Surcharge for APZ 3.1 according to EN 10204**			

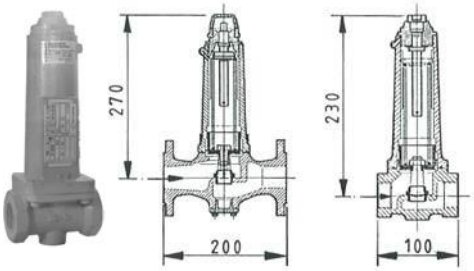


Other setting ranges are available on request!

Safety relief valve "SBV", DIN-DVGW approved, PN 16,

with WZ 2.2 according to EN 10204, housing made of GG 25, device for high response pressures and response accuracy, use downstream of gas pressure regulators as SBV for leakage gas quantities, type 155 D

Order no.	Connection	Adjustment range		Flow	Installation dimension
4.29000	G 3/4"	0.4 - 1.6 bar	approx.	28- 60 m³/ h	100 mm
4.29100	G 3/4"	1.0 - 3.5 bar	approx.	40-110 m³/ h	100 mm
4.29200	Flange DN 40	0.4 - 3.0 bar	approx.	38-150 m³/ h	200 mm
4.29300	Flange DN 40	1.6 - 6.0 bar	approx.	160-450 m³/ h	200 mm



Other setting ranges are available on request!

We repair and check your defective regulators in our own workshop!

Pipe rupture valves PN 25, with WZ 2.2 according to EN 10204,

Pipe break valves are safety fittings that immediately shut off the liquid or gaseous flow if the predetermined flow rate is exceeded, e.g. in the event of a pipe break.
The flow is only secured in one direction with a pipe-break valve. The installation position is arbitrary.

Order no	Inlet		Outlet		PA/Fisher	RegO	Closing quantities			Weight	Figure
	NPT		NPT				gaseous at 1.7 bar	gaseous at 7 bar	liquid		
5.00100	1"	IG	1"	IG	RBV-130	1519 A2	140 Nm3/h	250 Nm³/h	93 l/min	1.5	1
A 5.00200	1"	IG	1"	IG	RBV-140	A 1592 A2	140 Nm3/h	250 Nm³/h	93 l/min	1.5	1
5.00300	1 1/2"	IG	1 1/2"	IG	RBV-131	1519 A3	320 Nm³/h	560 Nm³/h	220 l/min	2.0	1
5.00400	2"	IG	2"	IG	RBV-133	1519 B4	780 Nm³/h	1400 Nm³/h	500 l/min	2.5	1
A 5.00500	2"	IG	2"	IG	RBV-141	A 1519 B4	780 Nm³/h	1400 Nm³/h	500 l/min	2.5	1
A 5.00600	3"	IG	3"	IG	RBV-142	A 1519 A6	1250 Nm³/h	2300 Nm³/h	850 l/min	5.2	1
5.01000	2"	AG	2"	AG	RBV-191	A 2137 A	400 Nm³/h	700 Nm³/h	260 l/min	1.7	2
	1 1/4"	IG									
5.01100	3"	AG	3"	AG	RBV-195	2193 A	750 Nm³/h	1300 Nm³/h	610 l/min	4.5	2
	2"	IG									
5.01800	3/4"	AG	3/4"	IG	RBV-100	----------	50 Nm³/h	100 Nm³/h	40 l/min	0.2	3
5.01900	3/4"	AG	3/4"	IG	RBV-101	----------	100 Nm³/h	190 Nm³/h	75 l/min	0.2	3
5.02000	3/4"	AG	3/4"	IG	RBV-143	----------	220 Nm³/h	450 Nm³/h	180 l/min	0.2	3
A 5.02100	3/4"	AG	3/4"	IG	RBV-144	A3272 G	100 Nm³/h	190 Nm³/h	75 l/min	0.2	3
5.02200	1 1/4"	AG	1 1/4"	IG	RBV-105	3282 C	250 Nm³/h	460 Nm³/h	190 l/min	0.4	3
A 5.02300	1 1/4"	AG	1 1/4"	IG	RBV-145	A 3282 C	250 Nm³/h	460 Nm³/h	190 l/min	0.4	3
5.02400	1 1/2"	AG	1 1/2"	IG	RBV-146	7574	430 Nm³/h	790 Nm³/h	340 l/min	0.7	3
5.02500	2"	AG	2"	IG	RBV-107	3292 B	510 Nm³/h	920 Nm³/h	370 l/min	1.0	3
A 5.02600	2"	AG	2"	IG	RBV-146	A 3292 B	620 Nm³/h	1150 Nm³/h	460 l/min	1.3	3
A 5.03000	2"	AG	--------		RBV-147	A 3500 P4	860 Nm³/h	1470 Nm³/h	570 l/min	0.9	4
A 5.03100	3"	AG	--------		RBV-148	A 3500 R6	900 Nm³/h	1570 Nm³/h	590 l/min	1.9	4
A 5.03200	3"	AG	--------		RBV-149	A 3500 V6	1440 Nm³/h	2520 Nm³/h	950 l/min	1.9	4
A 5.03300	4"	AG	--------		RBV-150	A 4500 Y8	2500 Nm³/h	4350 Nm³/h	1900 l/min	3.3	4
5.03500	1 1/2"	AG	1"	AG	RBV-134	1519 C2	240 Nm³/h	250 Nm³/h	93 l/min	1.0	5
	1"	IG									
A 5.04000	3/4"	AG	3/4"	AG	RBV-151	A 8523	150 Nm³/h	200 Nm³/h	60 l/min	0.2	6
A 5.04100	2"	AG	2"	AG	RBV-152	A 7537 P4	860 Nm³/h	1470 Nm³/h	570 l/min	1.5	6
			1 1/4"	IG							
A 5.04200	3"	AG	3"	AG	RBV-153	A 7539 V6	1450 Nm³/h	2520 Nm³/h	950 l/min	4.7	6
			1 1/4"	IG							


Figure 1


Figure 2


Figure 3


Figure 4


Figure 5


Figure 6

Flow direction from top to bottom

Pipe rupture valves for installation between two flanges, with APZ 3.1 according to EN 10204,

Flange connection according to DIN 2635, Material: steel C 22.8 or St. 35.8I, PN 25, make P&A

Order No.	Flange connection	Closing quantity liquid	P&A
5.05000	DN 50	570 l/min	RBV-160
5.05100	DN 65	590 l/min	RBV-161
5.05200	DN 80	950 l/min	RBV-162
5.05300	DN 100	1900 l/min	RBV-163

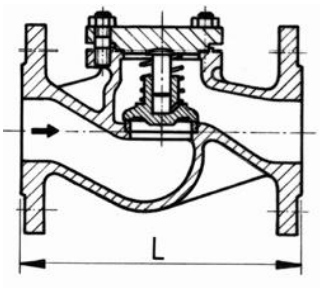
Other nominal diameters on request!

Check valve PN 40, with APZ 3.1 according to EN 10204,

Flanges acc. to DIN 2635, body made of cast steel GS-C25, cone made of stainless steel, marking acc. to AD data sheet

Order no.	Nominal width	Length	Weight
5.10000	DN 15	130	3.7
5.10100	DN 20	150	5.0
5.10200	DN 25	160	5.7
5.10300	DN 32	180	7.1
5.10400	DN 40	200	10.5
5.10500	DN 50	230	12.2
5.10600	DN 65	290	22.5
5.10700	DN 80	310	28.5
5.10800	DN 100	350	39.5
5.10900	DN 125	400	39.5

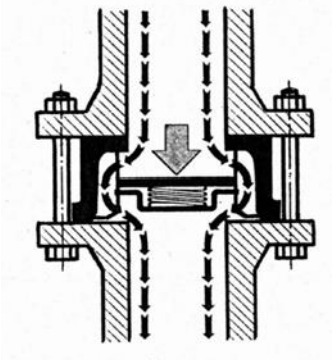
Other nominal diameters are available on request!



Check valve, PN 40 for installation between two flanges, with soft seal made of NBR,

Version A: Material: steel (standard Version), with APZ 3.1 according to EN 10204 Version B: Material: stainless steel 1.4571

Order no.	Nominal width	Length	Version	Weight
5.12000	DN 15	16	A	0.13
5.12100	DN 15	16	B	0.13
5.12200	DN 20	19	A	0.20
5.12300	DN 20	19	B	0.20
5.12400	DN 25	22	A	0.30
5.12500	DN 25	22	B	0.30
5.12600	DN 32	28	A	0.50
5.12700	DN 32	28	B	0.50
5.12800	DN 40	31.5	A	0.65
5.12900	DN 40	31.5	B	0.65
5.13000	DN 50	40	A	1.25
5.13100	DN 50	40	B	1.25
5.13200	DN 65	46	A	1.55
5.13300	DN 65	46	B	1.55
5.13400	DN 80	50	A	2.40
5.13500	DN 80	50	B	2.40
5.13600	DN 100	60	A	3.60
5.13700	DN 100	60	B	3.60
5.13900	**Surcharge for APZ 3.1 according to EN 10204 (version B)**			

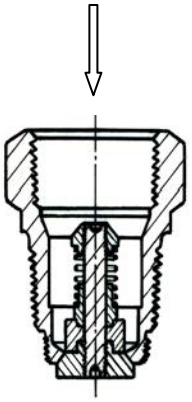


Check valve with NPT thread, PN 25, with WZ 2.2 according to EN 10204,

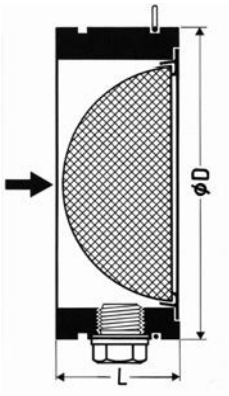
spring-loaded, any mounting position, Fisher, RegO or P&A make

Order no.	Inlet	Outlet	P&A	Fisher	RegO	Capacity	Material
5.15000	3/4" NPT IT	3/4" NPT MALE	-------	G100	3146	60 l/min	Brass
A5.15100	3/4" NPT IT	3/4" NPT MALE	-------	--------	A3146	60 l/min	Steel
5.15200	1 1/4" NPT IT	1 1/4" NPT MALE	PA-R10	G101	3176	150 l/min	Brass
A5.15300	1 1/4" NPT IT	1 1/4" NPT MALE	PA-R11	-------	A3176	150 l/min	Steel
5.15400	2" NPT IT	2" NPT male	PA-R12	-------	6586 D	1020 l/min	Brass
A5.15500	2" NPT IT	2" NPT male	PA-R13	-------	A3186	660 l/min	Steel
A5.15600	3" NPT IT	3" NPT male	PA-R14	G 104	A3196	1600 l/min	Steel

The stated capacities refer to a differential pressure of 0.7 bar



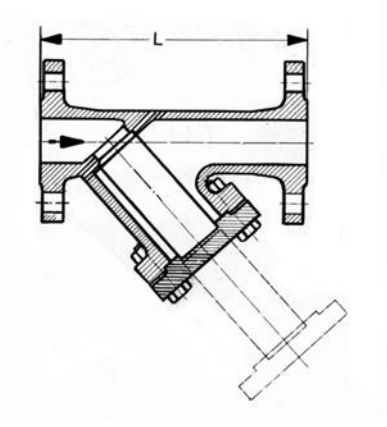
Dirt trap PN 40, with APZ 3.1 according to EN 10204, manufactured by P&A, for installation between two flanges, steel body, stainless steel Dirt trap, with drain plug, very low pressure losses as no flow deflection, mesh size 1.25 mm



Order No.	Nominal width	Dimen. L	Dimen. D	Weight
5.20000	DN 25	32	70	0.8
5.20100	DN 32	32	82	0.9
5.20200	DN 40	32	92	1.1
5.20300	DN 50	40	107	1.2
5.20400	DN 65	46	127	1.5
5.20500	DN 80	50	142	2.3
5.20600	DN 100	60	168	7.0
5.20700	DN 125	70	192	3.5

Dirt trap PN 40, with APZ 3.1 to EN 10204, flange to DIN 2635,

Inclined seat, cast steel body, stainless steel inner Dirt trap, marking according to AD data sheet A4

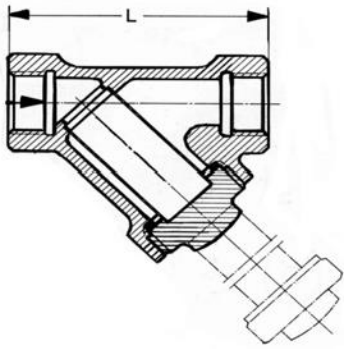


Order No.	Nominal width	Length L	Weight	Mesh size (mm)
5.21000	DN 15	130	3.0	0.6
5.21100	DN 20	150	3.0	0.6
5.21200	DN 25	160	6.5	0.6
5.21300	DN 32	180	7.0	0.6
5.21400	DN 40	200	8.0	0.6
5.21500	DN 50	230	13.0	0.6
5.21600	DN 65	290	17.0	0.6
5.21700	DN 80	310	25.0	1.2
5.21800	DN 100	350	36.0	1.2
5.21900	DN 125	400	57.0	1.2
5.22000	DN 150	480	79.0	1.2
5.22100	Surcharge for fine sieve with 0.25 mm mesh size (DN 15 - DN 40)			
5.22200	Surcharge for fine sieve with 0.25 mm mesh size (DN 50 - DN 150)			

Dirt trap with NPT or G thread

Inner sieve made of stainless steel, marking according to AD data sheet A4, inclined seat shape

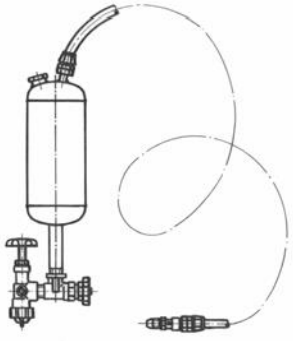
Version A: PN 40, body GS-C 25, NPT female thread, with APZ 3.1 acc. to EN 10204
Version B: PN 16, brass body or equivalent, with female G-thread



Order No. Version: A	Order. No. Version: B	Connection	Weight	Mesh size (mm)
5.23000	**5.24000**	1/2"	0.3	0.5
5.23100	**5.24100**	3/4"	0.4	0.5
5.23200	**5.24200**	1"	0.8	0.5
5.23300	**5.24300**	1 1/4"	1.2	0.75
5.23400	**5.24400**	1 1/2"	1.5	0.75
5.23500	**5.24500**	2"	2.4	0.75
5.24700	Surcharge for fine sieve with 0.25 mm mesh size			

Methanol filling device PN 25, Make P&A

Individual parts with APZ 3.1 according to EN 10204, nominal capacity approx. 2 litres,
The methanol filling device enables methanol to be filled into the LPG container in operation without additional aids, with only a brief interruption of the gas extraction.
On the one hand: Adapter (1 3/4" ACME) for the filling valve of the container
On the other hand: POL connection for the gas extraction valve of the container

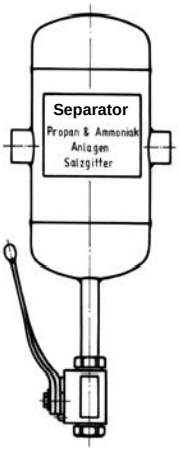


Order No. **5.24900**

Separator with APZ 3.1 according to EN 10204, make P&A

Area of application: behind evaporator systems,
Completely equipped with a sieve, a gas diverter and a shut-off valve for residue drainage

Version A: PN 25
Version B: PN 40

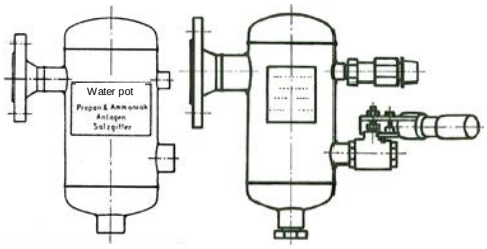


Order no. Version: A	Order no. Version: B	Threaded connection	Flange connection	Length	Weight
5.25000	**5.26000**	1/2" NPT	---------	160	4.0
5.25100	**5.26100**	3/4" NPT	---------	160	4.1
5.25200	**5.26200**	1" NPT	---------	160	4.2
5.25300	**5.26300**	----------	DN 25	220	6.0
5.25400	**5.26400**	----------	DN 32	220	8.0
5.25500	**5.26500**	----------	DN 40	230	8.5
5.25600	**5.26600**	----------	DN 50	320	9.5
5.25700	**5.26700**	----------	DN 65	340	11.0
5.25800	**5.26800**	----------	DN 80	340	18.5
5.25900	**5.26900**	----------	DN 100	350	22.0
5.27000	**Additional price for TÜV approval of the separator**				
5.27100	**Surcharge for electrical level sensor 1" NPT male, with ATEX approval**				
5.27200	**Surcharge for signal conditioning instrument, intrinsically safe Inlet circuit, 230 V, 50 Hz**				

Water pot, PN 25, make P&A,

suitable for draining liquid gas containers, capacity approx. 4 litres, inlet flange PN 40 to DIN 2635, individual parts with APZ 3.1 to EN 10204

Version A: with TÜV and component-tested safety valve, 25 bar
Version B: with TÜV and component-tested safety valve, 25 bar and ball valve with spring return PN 25



Version: **A** Version: **B**

Order no. Version: A	Order no. Version: B	Container connection	Weight
5.28000	**5.28500**	15	4.0
5.28100	**5.28600**	20	4.5
5.28200	**5.28700**	25	5.0

Compensator, Flange connection according to DIN 2635 or welding end

In order to be able to absorb expansion fluctuations in rigid pipelines and vibrations in pump systems, provision should be made for the installation of a compensator.

Version A: Rubber compensator, operating pressure 20 bar, test pressure 30 bar, theoretical burst pressure 100 bar **Version B:** Stainless steel compensator, **weld-on end** made of steel, **PN 40**, with APZ 3.1 to EN 10204 **Version C**: Stainless steel expansion joint, steel flange on both sides, **PN 25,** with APZ 3.1 to EN 10204 **Version D**: Stainless steel expansion joint, steel flange on both sides, **PN 40** , with APZ 3.1 to EN 10204

Order no. Version: A:	Order No. Version: B	Order no. Version C:	Order no. Version: D	Nominal width
----------	**5.30000**	**5.31000**	**5.32000**	DN 15
----------	**5.30100**	**5.31100**	**5.32100**	DN 20
5.29200	**5.30200**	**5.31200**	**5.32200**	DN 25
5.29300	**5.30300**	**5.31300**	**5.32300**	DN 32
5.29400	**5.30400**	**5.31400**	**5.32400**	DN 40
5.29500	**5.30500**	**5.31500**	**5.32500**	DN 50
5.29600	**5.30600**	**5.31600**	**5.32600**	DN 65
5.29700	**5.30700**	**5.31700**	**5.32700**	DN 80
5.29800	**5.30800**	**5.31800**	**5.32800**	DN 100


Version A


Version B


Version C + D

Breakaway coupling PN 25, make P&A,

new Version - full bore, Material: steel St.52-3 (galvanised) or stainless steel 1.4571, shut-off on both sides when separated,

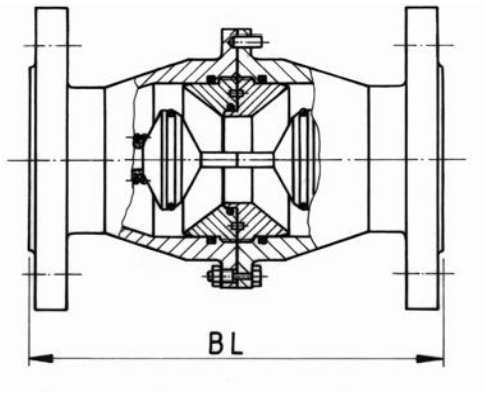
with construction, pressure and function test as well as TÜV individual acceptance and APZ 3.1 according to EN 10204

According to the state of the art in safety engineering and TRB 801, a quick disconnect point must always be provided in group C installations (according to TÜV requirements also in group B installations) as well as in floor loading arms. For this reason, P&A has developed a breakaway coupling in cooperation with TÜV-NORD that meets these requirements. The P&A breakaway coupling should be installed in the rigidly laid pipelines (version with predetermined breaking screw) or in the loading arms (version with clamping bracket). These pipelines or the weakest point of the system, the LPG high-pressure hoses (loading arms) are thus protected from unintentional extreme tensile stress and thus from tearing.

The breakaway coupling with predetermined breaking screws is designed according to the breakaway forces of the high-pressure hoses to be protected. However, it should be noted that flow losses occur due to the Version and that the breakaway coupling with predetermined breaking screws must not be loaded by the weight of the hose. This must be avoided by using appropriate brackets, substructures etc.

Version A: with predetermined breaking screws
Version B: with clamping bracket for loading arms

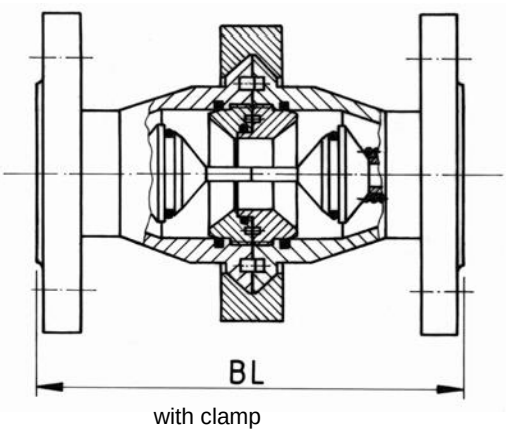
Version A: Order No. Steel	Version A Order. No. Stainless steel	Version B Order. No. Steel	Version B Order. No. Stainless steel	DN mm	BL mm
5.40000	5.41000	5.42000	5.43000	25	180
5.40100	5.41100	5.42100	5.43100	32	180
5.40200	5.41200	-------	-------	40	220
5.40300	5.41300	5.42300	5.43300	50	220
5.40400	5.41400	-------	-------	65	280
5.40500	5.41500	5.42500	5.43500	80	280
5.40600	5.41600	5.42600	5.43600	100	340



with predetermined breaking screw

Spare parts for the breakaway coupling (Medium: propane)

Version A: Order no Set (3 pieces) Predetermined breaking screws	Version A Order no Gasket set (5 x O-rings)	Version B Order no Gasket set (5 x O-rings)	Nominal width
5.46000	5.47000	5.48000	DN 25
5.46100	5.47100	5.48100	DN 32
5.46200	5.47200	-------	DN 40
5.46300	5.47300	5.48300	DN 50
5.46400	5.47400	-------	DN 65
5.46500	5.47500	5.48500	DN 80
5.46600	5.47600	5.48600	100



with clamp

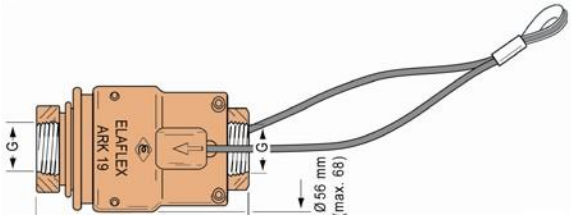
Order. No. 5.49000: Shear pin for the version with clamping bracket

We also supply breakaway couplings with welding ends and for other media such as ammonia, methanol, etc.

Breakaway coupling with fixed point, PN 25, with component test according to VDTÜV leaflet 100.

The hose breakaway coupling is a safety fitting that prevents the escape of liquid medium in the event of the LPG high-pressure hose bursting or breaking (shutting off on both sides). This Version has already proven itself for years in propellant gas systems, whereby the housing is attached to a fixed point via a rope or bracket. At a tractive force of 200 - 500 N on the hose side, the coupling separates independently of the internal pressure. **The separated coupling halves can be coupled again under pressure.** Attention: If the coupling halves are damaged, repair is necessary!

Order No.	Inlet	Outlet	Material	Type
5.60000	3/4" NPT female	3/4" NPT female	Gunmetal	ARK
5.60100	M30x1,5lks. male	M30x1,5lks. male	Red brass	P&A



LPG high-pressure hose, **PN 25,** Type P&A,

liquid gas resistant, according to EN-762, temperature range: -30° C to +70° C, electrically conductive,
with DIN-DVGW approval (except DN 10) and WZ 2.2 according to EN 10204

Order no.	Nominal width
6.00000	DN 10 -- 3/8"
6.00100	DN 16 -- 1/2"
6.00200	DN 19 -- 3/4"
6.00300	DN 25 -- 1"
6.00400	DN 32 -- 1 1/4"
6.00500	DN 50 -- 2"
6.00600	DN 75 -- 3"

Type LPG

Hose connection, **PN 25**, make P&A

A complete hose connection (one side) consists of a connector (e.g. flange, sleeve, etc.),
Steel hose spigots, aluminium clamping jaws, bolts and nuts, welded and primed, steel parts with APZ 3.1 to EN 10204,
complete hose connection with WAZ 2.2 to EN 10204

1) Connection piece: Flange PN 25, DIN 2635

Order no.	Nominal width Flange	Nominal width LPG
6.01000	DN 20	DN 19
6.01100	DN 25	DN 19
6.01200	DN 25	DN 25
6.01300	DN 25	DN 32
6.01400	DN 32	DN 25
6.01500	DN 32	DN 32
6.01600	DN 40	DN 32
6.01700	DN 40	DN 50
6.01800	DN 50	DN 32
6.01900	DN 50	DN 50
6.02000	DN 65	DN 50
6.02100	DN 65	DN 75
6.02200	DN 80	DN 75

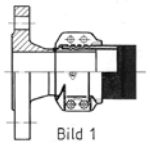


Bild 1

2) Connecting piece: Flange with socket 1/2" NPT for SV

Order no.	Nominal width flange	Nominal width LPG
6.03000	DN 50	DN 50
6.03100	DN 80	DN 75

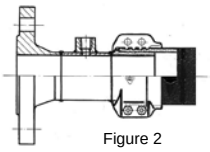
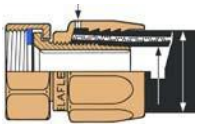


Figure 2

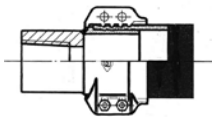
3) Connection piece: Union nut, flat sealing

Order. No.	Connection	Union m/nominal diameter LPG
6.04000	W 21.8x1/14" lksDN 10	
6.04100	M 30 x 1.5 left	DN 16
6.04200	M 30 x 1.5 left	DN 19
6.04300	G 1 1/4"	DN 32



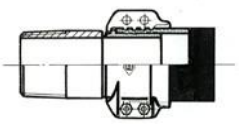
4) Connection piece: Sleeve with NPT thread

Order no.	Connection	sleeve	Nominal width LPG
6.05000	1/2"	NPT	19
6.05100	3/4"	NPT	16
6.05200	1"	NPT	16
6.05300	3/4"	NPT	19
6.05400	3/4"	NPT	25
6.05500	1"	NPT	19
6.05600	1"	NPT	25
6.05700	1 1/4"	NPT	25
6.05800	1 1/4"	NPT	32
6.05900	1 1/2"	NPT	32
6.06000	2"	NPT	50
6.06100	2"	NPT	75



5) Connection piece: Spigot with NPT thread

Order no.	Connection	Spigot	nominal size LPG
6.07000	1/2"	NPT	19
6.07100	3/4"	NPT	16
6.07200	1"	NPT	16
6.07300	3/4"	NPT	19
6.07400	3/4"	NPT	25
6.07500	1"	NPT	19
6.07600	1"	NPT	25
6.07700	1"	NPT	32
6.07800	1 1/4"	NPT	32
6.07900	1 1/2"	NPT	32
6.08000	2"	NPT	50
6.08100	2"	NPT	75



Integration **(assembly) of high pressure hoses**

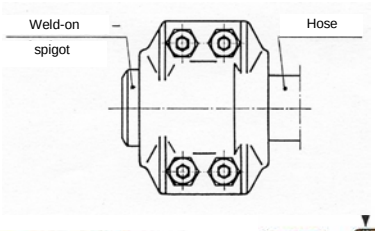
You will receive a certificate in accordance with TRG 402 for the hoses we bind, including
Water pressure test with 40 bar and a conductivity test.
Assembly of hose connections incl. test certificate (per hose side)

Order No. 6.**08500** HD hose DN 10 to DN 32
Order No. 6.**08600** HD hose DN 50 and DN 75

Loose LPG hose fittings

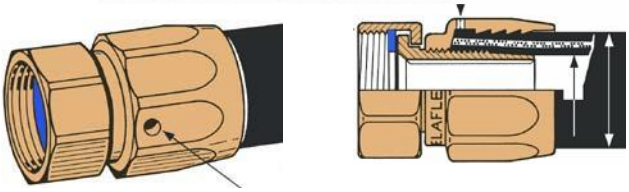
Version A: Hose nozzle with weld-on end (steel), safety clamping jaws and screws

Order No.	suitable for hose	Dimension
6.09000	LPG 19	25 x 5.5
6.09100	LPG 25	30 x 5.5
6.09200	LPG 32	38 x 5.5
6.09300	LPG 50	57 x 6.5
6.09400	LPG 75	89 x 9.0



Version B: Union nut (brass), flat sealing

Order No.	suitable for hose	Dimension
6.10000	LPG 10	W21.8x1/14" left
6.10100	LPG 16	M30 x 1.5 left
6.10200	LPG 19	M30 x 1.5 left
6.10300	LPG 32	G 1 1/4"



LPG high-pressure hose for pressurising filling lines, PN 25, make P&A **consisting of**:

Extraction connection (P&A no. 1.14600) for pressing on the filling valve, high-pressure hose LPG 16, L = 5 m for connecting the filling connection and the nitrogen cylinder, pressure gauge 0-40 bar, dip valve for releasing the pressure as well as a plug 1 3/4" ACME for closing the filling line on the container,
Completely bound, with test certificate

Order No. 6.11000 LPG high-pressure hose as described above
Order No. 6.11100 Surcharge for a nitrogen fitting 0-50 bar

Complete high pressure hose, PN 25, LPG 10, length 5 m

Suitable for transferring (emergency filling) of 33 kg propane cylinders into stationary liquid gas containers including test certificate according to TRG 402 (water pressure test 40 bar and conductivity test), integrated on both sides

Order. No.	Connection 33 kg cylinder	Connection liquid gas container
6.12000	W 21.8x1/14" left female	Fuelling nozzle 1 3/4" ACME

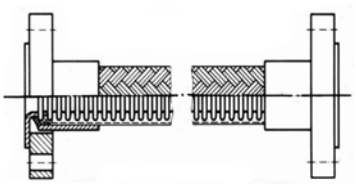
Seals for LPG hose connections

Order. No.	suitable for connection
6.13000	W21.8x1/14" left union nut
6.13100	M30x1.5 left union nut **6.13200** G 1 1/4" union nut

Annular corrugated hose made of stainless steel, with APZ 3.1 according to EN 10204, length 1000 mm

Flange connection on both sides made of steel according to DIN 2635, for movable connection of compressors/pumps

Order No. PN 25	Order. No. PN 40	Nominal size	Order. No. PN 25	Order. No. PN 40	Nominal size
6.14000	**6.15000**	15	**6.14500**	**6.15500**	DN 50
6.14100	**6.15100**	20	**6.14600**	**6.15600**	DN 65
6.14200	**6.15200**	25	**6.14700**	**6.15700**	DN 80
6.14300	**6.15300**	32	**6.14800**	**6.15800**	DN 100
6.14400	**6.15400**	40			



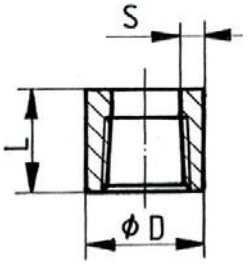
LPG high-pressure hoses must be checked annually for leaks and operational safety. We will carry out these tests for you promptly and inexpensively in our workshop!

Complete LPG high-pressure hoses for road tankers can be found on page 120

Socket with female NPT-thread, PN 40, with APZ 3.1 according to EN 10204,

Version A: Material: Steel ASTM 105, 3000lbs, Type JD 510
Version B: Material: steel St. 35.8 I, make P&A
Version C: Material: steel 15MO3, make P&A

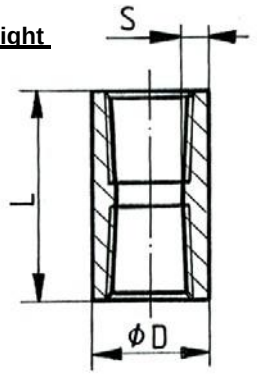
Order No. Version: A	Order. No. Version: B	Order. No. Version: C	Nominal width		Dimen. D	Dimen. S	Dimen. L	Weight
7.00000	7.01000	7.02000	1/4"	NPT	20.0	4.5	18	0.01
7.00100	7.01100	7.02100	3/8"	NPT	22.0	3.7	20	0.02
7.00200	7.01200	7.02200	1/2"	NPT	28.0	5.0	25.6	0.09
7.00300	7.01300	7.02300	3/4"	NPT	35.0	5.8	27	0.10
7.00400	7.01400	7.02400	1"	NPT	44.5	7.6	33	0.18
7.00500	7.01500	7.02500	1 1/4"	NPT	57.2	9.1	37.3	0.37
7.00600	7.01600	7.02600	1 1/2"	NPT	63.5	9.7	41.7	0.60
7.00700	7.01700	7.02700	2"	NPT	76.0	10.0	46	0.70
7.00800	7.01800	7.02800	2 1/2"	NPT	91.0	12.5	46.5	0.90
7.00900	7.01900	7.02900	3"	NPT	108.0	14.1	56.7	1.25



Double socket with female NPT thread, PN 40, with APZ 3.1 to EN 10204,

Version A: Material: Steel ASTM 105, 3000lbs, Type JD 500
Version B: Material: steel St. 35.8 I, make P&A
Version C: Material: steel 15MO3, make P&A

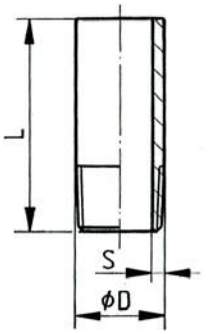
Order No. Version: A	Order. No. Version: B	Order. No. Version: C	Nominal width		Dimen. D	Dimen. S	Dimen. L	Weight
7.03000	7.04000	7.05000	1/4"	NPT	20.0	4.5	35	0.03
7.03100	7.04100	7.05100	3/8"	NPT	22.0	3.7	38	0.04
7.03200	7.04200	7.05200	1/2"	NPT	28.0	5.0	48	0.10
7.03300	7.04300	7.05300	3/4"	NPT	35.0	5.8	51	0.20
7.03400	7.04400	7.05400	1"	NPT	44.5	7.6	60	0.40
7.03500	7.04500	7.05500	1 1/4"	NPT	57.2	9.1	67	0.74
7.03600	7.04600	7.05600	1 1/2"	NPT	63.5	9.7	79	1.00
7.03700	7.04700	7.05700	2"	NPT	76.0	10.0	86	1.45
7.03800	7.04800	7.05800	2 1/2"	NPT	91.0	12.5	92	1.95
7.03900	7.04900	7.05900	3"	NPT	108.0	14.1	108	3.10



Spigot with NPT male thread, PN 40, with APZ 3.1 to EN 10204,

Version A: Material: Steel ASTM 106/B, 3000lbs, Type JD 610
Version B: Material: steel St. 35.8 I, make P&A
Version C: Material: steel 15MO3, make P&A

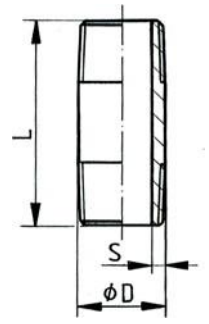
Order No. Version: A	Order. No. Version: B	Order. No. Version: C	Nominal width		Dimen. D	Dimen.S	Dimen. L	Weight
7.06000	7.07000	7.08000	1/4"	NPT	13.7	3.0	60	0.07
7.06100	7.07100	7.08100	3/8"	NPT	17.1	3.2	100	0.10
7.06200	7.07200	7.08200	1/2"	NPT	21.3	3.7	100	0.11
7.06300	7.07300	7.08300	3/4"	NPT	26.7	3.9	100	0.20
7.06400	7.07400	7.08400	1"	NPT	33.4	4.5	100	0.30
7.06500	7.07500	7.08500	1 1/4"	NPT	42.4	4.9	100	0.45
7.06600	7.07600	7.08600	1 1/2"	NPT	48.3	5.1	100	0.52
7.06700	7.07700	7.08700	2"	NPT	60.3	5.5	100	0.70
7.06800	7.07800	7.08800	2 1/2"	NPT	73.0	7.0	100	0.80
7.06900	7.07900	7.08900	3"	NPT	88.9	7.6	100	3.10



Double socket with NPT male thread, PN 40, with APZ 3.1 to EN 10204,

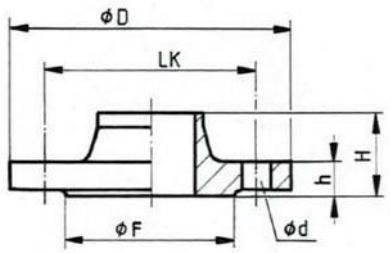
Version A: Material: Steel ASTM 106/B, 3000lbs, Type JD 600
Version B: Material: steel St. 35.8 I, make P&A
Version C: Material: steel 15MO3, make P&A

Order No. Version: A	Order. No. Version: B	Order. No. Version: C	Nominal width		Dimen. D	Dimen. S	Dimen. L	Weight
7.09000	7.10000	7.11000	1/4"	NPT	13.7	3.0	60	0.07
7.09100	7.10100	7.11100	3/8"	NPT	17.1	3.2	100	0.10
7.09200	7.10200	7.11200	1/2"	NPT	21.3	3.7	100	0.11
7.09300	7.10300	7.11300	3/4"	NPT	26.7	3.9	100	0.20
7.09400	7.10400	7.11400	1"	NPT	33.4	4.5	100	0.30
7.09500	7.10500	7.11500	1 1/4"	NPT	42.4	4.9	100	0.45
7.09600	7.10600	7.11600	1 1/2"	NPT	48.3	5.1	100	0.52
7.09700	7.10700	7.11700	2"	NPT	60.3	5.5	100	0.70
7.09800	7.10800	7.11800	2 1/2"	NPT	73.0	7.0	100	0.80
7.09900	7.10900	7.11900	3"	NPT	88.9	7.6	100	3.10



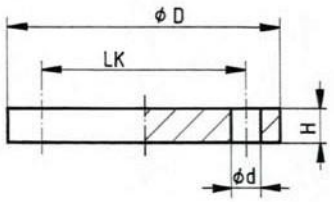
Welding neck flange, PN 40, Material: C 22.8, DIN 2635 (smooth), with APZ 3.1 according to EN 10 204

Order no	Nominal width	D	d	F	H	h	LK	Weight
7.12000	15	95	14	45	38	16	65	0.80
7.12100	20	105	14	58	40	16	75	1.10
7.12200	25	115	14	68	40	18	85	1.30
7.12300	32	140	18	78	42	18	100	1.90
7.12400	40	150	18	88	45	18	110	2.30
7.12500	50	165	18	102	48	20	125	2.80
7.12600	65	185	18	122	52	22	145	3.70
7.12700	80	200	18	138	58	24	160	4.70
7.12800	100	235	23	162	65	24	190	6.50
7.12900	125	270	27	188	68	26	220	9.10
7.13000	150	300	27	218	75	28	250	11.00
7.13100	Surcharge for welding neck flange with projection or recess							
7.13200	Surcharge for welding neck flange with tongue or groove							



Blind flange, PN 40, Material: C 22.8, DIN 2527 (smooth), with APZ 3.1 according to EN 10 204

Order no	Nominal width	D	d	H	LK	Weight
7.14000	15	95	14	16	65	0.80
7.14100	20	105	14	16	75	1.20
7.14200	25	115	14	18	85	1.40
7.14300	32	140	18	18	100	2.00
7.14400	40	150	18	18	110	2.30
7.14500	50	165	18	20	125	3.20
7.14600	65	185	18	22	145	4.20
7.14700	80	200	18	24	160	5.80
7.14800	100	235	23	24	190	7.50
7.14900	125	270	27	26	220	10.80

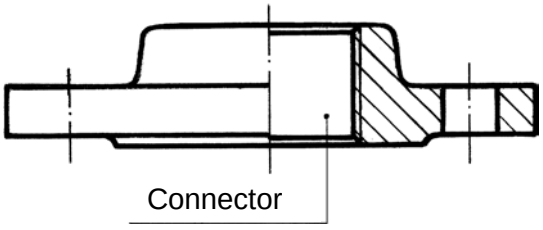


Threaded flange according to DIN 2567, PN 40, Material: C 22.8, with APZ 3.1 according to EN 10 204

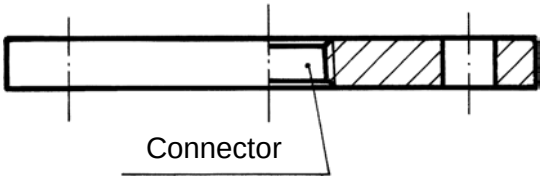
Version A: with female G-thread
Version B: with female NPT thread (in-house production)

Order. No. Version A	Order. No. Version B	Nominal width	Connection
-------	**7.15900**	DN 15	1/4"
7.15000	**7.16000**	DN 15	1/2"
-------	**7.16100**	DN 20	1/4"
-------	**7.16200**	DN 20	1/2"
7.15100	**7.16300**	DN 20	3/4"
-------	**7.16400**	DN 25	1/2"
-------	**7.16500**	DN 25	3/4"
7.15200	**7.16600**	DN 25	1"
-------	**7.16700**	DN 32	3/4"
-------	**7.16800**	DN 32	1"
7.15300	**7.16900**	DN 32	1 1/4"
-------	**7.17000**	DN 40	3/4"
-------	**7.17100**	DN 40	1"
-------	**7.17200**	DN 40	1 1/4"
7.15400	**7.17300**	DN 40	1 1/2"
-------	**7.17400**	DN 50	1"
-------	**7.17500**	DN 50	1 1/4"
-------	**7.17600**	DN 50	1 1/2"
7.15500	**7.17700**	DN 50	2"
7.15600	**7.17800**	DN 65	2 1/2"
7.15700	**7.17900**	DN 80	3"
7.15800	-------	DN 100	4"

Version A



Version B

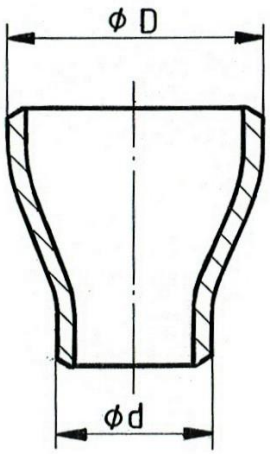


Reducer, concentric, PN 40, DIN 2616

Version A: Material: St. 35.8I, with APZ 3.1 according to EN 10204

Version B: Material: St. 35.8III, with APZ 3.1 according to EN 10204

Order. No. Version: A	Order. No. Version: B	Nominal width DN	Pipe connection D/d	Weight kg
7.18000	**7.21000**	20/15	26.9/21.3	0.10
7.18100	**7.21100**	25/15	33.7/21.3	0.10
7.18200	**7.21200**	32/15	42.4/21.3	0.11
7.18300	**7.21300**	40/15	48.3/21.3	0.12
7.18400	**7.21400**	25/20	33.7/26.9	0.12
7.18500	**7.21500**	32/20	42.4/26.9	0.13
7.18600	**7.21600**	40/20	48.3/26.9	0.13
7.18700	**7.21700**	32/25	42.4/33.7	0.14
7.18800	**7.21800**	40/25	48.3/33.7	0.20
7.18900	**7.21900**	50/25	60.3/33.7	0.22
7.19000	**7.22000**	65/25	76.1/33.7	0.30
7.19100	**7.22100**	40/32	48.3/42.4	0.18
7.19200	**7.22200**	50/32	60.3/42.4	0.25
7.19300	**7.22300**	65/32	76.1/42.4	0.32
7.19400	**7.22400**	80/32	88.9/42.4	0.38
7.19500	**7.22500**	50/40	60.3/48.3	0.30
7.19600	**7.22600**	65/40	76.1/48.3	0.38
7.19700	**7.22700**	65/50	76.1/60.3	0.45
7.19800	**7.22800**	80/50	88.9/60.3	0.52
7.19900	**7.22900**	80/65	88.9/76.1	0.55
7.20000	**7.23000**	100/65	114.3/76.1	0.85
7.20100	**7.23100**	100/80	114.3/88.9	0.90

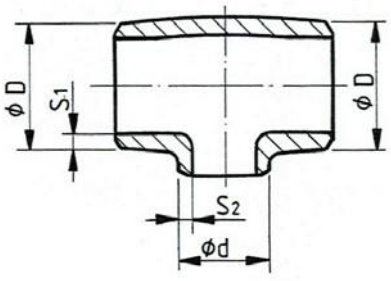


T-piece with equilateral and reduced outlet, PN 40, DIN 2615

Version A: Material: St. 35.8I, with APZ 3.1 according to EN 10204

Version B: Material: St. 35.8III, with APZ 3.1 according to EN 10204

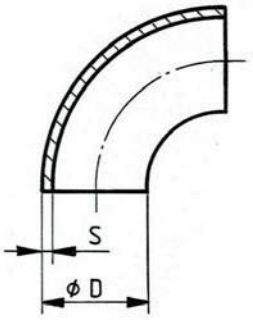
Order. No. Version: A	Order. No. Version: B	Nominal width DN	Pipe connection D/d/D	Wall thickness S1/S2
7.23500	**7.26500**	**15/15/15**	21.3/21.3/21.3	2.0
7.23600	**7.26600**	20/15/20	26,9/21,3/26,9	2.3/2.0
7.23700	**7.26700**	**20/20/20**	26.9/26.9/26.9	2.3
7.23800	**7.26800**	25/15/25	33,7/21,3/33,7	2.6/2.0
7.23900	**7.26900**	25/20/25	33,7/26,9/33,7	2.6/2.3
7.24000	**7.27000**	**25/25/25**	33.7/33.7/33.7	2.6
7.24100	**7.27100**	32/20/32	42,4/26,9/42,4	2.6/2.3
7.24200	**7.27200**	32/25/32	42,4/33,7/42,4	2.6/2.6
7.24300	**7.27300**	**32/32/32**	42.4/42.4/42.4	2.6
7.24400	**7.27400**	40/20/40	48,3/26,9/48,3	2.6/2.3
7.24500	**7.27500**	40/25/40	48,3/33,7/48,3	2.6/2.6
7.24600	**7.27600**	40/32/40	48,3/42,4/48,3	2.6/2.6
7.24700	**7.27700**	**40/40/40**	48.3/48.3/48.3	2.6
7.24800	**7.27800**	50/25/50	60,3/33,7/60,3	2.9/2.6
7.24900	**7.27900**	50/32/50	60,3/42,4/60,3	2.9/2.6
7.25000	**7.28000**	50/40/50	60,3/48,4/60,3	2.9/2.6
7.25100	**7.28100**	**50/50/50**	60.3/60.3/60.3	2.9
7.25200	**7.28200**	65/32/65	76,1/42,4/76,1	2.9/2.6
7.25300	**7.28300**	65/40/65	76,1/48,4/76,1	2.9/2.6
7.25400	**7.28400**	65/50/65	76,1/60,3/76,1	2.9/2.9
7.25500	**7.28500**	**65/65/65**	76.1/76.1/76.1	2.9
7.25600	**7.28600**	80/25/80	88,9/33,7/88,9	3.2/2.6
7.25700	**7.28700**	80/32/80	88,9/42,4/88,9	3.2/2.6
7.25800	**7.28800**	80/40/80	88,9/48,4/88,9	3.2/2.6
7.25900	**7.28900**	80/50/80	88,9/60,3/88,9	3.2/2.9
7.26000	**7.29000**	80/65/80	88,9/76,1/88,9	3.2/2.9
7.26100	**7.29100**	**80/80/80**	88.9/88.9/88.9	3.2
7.26200	**7.29200**	**100 /100/100**	114.3/114.3/114.3	3.6



Pipe elbow, PN 40, DIN 2605, type 3

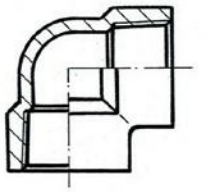
Version A: Material: St. 35.8I, with APZ 3.1 according to EN 10204
Version B: Material: St. 35.8III, with APZ 3.1 according to EN 10204

Order No. Version: A	Order. No. Version: B	Nominal width	Pipe connection D	Wall thickness S	Weight
7.29500	**7.30500**	DN 15	21.3 mm	2.0 mm	0.04
7.29600	**7.30600**	DN 20	26.9 mm	2.3 mm	0.05
7.29700	**7.30700**	DN 25	33.7 mm	2.6 mm	0.11
7.29800	**7.30800**	DN 32	42.4 mm	2.6 mm	0.20
7.29900	**7.30900**	DN 40	48.3 mm	2.6 mm	0.25
7.30000	**7.31000**	DN 50	60.3 mm	2.9 mm	0.45
7.30100	**7.31100**	DN 65	76.1 mm	2.9 mm	0.75
7.30200	**7.31200**	DN 80	88.9 mm	3.2 mm	1.20
7.30300	**7.31300**	DN 100	114.3 mm	3.6 mm	2.30



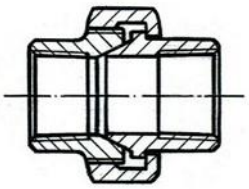
90° Elbow, PN 40, NPT female thread on both sides, Material: ASTM 106/B, with APZ 3.1 to EN 10204

Order no	Connection	Order no	Connection
7.31400	1/4" NPT	**7.31800**	1" NPT
7.31500	3/8" NPT	**7.31900**	1 1/4" NPT
7.31600	1/2" NPT	**7.32000**	1 1/2" NPT
7.31700	3/4" NPT	**7.32100**	2" NPT



Screw connection, PN 40, Material: Steel ASTM A 105, 3000 lbs, with APZ 3.1 according to EN 10204

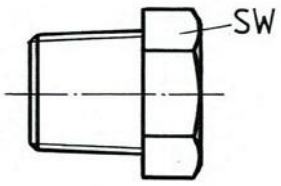
Order no	Connection	Order no	Connection	Order no	Welding
7.32200	3/8" NPT female	**7.32900**	1/2" NPT IT/male	**7.33300**	3/8"
7.32300	1/2" NPT female	**7.33000**	3/4" NPT IT/male	**7.33400**	1/2"
7.32400	3/4" NPT female	**7.33100**	1"NPT female/male	**7.33500**	3/4"
7.32500	1" NPT IT	**7.33200**	1 1/4" NPT female/male	**7.33600**	1"
7.32600	1 1/4" NPT IT			**7.33700**	1 1/4"
7.32700	1 1/2" NPT IT			**7.33800**	1 1/2"
7.32800	2" NPT IT			**7.33900**	2"



Plug with NPT thread, PN 40, with APZ 3.1 according to EN 10204

with square or hexagonal head, type JD 700 made of steel ASTM A 105

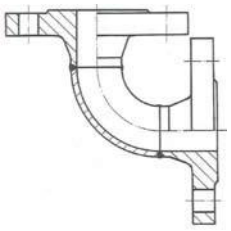
Order. No.	Nominal width	Width across flats SW	Weight
7.34000	1/8" NPT	14	0.02
7.34100	1/4" NPT	17	0.03
7.34200	3/8" NPT	19	0.05
7.34300	1/2" NPT	22	0.07
7.34400	3/4" NPT	27	0.11
7.34500	1" NPT	36	0.25
7.34600	1 1/4" NPT	46	0.35
7.34700	1 1/2" NPT	50	0.55
7.34800	2" NPT	65	1.00
7.34900	2 1/2" NPT	76	2.10
7.35000	3" NPT	89	2.60



Pipe elbow PN 25, with flanges for shuttle valves, make P&A,

Flanges made of C 22.8 according to DIN 2635, pipe elbows made of St. 35.8 I according to DIN 2605, welded and primed, individual parts with APZ 3.1 according to EN 10204 as well as with pressure and leak test

Order No.	Nominal width	Weight
7.35100	DN 25	2.6
7.35200	DN 32	4.0
7.35300	DN 40	4.5
7.35400	DN 50	6.0
7.35500	DN 65	7.5
7.35600	DN 80	10.5
7.35700	DN 100	14.0

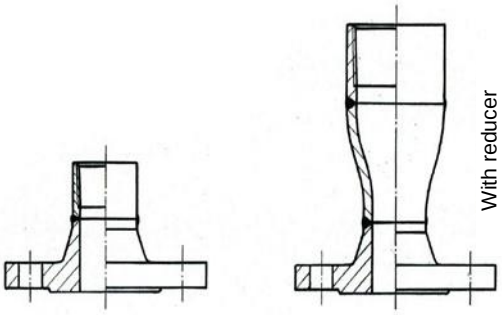


Flange with socket PN 25, make P&A,

Flanges made of C 22.8 according to DIN 2635, socket made of ASTM 105, with NPT internal thread, welded and primed

Order. No.	Flange connection	Threaded connection
7.36000	DN 15	1/2" NPT
7.36100	DN 15	3/4" NPT
7.36200	DN 20	1/2" NPT
7.36300	DN 20	3/4" NPT
7.36400	DN 20	1" NPT
7.36500	DN 25	1/2" NPT
7.36600	DN 25	3/4" NPT
7.36700	DN 25	1" NPT
7.36800	DN 25	1 1/4" NPT
7.36900	DN 32	1" NPT
7.37000	DN 32	1 1/4" NPT
7.37100	DN 40	1 1/4" NPT
7.37200	DN 40	1 1/2" NPT
7.37300	DN 50	1 1/4" NPT
7.37400	DN 50	1 1/2" NPT
7.37500	DN 50	2" NPT
7.37600	DN 50	2 1/2" NPT
7.37700	DN 65	2" NPT
7.37800	DN 65	3" NPT
7.37900	DN 80	2" NPT
7.38000	DN 80	2 1/2" NPT
7.38100	DN 80	3" NPT

Individual parts with APZ 3.1 according to EN 10204 and with pressure and leak test



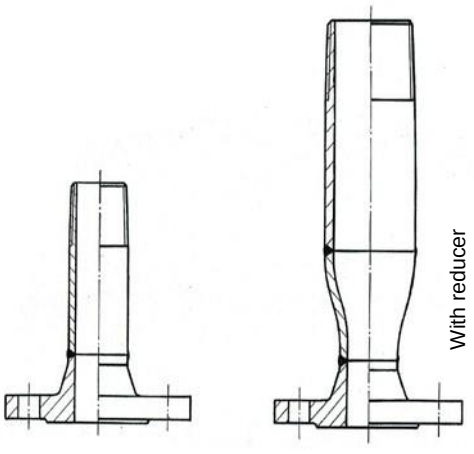
If necessary, the parts are fitted with a Reducer welded

Flange with spigot PN 25, make P&A,

Flanges made of C 22.8 to DIN 2635, spigots made of ASTM 105, with NPT male thread, welded and primed

Order. No.	Flange connection	Threaded connection
7.39000	DN 15	1/2" NPT
7.39100	DN 15	3/4" NPT
7.39200	DN 20	1/2" NPT
7.39300	DN 20	3/4" NPT
7.39400	DN 20	1" NPT
7.39500	DN 25	1/2" NPT
7.39600	DN 25	3/4" NPT
7.39700	DN 25	1" NPT
7.39800	DN 25	1 1/4" NPT
7.39900	DN 32	1" NPT
7.40000	DN 32	1 1/4" NPT
7.40100	DN 40	1 1/4" NPT
7.40200	DN 40	1 1/2" NPT
7.40300	DN 50	1 1/4" NPT
7.40400	DN 50	1 1/2" NPT
7.40500	DN 50	2" NPT
7.40600	DN 50	2 1/2" NPT
7.40700	DN 65	2" NPT
7.40800	DN 65	3" NPT
7.40900	DN 80	2" NPT
7.41000	DN 80	2 1/2" NPT

Individual parts with APZ 3.1 according to EN 10204 and with pressure and leak test



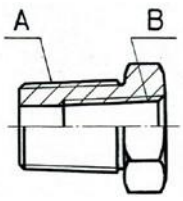
If necessary, the parts are fitted with a Reducer welded

Reducer with NPT thread, PN 40, with APZ 3.1 according to EN 10204

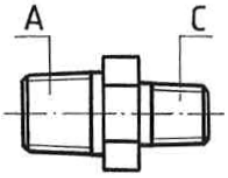
Type JD 645 or 660, Material: steel ASTM A 105

Version A: on one side **NPT male** (connection A), on the other side **NPT female** (connection B)
Version B: **NPT male** on both sides (connection A and connection C)

Order. No. Version A:	Order. No. Version B:	Connection A	Connection B	Connection C	Width across flats
7.42000	**7.43500**	3/8" NPT male	1/4" NPT female	1/4" NPT male	22
7.42100	**7.43600**	1/2" NPT male	1/4" NPT female	1/4" NPT male	22
7.42200	**7.43700**	3/4" NPT male	1/4" NPT female	1/4" NPT male	27
7.42300	**7.43800**	3/4" NPT male	3/8" NPT female	3/8" NPT male	27
7.42400	**7.43900**	3/4" NPT male	1/2" NPT female	1/2" NPT male	27
7.42500	**7.44000**	1" NPT male	1/2" NPT female	1/2" NPT male	32
7.42600	**7.44100**	1" NPT male	3/4" NPT female	3/4" NPT male	36
7.42700	**7.44200**	1 1/4" NPT male	3/4" NPT female	3/4" NPT male	46
7.42800	**7.44300**	1 1/4" NPT male	1" NPT IT	1" NPT male	50
7.42900	**7.44400**	1 1/2" NPT male	1" NPT IT	1" NPT male	46
7.43000	**7.44500**	1 1/2" NPT male	1 1/4" NPT IT	1 1/4" NPT male	50
7.43100	**7.44600**	2" NPT male	1 1/4" NPT IT	1 1/4" NPT male	65
7.43200	**7.44700**	2 1/2" NPT male	1 1/4" NPT IT	1 1/4" NPT male	65
7.43300	**7.44800**	3" NPT male	2" NPT IT	1" NPT male	70



Version **A**

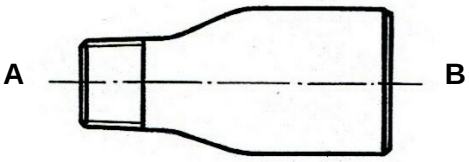


Version **B**

Reducer on one side NPT thread, welding end on the other, PN 40,

Type JD 760, Material: steel ASTM A 105, **with APZ 3.1 according to EN 10204**

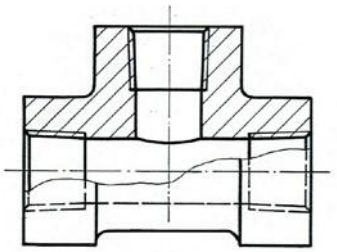
Order. No.	Connection A	Connection B
7.45000	1/2" NPT male	20
7.45100	1/2" NPT male	25
7.45200	1/2" NPT male	32
7.45300	3/4" NPT male	25
7.45400	3/4" NPT male	DN 32
7.45500	3/4" NPT male	40
7.45600	1" NPT male	32
7.45700	1" NPT male	40
7.45800	1" NPT male	50



T-piece, NPT female thread on all sides, PN 40,

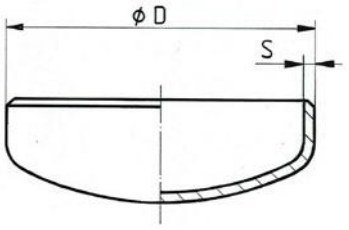
Type JD 900, Material: steel ASTM A 105, **with APZ 3.1 according to EN 10204**

Order No.	Connection
7.46000	1/4" NPT IT
7.46100	3/8" NPT IT
7.46200	1/2" NPT IT
7.46300	3/4" NPT IT
7.46400	1" NPT IT
7.46500	1 1/4" NPT IT
7.46600	1 1/2" NPT IT
7.46700	2" NPT IT



Dished end, PN 40, DIN 28011, Material: RSt 37-2, with APZ 3.1 according to EN 10204

Order no	Nominal width	Pipe connection D	Wall thickness S	Weight
7.47000	15	21.3 mm	2.0 mm	0.06
7.47100	20	26.9 mm	2.3 mm	0.07
7.47200	25	33.7 mm	2.6 mm	0.10
7.47300	32	42.4 mm	2.6 mm	0.11
7.47400	40	48.3 mm	2.6 mm	0.20
7.47500	50	60.3 mm	2.9 mm	0.28
7.47600	65	76.1 mm	2.9 mm	0.35
7.47700	80	88.9 mm	3.2 mm	0.50
7.47800	100	114.3 mm	3.6 mm	1.00
7.47900	125	139.7 mm	4.0 mm	1.15



Connector W 21.8 x 1/14" left ET, PN 25, Material: brass, with WZ 2.2 according to EN 10204

Order. No.	Connection A	Connection B
7.48000	W 21.8 x 1/14" left. AG	12 mm spigot
7.48100	W 21.8 x 1/14" left. AG	15 mm spigot
7.48200	W 21.8 x 1/14" left. AG	18 mm spigot
7.48300	W 21.8 x 1/14" left. AG	22 mm spigot

A  B

Connector W 21.8 x 1/14" left male, PN 25, with WZ 2.2 according to EN 10204

Order no	Connection A	Connection B	Material
7.48500	W 21.8 x 1/14" left. AG	1/2" NPT male	Steel
7.48600	W 21.8 x 1/14" left. AG	W 21.8 x 1/14" left. AG	Brass
7.48700	W 21.8 x 1/14" left. AG	18s Ermeto connection	Steel

A  B

Connection piece, Brass, PN 25, on **both sides M 30x1.5 left. male** especially suitable as connecting piece for two high-pressure hoses LPG 16 or LPG 19 make P&A, with WZ 2.2 according to EN 10204

Order No. **7.48900**

Connection piece, Brass, PN 25, **3/4" NPT male x M 30x1.5 left. AG** especially suitable as transition piece from NPT-thread to hose connection, make P&A, with WZ 2.2 according to EN 10204

Order No. **7.49000**

Connection piece, Brass, PN 25, **M 30x1.5 left. x 22 pipe connection**, Make P&A, with WZ 2.2 according to EN 10204

Order no	**7.49100**	M 30 x 1.5 left. male x 22er pipe socket
Order no	**7.49200**	M 30 x 1.5 left. ÜF x 22er Rohrstutzen

T-piece (Ermeto) with safety valve PN 25, Make P&A, Ermeto T-piece, with TÜV and component-tested safety valve 1/4" NPT, response pressure 25 bar

Order no	**7.49400**	Connection: 22 mm
Order no	**7.49500**	Connection: 28 mm

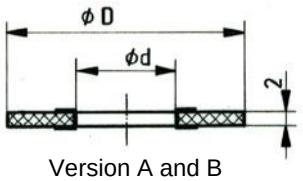
Double spigot, PN 40, male NPT-thread on both sides, with APZ 3.1 according to EN 10204, **short version with spanner flat,** Material: steel, ASTM 106/B

Order no	Connection	Order no	Connection
7.50000	1/4" NPT	7.50500	1 1/4" NPT
7.50100	3/8" NPT	7.50600	1 1/2" NPT
7.50200	1/2" NPT	7.50700	2" NPT
7.50300	3/4" NPT	7.50800	2 1/2" NPT
7.50400	1" NPT	7.50900	3" NPT

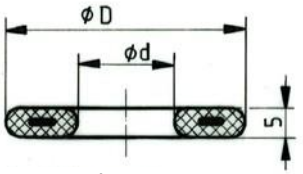
Gasket, PN 40, liquid gas resistant, **for flanges to DIN 2635**

Version A: Material: Klinger SIL 4400, with HTB test up to 650°C, with DVGW approval, **2 mm thick**
Version B: Material: Klinger SIL 4430, with fire-safe test to BS 5146 (620°C), **2 mm thick**
Version C: Material: Perbunan with steel insert, DIN-DVGW-approved, reusable, **5 mm thick**

Order no Version A	Order no Version B	Order no Version C	Nominal width	D mm	d mm
7.52000	**7.53000**	**7.54000**	15	50	22
7.52100	**7.53100**	**7.54100**	20	60	27
7.52200	**7.53200**	**7.54200**	25	70	34
7.52300	**7.53300**	**7.54300**	32	82	43
7.52400	**7.53400**	**7.54400**	40	92	48
7.52500	**7.53500**	**7.54500**	50	107	61
7.52600	**7.53600**	**7.54600**	65	127	76
7.52700	**7.53700**	**7.54700**	80	142	89
7.52800	**7.53800**	**7.54800**	100	168	114
7.52900	**7.53900**	**7.54900**	125	195	141



Version A and B



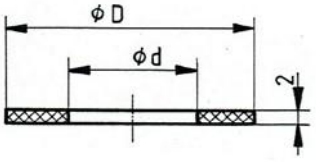
Version C

Seal **for groove/spring or protrusion/retraction** PN 40, asbestos-free,

Material: Klinger SIL 4430, with fire-safe test according to British Standard 5146 (620° C)

Version A: For tongue and groove according to DIN 2691, Material: thickness 2 mm
Version B: For projection and recess according to DIN 2692, Material: thickness 3 mm

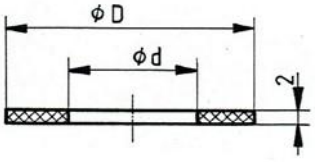
Order. No. Version A	Order. No. Version B	Nominal size	D (mm) Version A	d (mm) Version A	D (mm) Version B	d (mm) Version B
7.55000	**7.56000**	15	39	29	39	22
7.55100	**7.56100**	20	50	36	50	27
7.55200	**7.56200**	25	57	43	57	34
7.55300	**7.56300**	32	65	51	65	43
7.55400	**7.56400**	40	75	61	75	48
7.55500	**7.56500**	50	87	73	87	60
7.55600	**7.56600**	65	109	95	109	76
7.55700	**7.56700**	80	120	106	120	89
7.55800	**7.56800**	100	149	129	149	114
7.55900	**7.56900**	125	175	155	175	139



Dome cover gaskets, PN 25, asbestos-free, Material: thickness 2 mm

Version A: Material: Klinger SIL 4400, with HTB test up to 650°C, with DVGW approval
Version B: Material: Klinger SIL 4430, with Fire-Safe test according to British Standard BS 5146 (620°C)

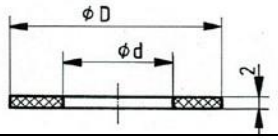
Order no Version A	Order no Version B	D mm	d mm	Order no Version A	Order no Version B	D mm	d mm
7.57000	**7.59000**	468	442	**7.57700**	**7.59700**	540	520
7.57100	**7.59100**	500	470	**7.57800**	**7.59800**	560	525
7.57200	**7.59200**	535	515	**7.57900**	**7.59900**	560	530
7.57300	**7.59300**	540	490	**7.58000**	**7.60000**	575	550
7.57400	**7.59400**	540	500	**7.58100**	**7.60100**	600	580
7.57500	**7.59500**	540	510	**7.58200**	**7.60200**	635	615
7.57600	**7.59600**	540	518				



Seal for drainage flanges of 1.2; 2.1 and 2.9 to containers, PN 25,

asbestos-free, Material: thickness 2 mm, Material: Klinger SIL 4430, with fire-safe test acc. to BS 5146 (620° C)

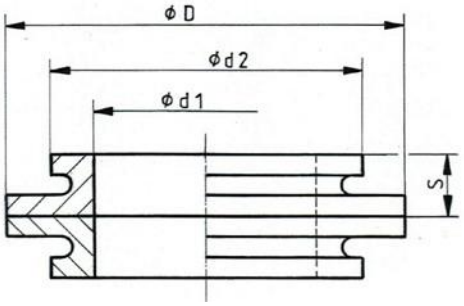
Order. No.	Size (mm)	Order No.	Dimension
7.60400	57 x 37	7.60700	168 x 130
7.60500	154 x 134	7.60800	175 x 145
7.60600	154 x 145		



Weld lip seal, PN 40, make P&A, with APZ 3.1 according to EN 10204,

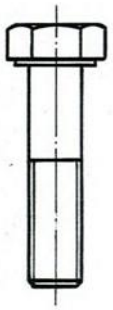
Material: C 22.8 or equivalent, profile A22 for smooth flanges according to DIN 2635,
a complete welding lip seal consists of two welding lips

Order. No.	Nominal width DN	Dimensions			
		D	d1	d2	s (mm)
7.61000	15	46	17.3	32	15
7.61100	20	58	22.3	38	15
7.61200	25	66	28.5	46	15
7.61300	32	75	37.2	55	15
7.61400	40	80	43.1	60	15
7.61500	50	95	54.5	75	15
7.61600	65	110	70.3	90	15
7.61700	80	125	82.5	105	15
7.61800	100	145	107.1	125	15
7.61900	125	170	131.7	150	15



Hexagon head screw, DIN 931, stamped 5.6, galvanised

M 12		M 16		M 20, M 24, M 30, M 33	
Order no	Dimensions	Order no	Dimensions	Order no	Dimensions
7.62000	M 12x25	7.63200	M 16x 45	7.64400	M 20x 45
7.62100	M 12x30	7.63300	M 16x 50	7.64500	M 20x 70
7.62200	M 12x40	7.63400	M 16x 55	7.64600	M 20x 75
7.62300	M 12x45	7.63500	M 16x 60	7.64700	M 20x 90
7.62400	M 12x50	7.63600	M 16x 65	7.64800	M 20x100
7.62500	M 12x55	7.63700	M 16x 70	7.64900	M 24x 80
7.62600	M 12x60	7.63800	M 16x 75	7.65000	M 24x 90
7.62700	M 12x65	7.63900	M 16x 80	7.65100	M 24x100
7.62800	M 12x70	7.64000	M 16x 90	7.65200	M 24x120
7.62900	M 12x75	7.64100	M 16x100	7.65300	M 30x120
7.63000	M 12x90	7.64200	M 16x110	7.65400	M 33x120



Stud bolt

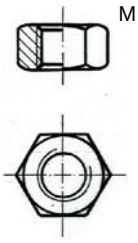
DIN 939, stamped 5.6, galvanised

Order No.	Dimension	Order. No.	Dimension
7.66000	M 12x 20	7.67300	M 16 x 50
7.66100	M 12x 30	7.67400	M 16 x 55
7.66200	M 12x 35	7.67500	M 16 x 60
7.66300	M 12x 40	7.67600	M 16 x 65
7.66400	M 12x 45	7.67700	M 16 x 70
7.66500	M 12x 50	7.67800	M 16 x 75
7.66600	M 12x 55	7.67900	M 16 x 80
7.66700	M 12x 60	7.68000	M 16 x 95
7.66800	M 12x 65	7.68100	M 16 x100
7.66900	M 12x 70	7.68200	M 16 x110
7.67000	M 16x 35	7.68300	M 16 x115
7.67100	M 16x 40	7.68400	M 16 x120
7.67200	M 16x 45	7.68500	M 16 x200

Hexagon nut

DIN 934, stamped 5.2, galvanised

Order No.	Dimension
7.69000	M 12
7.69100	M 16
7.69200	M 20
7.69300	M 24
7.69400	M 30
7.69500	M 33



Steel tube, **seamless,** according to DIN 2448

Version A: Material: **St. 35.8I** according to DIN 17175, **bright**, with APZ 3.1 according to EN 10204
Version B: Material: **St. 35.8III** according to DIN 17175, **bright**, with APZ 3.1 (or 3.1A) according to EN 10204
Version C: Material: **St. 35.8I**, **plastic-coated for underground installation**, with APZ 3.1 according to EN 10204
Version D: Material: **St. 35.8III**, **plastic-coated for underground installation**, with APZ 3.1 according to EN 10204

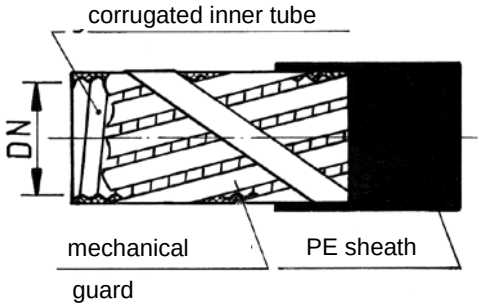
Order no	Order no	Order no	Order no.	Nominal width	Dimensions
Version A	Version B	Version C	Version D	DN	mm
St.35.8I blank	St.35.8III blank	St.35.8I PE-Umm.	St.35.8III PE-Umm.		
7.70000	**7.71000**	**7.72000**	**7.73000**	15	21.3 x 2.0
7.70100	**7.71100**	**7.72100**	**7.73100**	20	26.9 x 2.3
7.70200	**7.71200**	**7.72200**	**7.73200**	25	33.7 x 2.6
7.70300	**7.71300**	**7.72300**	**7.73300**	32	42.4 x 2.6
7.70400	**7.71400**	**7.72400**	**7.73400**	40	48.3 x 2.6
7.70500	**7.71500**	**7.72500**	**7.73500**	50	60.3 x 2.9
7.70600	**7.71600**	**7.72600**	**7.73600**	65	76.1 x 2.9
7.70700	**7.71700**	**7.72700**	**7.73700**	80	88.9 x 3.2
7.70800	**7.71800**	**7.72800**	**7.73800**	100	114.3 x 3.6
7.70900	**7.71900**	**7.72900**	**7.73900**	125	139.3 x 4.0

Corrugated stainless steel pipe **with PE-coating for liquid gas pipes** (corrugated flexible pipe),

PN 25, with APZ 3.1 according to EN 10204 and type test, test basis 97/23 EG, -50° C to +60° C,
Flex corrugated pipe type LPG is a single-wall, flexible pipe system. It is specially designed for underground installation.
The flexible tube has a corrugated stainless steel inner tube and a helically wound outer mechanical protection. A PE sheath serves as external corrosion protection for the underground installation.

System advantages:

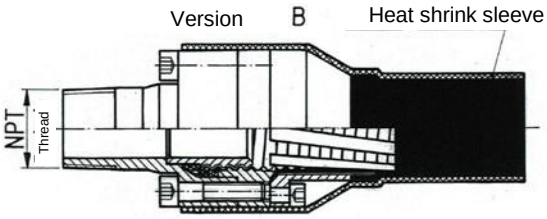
- Quick and easy laying of the pipeline (roll goods up to 700 m)
- Welding work and X-ray tests can be omitted on site
- Reducing the cost of earthworks



Order No.	Nominal width	Bending radius
7.74000	20	0.2 m
7.74100	25	0.2 m
7.74200	32	0.3 m

Version A: Integration as weld-on end made of steel Version B: Integration as NPT male thread Version C: Integration as loose flange

Order No. Version A	Order. No. Version B	Order. No. Version C	Nominal size
7.74400	**7.74800**	**7.75200**	DN 20 / 3/4"
7.74500	**7.74900**	**7.75300**	DN 25 / 1"
7.74600	**7.75000**	**7.75400**	DN 32 / 1 1/4"



Order No. 7.75600 Integration (labour costs per side) for the corrugated flex pipe DN 20 - DN 25
Order No. 7.75700 Integration (labour costs per side) for the corrugated flex pipe DN 32
Order No. 7.75800 Pressure test (per hose) for the integrated corrugated flexible tube

The Flexwell pipe is bound in our workshop according to your specifications and delivered
Attention: When ordering, please specify the desired length and binding type

Precision steel pipe (Ermeto), galvanised, DIN 2391

Order No.	Dimension	Order. No.	Dimension	Order. No.	Dimension
7.76000	8 x 1.5	**7.76300**	15 x 1.5	**7.76600**	28 x 2.0
7.76100	10 x 1.5	**7.76400**	18 x 1.5	**7.76700**	35 x 2.0
7.76200	12 x 1.5	**7.76500**	22 x 2.0	**7.76800**	Surcharge for APZ 3.1 according to EN 10204

Copper pipe

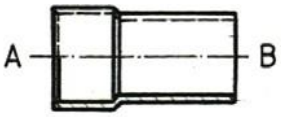
Version A: Copper tube, bare, bar stock
Version B: Copper tube, coated, rod material
Version C: Copper tube (Wicu), coated, roll material

Order No. Version A	Order. No. Version B	Order. No. Version C	Connection mm
7.77000	**7.77700**	**7.78400**	12 x 1
7.77100	**7.77800**	**7.78500**	15 x 1
7.77200	**7.77900**	**7.78600**	18 x 1
7.77300	**7.78000**	**7.78700**	22 x 1
7.77400	**7.78100**	--------	28 x 1,5
7.77500	**7.78200**	--------	35 x 1.5
7.77600	**7.78300**	--------	42 x 1.5
7.78900	Surcharge for APZ 3.1 according to EN 10204		

Soldering sleeve made of brass, PN 25, make P&A, with WZ 2.1 according to EN 10204,

on the one hand for soldering onto a copper pipe, on the other hand for connection to a cutting ring fitting

Order no	Connection A	Connection B
7.79000	12 mm solder connection	12 mm cutting ring connection
7.79100	15 mm solder connection	15 mm cutting ring connection
7.79200	18 mm solder connection	18 mm cutting ring connection
7.79300	22 mm solder connection	22 mm cutting ring connection
7.79400	28 mm solder connection	28 mm cutting ring connection
7.79500	35 mm solder connection	35 mm cutting ring connection



Connections for filling pipes, PN 25, manufactured by P&A, with WZ 2.2 according to EN 10204, These connections developed by the company P&A are particularly suitable as connectors for filling pipes when laying precision steel pipe (Ermeto) and copper pipe.

Two connections, the filling connection and the container connection, are required for laying the filling line.

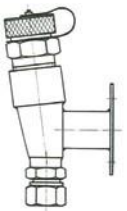
The filling connection consists of: Filling valve 1 3/4" ACME x 1 1/4" NPT, double socket 1 1/4" NPT, GE screw-in Screw connection 1 1/4" NPT x 28 mm and mounting plate

The tank connection consists of: Filling nozzle 1 3/4" ACME x 1" NPT, with 90° bend

Order. no	
7.79600	Filling connection
7.79601	Filling connection with 45° angle of attack, 35 RVS connection
7.79700	Container connection

Other connections, e.g. 35 EO, are available on request

Tank connector

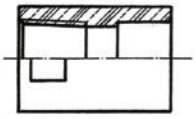


Filling connector

Soldering sleeve for filling pipes PN 25, make P&A, with WZ 2.1 according to EN 10204,

Material: brass MS 58, with spanner flat

Order No.	on the one hand	on the other
7.79800	1 1/4" NPT for filling valve	Solder connection for copper pipe 35 x 1.5
7.79900	1" NPT for fuelling nozzle	Solder connection for copper pipe 35 x 1.5



Straight screw-in fitting
with NPT thread, Material: steel, galvanised

Order. No.	Threaded connection	pipe external Ø
7.81000	1/4" NPT	8 mm
7.81100	1/4" NPT	10 mm
7.81200	1/4" NPT	12 mm
7.81300	3/8" NPT	10 mm
7.81400	3/8" NPT	12 mm
7.81500	1/2" NPT	12 mm
7.81600	1/2" NPT	15 mm
7.81700	1/2" NPT	18 mm
7.81800	1/2" NPT	22 mm
7.81900	3/4" NPT	18 mm
7.82000	3/4" NPT	22 mm
7.82100	1" NPT	28 mm
7.82200	1 1/4" NPT	35 mm

Angle screw-in fitting
with NPT thread, Material: steel, galvanised

Order. No.	Threaded connection	Pipe-out Ø
7.82300	1/4" NPT	8 mm
7.82400	1/4" NPT	10 mm
7.82500	1/4" NPT	12 mm
7.82600	3/8" NPT	10 mm
7.82700	3/8" NPT	12 mm
7.82800	1/2" NPT	12 mm
7.82900	1/2" NPT	15 mm
7.83000	1/2" NPT	18 mm
7.83100	3/4" NPT	22 mm
7.83200	1" NPT	28 mm
7.83300	1 1/4" NPT	35 mm

Weld-on fitting
Material: steel

Order No.	Connection
7.83400	8 mm
7.83500	10 mm
7.83600	12 mm
7.83700	15 mm
7.83800	18 mm
7.83900	22 mm
7.84000	28 mm
7.84100	35 mm

Elbow fitting
Material: steel, galvanised

Order. No.	External pipe Ø
7.84200	8 mm
7.84300	10 mm
7.84400	12 mm
7.84500	15 mm
7.84600	18 mm
7.84700	22 mm
7.84800	28 mm
7.84900	35 mm

Straight fitting
Material: steel, galvanised

Order No.	Pipe-Outside Ø
7.85000	8 mm
7.85100	10 mm
7.85200	12 mm
7.85300	15 mm
7.85400	18 mm
7.85500	22 mm
7.85600	28 mm
7.85700	35 mm

Straight reduction
Material: steel, galvanised

Order No.	Tube External Ø
7.85800	10 / 8 mm
7.85900	12 / 8 mm
7.86000	12 / 10 mm
7.86100	15 / 8 mm
7.86200	15 / 10 mm
7.86300	15 / 12 mm
7.86400	18 / 10 mm
7.86500	18 / 12 mm
7.86600	18 / 15 mm
7.86700	22 / 12 mm
7.86800	22 / 15 mm
7.86900	22 / 18 mm

T-fitting
Material: steel, galvanised

Order. No.	Tube External Ø
7.87000	8 mm
7.87100	10 mm
7.87200	12 mm
7.87300	15 mm
7.87400	18 mm
7.87500	22 mm
7.87600	28 mm
7.87700	35 mm

Cross-fitting
Material: steel, galvanised

Order No.	Tube external Ø
7.87800	8 mm
7.87900	10 mm
7.88000	12 mm
7.88100	15 mm
7.88200	18 mm
7.88300	22 mm
7.88400	28 mm
7.88500	35 mm

Straight screw-on fitting
Material: steel, galvanised

Order. No.	Threaded connection	Pipe Ø
7.88600	G 1/4"	10 mm
7.88700	G 3/8"	12 mm
7.88800	G 1/2"	15 mm
7.88900	G 1/2"	18 mm
7.89000	G 3/4"	22 mm
7.89100	G 1"	28 mm

Sealing plug
Material: steel, galvanised

Order No.	Pipe Ø
7.89200	8 mm
7.89300	10 mm
7.89400	12 mm
7.89500	15 mm
7.89600	18 mm
7.89700	22 mm
7.89800	28 mm
7.89900	35 mm

Cutting ring
Material: steel

Order No.	Pipe Ø
7.90000	8 mm
7.90100	10 mm
7.90200	12 mm
7.90300	15 mm
7.90400	18 mm
7.90500	22 mm
7.90600	28 mm
7.90700	35 mm

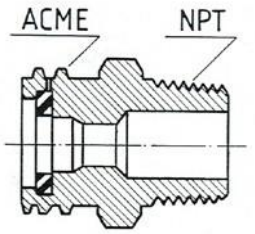
Union nut
Material: steel

Order. No.	Pipe Ø
7.91000	8 mm
7.91100	10 mm
7.91200	12 mm
7.91300	15 mm
7.91400	18 mm
7.91500	22 mm
7.91600	28 mm
7.91700	35 mm

Connection piece PN 25, with WZ 2.2 according to EN 10204,

on the one hand: ACME - external thread, on the other hand: NPT - male thread

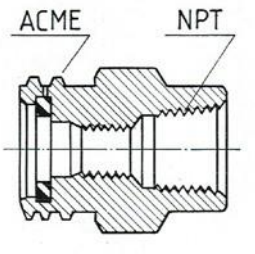
Order no	Connection ACME	Connection NPT	Fisher	RegO	P&A	Material
7.92000	1 1/4"	3/4"	M498-6/3	5763D	PA-A1	Ms
A7.92100	1 3/4"	1/2"	M521-4	A5765C	PA-A2	St
7.92200	1 3/4"	3/4"	M215	5765D	PA-A3	Ms
A7.92300	1 3/4"	3/4"	M521-6	A5765D	PA-A4	St
7.92400	1 3/4"	1"	M216	5765E	PA-A5	Ms
A7.92500	1 3/4"	1"	M521-8	A5765E	PA-A6	St
7.92600	1 3/4"	1 1/4"	M217	5765F	PA-A7	Ms
A7.92700	1 3/4"	1 1/4"	M521-10	A5765F	PA-A8	St
7.92800	2 1/4"	1 1/4"	M233	5767F	PA-A9	Ms
A7.92900	2 1/4"	1 1/4"	M236	A5767F	PA-A10	St
7.93000	2 1/4"	1 1/2"	M502-12/8	5767G	PA-A11	Ms
7.93100	2 1/4"	2"	M502-16/10	5767H	PA-A12	Ms
7.93200	3 1/4"	2"	M503-16	5769H	PA-A13	Ms
A7.93300	3 1/4"	2	M263	A5769H	PA-A14	St
7.93400	3 1/4"	2 1/2"	--------	5769J	PA-A15	Ms
7.93500	3 1/4"	3"	M262	5769K	PA-A16	Ms
A7.93600	3 1/4"	3"	M523-24	A5769K	PA-A17	St
A7.93700	4 1/4"	3"	M524-24	--------	PA-A18	St



Connection piece PN 25, with WZ 2.2 according to EN 10204,

on the one hand: ACME - external thread, on the other hand: NPT -Female thread

Order no	Connection ACME	Connection NPT	Fisher	RegO	P&A	Material
7.93800	1 3/4"	1/4"	---------	---------	PA-A20	Ms
7.93900	1 3/4"	3/8"	---------	---------	PA-A21	Ms
7.94000	1 3/4"	1/2"	M212	5764C	PA-A22	Ms
7.94100	1 3/4"	3/4"	M213	5764D	PA-A24	Ms
A7.94200	1 3/4"	3/4"	M526-6	--------	PA-A25	St
7.94300	1 3/4"	1"	M214	5764E	PA-A26	Ms
7.94400	2 1/4"	1"	M502-12/8	5766E	PA-A27	Ms
7.94500	2 1/4"	1 1/4"	M502-16/10	5766F	PA-A28	Ms
7.94600	2 1/4"	1 1/2"	M502-16/12	--------	PA-A29	Ms
7.94700	3 1/4"	1 1/2"	--------	5768G	PA-A30	Ms
7.94800	3 1/4"	2"	M252	5768H	PA-A31	Ms
A7.94900	3 1/4"	2"	M528-16	A5768H	PA-A32	St
7.95000	3 1/4"	2 1/2"	--------	5768J	PA-A33	Ms
7.95100	3 1/4"	3"	M508-24	--------	PA-A34	Ms
7.95200	4 1/4"	3"	M509-24	--------	PA-A35	Ms



External filling safety device made of steel,

manufactured by P&A This filling safety device developed by P&A is placed over the filling valve and thus prevents the external filling of liquid gas containers.
Primed and painted or galvanised

Order no	**7.97000**	**suitable for filling valve 1 3/4" ACME**
Order no	**7.97100**	**suitable for filling valve 2 1/4" ACME**
Order no	**7.97500**	**Safety lock for external filling protection**

Sealant, Loctite, liquid Teflon, pipe and surface sealant, white,
Contents: 50 ml

Order No. **8.00000**

Copper paste, multi-purpose assembly paste for screws, seals etc., content 1 kg

Order. No. **8.00500**

Teflon sealing tape, Dimension 12 mm x 0.1 mm x 12 m

Order. No. **8.01000**

Gas warning tape for marking buried pipelines, roll material, roll length 250 m x 40 mm

Order No. **8.01500**

Attention gas line

Electric warning tape for marking buried cables, roll material
Roll length 250 m x 40 mm

Order No. **8.02000**

Attention cable

Identification tape for above-ground pipelines according to DIN 2403 colour yellow,
Label "Propane", with arrow for flow direction, roll material, 90 mm wide, roll length 250 m

Order. No. **8.02500**

Leak detection liquid, with corrosion protection and DVGW-tested, Temperature range + 5 °C to + 40 °C, ready for use, especially suitable for refillable spray bottles with adjustable and lockable nozzle, no corrosion formation,
no propellant gas required, environmentally friendly, no danger of explosion when heated above 50°C, unlimited shelf life as no propellant gas is lost, content of bottle = 1000 ml

Order no	**8.03500**	Spray bottle with 1000 ml leak detection liquid (+ 5 °C to + 40 °C)
Order no	**8.03600**	Spray bottle (without leak detection liquid)
Order no	**8.03700**	5 l canister with tap and leak detection liquid (+ 5 °C to + 40 °C)
Order no	**8.03800**	20 l canister with tap and leak detection liquid (+ 5 °C to + 40 °C)

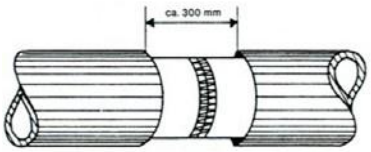
Leak detector (400 ml spray can), with corrosion and frost protection, temperature range - 15 °C to + 70 °C, DVGW-tested,
For fast and effortless detection of leaks in gas and compressed air systems

Order No. 8**.03900** 400 ml spray can (temperature range - 15 °C to + 70 °C)

Corrosion protection for buried pipelines, with DIN-DVGW reg. no.

The following material can be used to insulate buried steel pipelines etc. without heating.
Perfect corrosion protection consists of an adhesive coating, the test bandage (1.5 mm thick) and the protective film.

Order. no	
8.06000	1 litre Kebutyl - adhesive coating
8.06100	2 litre Kebutyl - adhesive coating
8.06200	5 litre Kebutyl - adhesive coating
8.06300	1 0 mTesto bandage with Kebulen protective film --- 50 mm wide
8.06400	1 0 mTesto bandage with Kebulen protective film ---100 mm wide



Dome shaft fire protection insulation with BAM approval for liquid gas containers Fire protection insulation in the **dome** shaft area can be carried out **"on one's own"** without the BAM approval becoming invalid. The material is mixed with a mortar mixer and then distributed in the dome shaft. Consumption at a bulk density of 800 $^{kg/m3}$ = 8 $^{kg/m2}$ and cm thickness.

Order no	**8.07000**	Synthomer adhesive primer in barrels of 120 l each
Order no	**8.07100**	Fire protection mortar HFC in bags of 15 kg each

Wall duct

for pipes from 10-164 mm, protective pipe made of PVC (up to U-100) or special fibre cement (from U-125) with a standard length of 40 cm (protective pipes can be shortened as required with a saw), 2 internal seals made of gas-, corrosion-, acid- and ageing-resistant material, with clamping screws M 8 made of stainless steel

Version A: Standard Version
Version B: with capillary seal for a water- and gas-tight pipe feed-through

Order No. Version A	Order. No. Version B	Inner Ø mm	Core hole drilling mm
8.08000	**8.10000**	24	100 - 102
8.08100	**8.10100**	30	100 - 102
8.08200	**8.10200**	38	100 - 102
8.08300	**8.10300**	47	100 - 102
8.08400	**8.10400**	54	100 - 102
8.08500	**8.10500**	65	100 - 102
8.08600	--------	82	126
8.08700	--------	94	152
8.08800	--------	120	202
8.08900	--------	140	202
8.09000	--------	169	252

Wall bushing for electric cables,

optionally with 4 or 6 holes for the electric cables, the hole pattern is made according to the customer's specifications
Protective tube made of special fibre cement with a standard length of 60 mm (protective tubes can be shortened as required with a saw), 2 pieces of inner seals made of gas-, corrosion-, acid- and ageing-resistant material, with clamping screws M 8 made of stainless steel

Attention: Specify desired number of bores and bore diameter

Order. No.	Number of bores	Bore-Ø	Core hole drilling
8.11000	4	2x24 + 2x32 mm	100 - 102
8.11100	6	4x10 + 2 x 24 mm	100 - 102

Screw pipe clamp, galvanised,
with insulating glass insert and nut

Order. No.	Size	Clamping range	mm
8.20000	3/8"	15 - 19	M8
8.20100	1/2"	21 - 23	M8
8.20200	3/4"	26 - 28	M8
8.20300	1"	32 - 35	M8
8.20400	1 1/4"	40 - 43	M8
8.20500	1 1/2"	48 - 51	M8
8.20600	2"	60 - 65	M10/12
8.20700	2 1/2"	73 - 78	M10/12
8.20800	3"	88 - 93	M10/12
8.20900	4"	108 – 116	M10/12

Rail brackets, galvanised,
for easy fastening of pipelines

Order. No.	Profile	Length
8.22000	26 / 18	200 mm
8.22100	26 / 18	300 mm
8.22200	36 / 36	200 mm
8.22300	36 / 36	300 mm
8.22400	End cap for profile 26 / 18	
8.22500	End cap for profile 28 / 28	
8.22600	End cap for profile 36 / 36	

Hammer-head screws, galvanised,
galvanised, for insertion into the rail brackets and for mm fastening the screw pipe clamp

Order No.	for profile	
8.23000	26/18 u. 28/28	118 x 25
8.23100	27/18 u. 28/28	118 x 40
8.23200	28/30 u. 28/28	118 x 60
8.23300	28/30	118 x 30
8.23400	38/40	118 x 40
8.23500	38/40	1110 x 40

Threaded rods,
Length of threaded rod 1000

Order. No	Thread
8.24000	M 6
8.24100	M 8
8.24200	M 10
8.24300	M 12
8.24400	M 16

Installation rail, galvanised,
For quick fastening of pipe strings

Order No.	for profile	Length mm
8.25100	27/18	2000
8.25400	28/30	2000
8.25600	38/40	2000
8.25700	38/40	6000

Drive-in dowel, galvanised
uncracked concrete,

Order. No.	Size	Drill Ø
8.26000	M 6	8 mm
8.26100	M 8	10 mm
8.26200	M 10	12 mm
8.26300	M 12	15 mm
8.26400	M 16	20 mm
8.26500	Setting tool for dowel M 6	
8.26600	Setting tool for dowel M 8	
8.26700	Setting tool for dowel M 10	
8.26800	Setting tool for dowel M 12	
8.26900	Setting tool for dowel M 16	

Universal nylon dowel,
for KS stone/concrete etc.

Order. No.	Size	f. cubicles
8.27000	6 mm	4 -5
8.27100	8 mm	4.5 - 6
8.27200	10 mm	6 - 8
8.27300	12 mm	8 - 10
8.27400	14 mm	10 -12

Hanger bolt, galvanised,
with SW, for nylon dowels

Order No.	Size	SW	for nylon dowel
8.27500	M 6 / 50	SW-	8 mm
8.27600	M 8 / 80	SW 6	10 mm
8.27700	M 10 / 100	SW 8	12 mm
8.27800	M 10 / 160	SW 8	12 mm

Grub screws, galvanised,
for steel dowels

Order No.	Size
8.28000	M 6 / 40
8.28100	M 8 / 40
8.28200	M 10 / 55
8.28300	M 12 / 55
8.28400	M 16 / 70

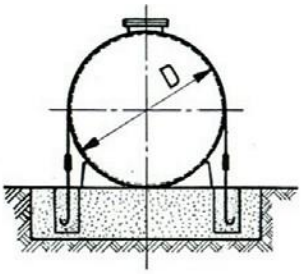
Fixed anchor, galvanised,
uncracked concrete

Order No.	Size
8.29000	M 8 / 95
8.29100	M 8 / 120
8.29200	M 10 / 145

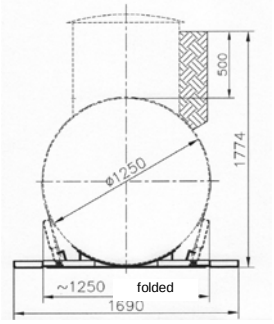
Tank anchorages for buried tanks

As soon as groundwater or surface water is to be expected when storing tanks, the tank can be secured against floating with the tank anchorages and a concrete slab.
A complete tank anchorage consists of 1 piece of flat steel, 2 pieces of turnbuckles, 2 pieces of welding ends and 2 pieces of anchor bolts. The tank anchorage is supplied primed or galvanised.

Order No.	for container ∅	Nominal container capacity	Quantity	Type
8.30000	1250 mm	1 to 3 m³	1	PA
8.30100	1250 mm	4 to 7 m³	2	PA
8.30200	1600 mm	7 to 13 m³	2	PA
8.30300	1600 mm	16 m³	3	PA
8.30400	2000 mm	20 to 30 m³	3	PA
8.30500	2500 mm	40 to 50 m³	4	PA
8.30600	2500 mm	60 m³	5	PA
8.30700	2900 mm	100 m³	6	PA
8.31500	Additional price (per piece) for bitumen underlay between tensioning strap and container			



Tank anchorage with hot-dip galvanised saddle feet and hinged anchor plates for 1. 3-fold uplift protection with an earth cover of 0.5 m.
Advantages: easy assembly, no concrete slab required, easy transport due to foldable anchor plates, no larger pit dimensions.

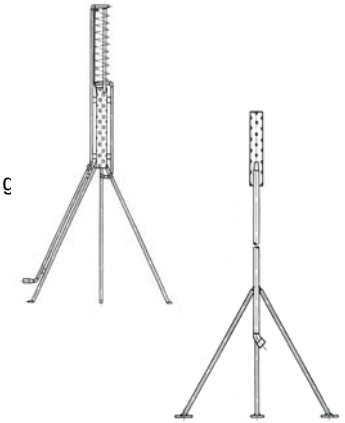


Order No.	for container ∅	Nominal container capacity	Quantity	Type
8.32000	1250 mm	1 to 3 m³	1	DELTA
8.32100	1250 mm	4 to 5 m³	1	DELTA
8.32200	1250 mm	6 to 7 m³	1	DELTA
8.32300	Attachment of the tank anchorage to the tank			

Propane/butane flare, Make P&A,

Suitable for flaring propane/butane from above-ground and underground containers, sturdy steel Version, with removable three-leg for transport purposes, flare connection 1 3/4" ACME ET, with check valve.

Order No. 8.33000 Gas phase flare for manual ignition
Order. No. 8.33100 Gas phase flare (small version for household containers), with manual ignition.
Order No. 8.33200 Liquid and gas phase flare, with manual ignition
Order No. 8.33300 Gas phase flare, with automatic ignition via a
Pilot flame, pilot burner, solenoid valve, thermocouple etc.
Order No. 8.33400 Replacement heating coil made of steel for the liquid phase flare



Accessories:

Detonation arrester, PN 16

To be used for pipelines on tank installations as a flame arrester to prevent flame penetration in case of explosions. With PTB approvals for fuel/air mixtures, suitable for propane and butane.

Order No. 8.34000 Connection G 3/4" IT
Order No. 8.34100 Connection G 1" IT
Order No. 8.34200 Connection G 1 1/4" IT

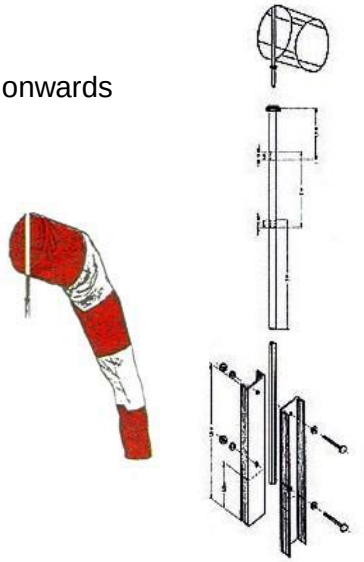
High pressure hose LPG 25, PN 25, type P&A,

for flare/container connection, completely bound, length 10 m, with test certificate

Order no 8.35000 LPG hose, on one side 1 3/4" ACME ÜF (flare), on the other side 3/4" NPT male (liquid withdrawal valve)
Order no 8.35100 LPG hose, on one side 1 3/4" ACME ÜF (flare), on the other side extraction connection. 1 3/4 "ACME (filling valve)
Order no 8.35200 LPG hose, on one side 1 3/4" ACME ÜF (flare), on the other side flange DN 25 for large containers
Order no 8.35300 Surcharge for each additional LPG hose per metre

Wind direction indicator

according to the requirements of TRB 801 No. 25, for systems from group C onwards



The complete wind direction indicator consists of a tear-resistant and weatherproof windsock (Ø 30 cm, length 1.8 m, red/white), a galvanised steel basket with swivel bearing, a galvanised windsock mast L = 1.5 m, a cover cap and the galvanised mast stand.

Order no	**8.50000**	Complete wind direction indicator as described above
Order no	**8.50100**	Surcharge per 0.5 m wind mast length
Order no	**8.50200**	Surcharge for wind mast lighting (not ex-protected)
Order no	**8.50300**	Surcharge for wind mast lighting (ex-protected)
Order no	**8.50400**	Spare windsock (red/white) without basket
Order no	**8.50500**	Spare windsock (red/white) with basket

ABC fire extinguisher and accessories,

According to TRB 801, No. 25 Para. 7.1.15, the following fire extinguishers must be available for liquid gas systems:

Group 0: one	PG 6 powder extinguisher
Group A: two	powder extinguishers PG 6 or one powder extinguisher PG 12
Group B: two	powder extinguishers PG 12
from Group C: four	PG 12 powder extinguishers and a mobile Fire extinguisher PG 50

Order No.	**8.51000**	6 kg ABC hand-held fire extinguisher with wall bracket
Order No.	**8.51200**	12 kg ABC hand-held fire extinguisher with wall bracket
Order No.	**8.51300**	Fire extinguisher bonnet for 6 kg and 12 kg made of plastic
Order No.	**8.51400**	Mobile fire extinguisher PU 50 with 5 m hose
Order No.	**8.51500**	B-coupling with blind cap for the flooding connection of the dome shaft
Order No.	**8.51600**	C-coupling with blind cap for the flooding connection of the dome shaft

Nitrogen pressure reducer, single-stage,

Inlet nitrogen cylinder, outlet G 1/4" IT

Order no	**8.52000**	Control range up to 10 bar
Order no	**8.52100**	Control range up to 20 bar
Order no	**8.52200**	Control range up to 50 bar

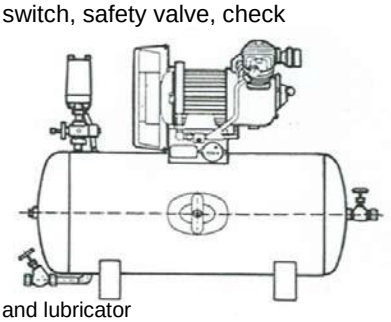
Isotest device

for high-voltage tests on buried tanks and pipelines
complete with charger, tractor earth, earth rod with cable, flat brush 400 mm and round brush

Order No. **8.53000**

Air compressor, with ZUA type approval (TÜV acceptance)

For the supply of pneumatic quick-acting valves, filling connections and filling scales, 230 V alternating or three-phase current, complete with maintenance unit, pressure reducer, condensate drain, motor protection switch, safety valve, check valve and quick coupling, maximum overpressures 8 or 10 bar.



Order No.	Boiler capacity	Intake quantity	Type
8.60000	24 litres	200 l/min	PA 24/200
8.60100	50 litres	400 l/min	PA 50/400
8.60200	90 litres	400 l/min	PA 90/400

Accessories:

8.60500	15 m compressed air hose with the required quick couplings
8.60600	Combination maintenance unit with pressure reducer, filter, separator, pressure gauge and lubricator

Water separator with float trap, PN 16, high separation efficiency, suitable for the

separation of condensate e.g. behind air compressors, coolers etc., housing made of seawater-resistant aluminium, connection G 1/2" IT, installation length 75 mm.

Technology: After the compressed air enters the separator, a special swirl insert causes the air stream to rotate at high speed.
displaced. Due to the outwardly directed rotational forces, the condensate droplets are directed to the separator wall, from where they flow into the collection chamber.

Order no	**8.61000**	Water separator with float trap
Order no	**8.61100**	Water separator with electronic level-controlled condensate trap

Compressed air refrigeration dryer

for the economical and trouble-free generation of dry compressed air for pneumatic valves and filling scales. At a constant dew point of +3°C, condensate and dirt particles are separated from the compressed air and discharged. Operating voltage 230 V, 50 Hz, max. operating pressure 15 bar, volumetric flow in m³/h referred to +20°C and 1 bar absolute, at air inlet temperature +35° C, operating overpressure 7 bar

Order No.	**8.62000**	Designed for the above-mentioned air compressors **PA Art. No. 8.60100 and 8.60200**

Compressed air hose made of plastic, PN 10

Temperature range -35° C to +60° C (from +40° C only PN 8), dimension 8x6x1 mm, type PA12 WEICH
ideal for connecting pneumatic control air solenoid valves with the matching fittings (see below)

Order. No.	**8.63000**

Plug connections for the above-mentioned compressed air hose,

fast, economical and technically perfect.

Order no	**8.64000**	Push-in fitting 8 mm x 1/8" male
Order no	**8.64100**	Push-in fitting 8 mm x 1/4" male
Order no	**8.64200**	Push-in fitting 8 mm x 3/8" male
Order no	**8.64300**	Elbow push-in fitting 8 mm x 1/4" male
Order no	**8.64400**	Elbow push-in fitting 8 mm x 3/8" male
Order no	**8.64500**	Push-in T-fitting 8 x 1/4" male x 8
Order no	**8.64600**	Plug connection 8 mm
Order no	**8.64700**	Angle push-in connector 8 mm
Order no	**8.64800**	Push-in T-connector 8 mm
Order no	**8.64900**	Cross push-in connector 8 mm
Order no	**8.65000**	Plug cap for sealing cables 8 mm

Insulating piece, DIN-DVGW-approved

Insulating pieces are prescribed for electrical isolation in underground tanks or buried pipelines. The installation of an insulating piece prevents electrical currents from reaching the buried pipelines or the underground tank from the building or the consumer equipment and causing corrosion there. For installation in hazardous areas, an additional isolating spark gap is required.

Version A: Insulating piece, without accessories
Version B: Insulating piece, completely mounted with a ball valve with DIN-DVGW approval

Order. No. Version A	Order. No. Version B	Connection	Nominal pressure	
8.70000	**8.72000**	G 1"	PN 4	**Version A**
8.70100	**8.72100**	G 1 1/4"	PN 4	
8.70200	**8.72200**	G 1 1/2"	PN 4	
8.71000	**8.73000**	RVS 12 x RVS 12	PN 25	
8.71100	**8.73100**	RVS 15 x RVS 15	PN 25	**Version B**
8.71200	**8.73200**	RVS 18 x RVS 18	PN 25	
8.71300	**8.73300**	RVS 22 x RVS 22	PN 25	

Insulating flange pair, PN 40, with APZ 3.1 according to EN 10204,

Tested for dielectric strength with 5000 V, temperature range -10° C to +50° C

Version A: with welding end
Version B: with female NPT-thread

Order No. Version A:	Order. No. Version B:	Weld-on end	Threaded connection		Weight
8.74000	**8.75000**	DN 20	3/4"	NPT female	2.2
8.74100	**8.75100**	DN 25	1"	NPT female	3.5
8.74200	**8.75200**	DN 32	1 1/4"	NPT female	4.8
8.74300	**8.75300**	DN 40	1 1/2"	NPT female	6.0
8.74400	**8.75400**	DN 50	2"	NPT female	6.9
8.74500	**8.75500**	DN 65	2 1/2"	NPT female	10.5
8.74600	**8.75600**	DN 80	3"	NPT female	13.0
8.74700	**8.75700**	DN 100	4"	NPT female	18.9

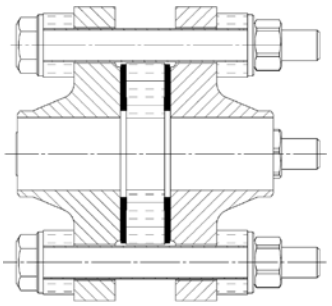
Version A

Version B

Insulation conversion kit, PN 40, for smooth flanges to DIN 2635,

consisting of bolts, nuts, insulating washers and shrink tubing

Order No.	Nominal size	Order. No.	Nominal size
8.76000	15	**8.76500**	DN 50
8.76100	20	**8.76600**	DN 65
8.76200	25	**8.76700**	DN 80
8.76300	32	**8.76800**	DN 100
8.76400	40	**8.76900**	DN 125



Separating spark gap, Ex-protected, Version according to **ATEX**,

mandatory when installing insulating fittings and insulating flanges in protective or potentially explosive atmospheres.
Complete with connection cable and bracket, connection cable (length 350 mm)

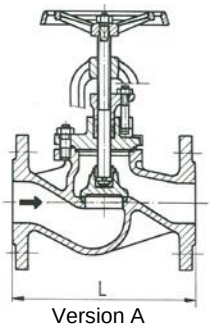
Order. No.	Connection	Order. No.	Connection
8.78000	M 12	**8.78300**	15 tube
8.78100	M 16	**8.78400**	18 tube
8.78200	12 tube	**8.78500**	22 tube

Shut-off valve, PN 40, straight through, with APZ 3.1 to EN 10204,

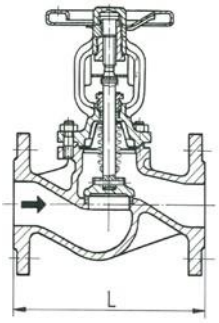
Flanges acc. to DIN 2635, body cast steel GS-C 25, plug and stem made of stainless steel, overall length acc. to DIN 3202

Version A: Stuffing box packing made of pure graphite, leakage rate 1 according to DIN 3230 part 1
Version B: Bellows seal, maintenance-free, leakage rate 1 to DIN 3230 Part 1

Order. No. Version: A	Order. No. Version: B	Nominal width	Overall length L	Weight
9.00000	**9.01000**	DN 25 15	130	4.9
9.00100	**9.01100**	DN 20	150	5.5
9.00200	**9.01200**	DN 25	160	7.0
9.00300	**9.01300**	DN 32	180	8.0
9.00400	**9.01400**	DN 40	200	11.3
9.00500	**9.01500**	DN 50	230	13.0
9.00600	**9.01600**	DN 65	290	23.0
9.00700	**9.01700**	DN 80	310	27.5
9.00800	**9.01800**	DN 100	350	39.0



Version A



Version B

9.02000	Surcharge for flanges with projection and recess or tongue and groove per side
9.02100	Surcharge for regulating cone
9.02200	Surcharge for plug with PTFE soft seal

On request, we also supply PN 40 shut-off valves in angle form

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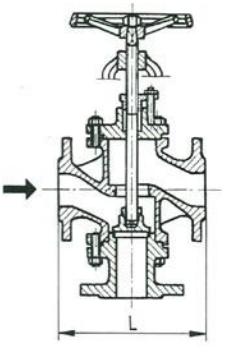
Shuttle valve, PN 40, 3-way form, with APZ 3.1 to EN 10204,

Flanges to DIN 2635, body cast steel GS-C 25, plug and stem made of stainless steel, gland packing made of pure graphite

Version A: Stuffing box packing made of pure graphite, leakage rate 1 according to DIN 3230 part 1
Version B: Bellows seal, maintenance-free, leakage rate 1 to DIN 3230 Part 1

Order No. Version: A	Order. No. Version: B	Nominal width	Length L	Weight
9.03000	**9.04000**	DN 25	160	10.5
9.03100	**9.04100**	DN 32	180	14.0
9.03200	**9.04200**	DN 40	200	18.0
9.03300	**9.04300**	DN 50	230	21.0
9.03400	**9.04400**	DN 65	290	31.0
9.03500	**9.04500**	DN 80	310	45.0
9.03600	**9.04600**	DN 100	350	63.5



Version A

Surcharge for special Version: see order. No. 9.02000 to 9.02200

Safety ball valve, PN 40, manually operated - spring closing,

2-piece ball valve with NPT-thread, body steel, ball stainless steel, seal made of PTFE/graphite, Fire-Safe, **with APZ 3.1 according to EN 10204**

Order. No.	Threaded connection
9.05000	1/4" NPT
9.05100	1/2" NPT
9.05200	3/4" NPT
9.05300	1" NPT
9.05400	1 1/4" NPT
9.05500	1 1/2" NPT
9.05600	2" NPT

Globe valve, PN 25, with WZ 2.2 according to EN 10204,
with NPT female thread and soft seal

Order no	Connection	Overall length	Fisher	RegO	Weight
A9.06000	1/2" NPT	94	N301-04	----	1.30
A9.06100	3/4" NPT	94	N301-06	A7505AP	1.30
A9.06200	1" NPT	110	N301-08	A7507AP	1.55
A9.06300	1 1/4" NPT	125	N310-10	A7509BP	3.00
A9.06400	1 1/2" NPT	132	N310-12	A7511AP	3.60
A9.06500	2" NPT	150	N310-16	A7513AP	7.50
A9.06600	3" NPT	230	N310-24	A7517AP	17.50

Angle valve, PN 25, with WZ 2.2 according to EN 10204,
with NPT female thread and soft seal

Order no	Connection	Overall length	Fisher	RegO	Weight
A9.07000	1/2" NPT	45	N401-04	----	1.20
A9.07100	3/4" NPT	45	N401-06	A7506AP	1.20
A9.07200	1" NPT	51	N401-08	A7508AP	1.50
A9.07300	1 1/4" NPT	57	N410-10	A7510BP	2.60
A9.07400	1 1/2" NPT	62	N410-12	A7512AP	3.50
A9.07500	2" NPT	69	N410-16	A7514AP	4.80
A9.07600	3" NPT	102	N410-24	A7518AP	14.00

Globe valve, PN 25, with WZ 2.2 according to EN 10204,
with NPT female thread and sleeve seal

Order no	Connection	Overall length	Fisher	RegO	Weight
9.08000	1/2" NPT	94	N350-04	7704P	1.10
9.08100	3/4" NPT	94	N350-06	7705P	1.10

Angle valve, PN 25, with WZ 2.2 according to EN 10204,
with NPT female thread and sleeve seal

Order no	Connection	Overall length	Fisher	RegO	Weight
9.08500	1/2" NPT	45	N450-04	7704LP	1.00
9.08600	3/4" NPT	45	N450-06	7706P	1.00

Shut-off/needle valve, PN 25, with WZ 2.2 according to EN 10204,
with NPT external thread

Order No.	Connection	RegO	Weight
9.09000	1/4" NPT	1224WA	0.1

Lever quick-closing valve, PN 25, with WZ 2.2 according to EN 10204,
with NPT internal thread

Order No.	Connection	RegO	Length	Weight
9.09500	1/4" NPT IT	7901T	63 mm	0.7
9.09600	1/2" NPT IT	7901TC	100 mm	1.0
9.09700	3/4" NPT IT	7554SV	100 mm	1.0

Flanged ball valve, Flanges according to DIN 2635, PTFE gaskets, leakage rate 1, full bore, with hand lever, **marked according to AD leaflet A4, with APZ 3.1 according to EN 10204**

Version A: **Standard Version, PN 16, with DIN-DVGW approval,** SHORT CONSTRUCTION F4, spheroidal cast iron body, hard-chrome plated brass ball.

Version B: **Fire-Safe to BS 6755 Part 2, PN 40,** COMPACT - CONSTRUCTION, steel housing, stainless steel ball and control shaft, double housing seal, with anti-static protection.

Version C: **Fire-Safe to BS 6755 Part 2, PN 40,** LANGE BAUFORM F1, cast steel body, stainless steel ball and stem, double body seal, with anti-static protection.

Version D: **Fire-Safe to BS 6755 Part 2, PN 40,** SHORT CONSTRUCTION F4 Housing cast steel, ball and switching shaft made of stainless steel, double housing seal, with antistatic protection.

Version E: **Fire-Safe according to BS 6755, PN 40 (DN 15 to DN 50) / PN 25 (DN 65 to DN 125)** LONG FORM F1, (DN 15 to DN 25) / SHORT FORM F4 (DN 32 to DN 125), Housing made of steel, ball and switching shaft made of stainless steel double housing seal, with anti-static protection, **with component testing according to VDTÜV leaflet 1065.**

Order no. Version A	Order no. Version B	Order no. Version C	Order no. Version D	Order no. Version E	Nominal width	Length Figure 1 2 3	Set of screws and seals (In / Out)
9.10000	**9.11000**	**9.12000**	**9.13000**	**9.14000**	DN 15	35/115/130	**9.15000**
9.10100	**9.11100**	**9.12100**	**9.13100**	**9.14100**	DN 20	35/120/150	**9.15100**
9 10200	**9.11200**	**9.12200**	**9.13200**	**9.14200**	DN 25	43/125/160	**9.15200**
9.10300	**9.11300**	**9.12300**	**9.13300**	**9.14300**	DN 32	51/130/180	**9.15300**
9.10400	**9.11400**	**9.12400**	**9.13400**	**9.14400**	DN 40	64/140/200	**9.15400**
9.10500	**9.11500**	**9.12500**	**9.13500**	**9.14500**	DN 50	85/150/230	**9.15500**
9.10600	**9.11600**	**9.12600**	**9.13600**	**9.14600**	DN 65	103/170/290	**9.15600**
9.10700	**9.11700**	**9.12700**	**9.13700**	**9.14700**	DN 80	120/180/310	**9.15700**
9.10800	**9.11800**	**9.12800**	**9.13800**	**9.14800**	DN 100	155/190/350	**9.15800**
9.10900	**9.11900**	**9.12900**	**9.13900**	**9.14900**	DN 125	182/325/400	**9.15900**

The screw and gasket set (Order. No. 9.15000-9.15900) consists of 8 hexagon head bolts (from DN 65 = 16 hexagon head bolts) and 2 fire-safe seals made of SIL 4430.

COMPACT Version
Figure 1

SHORT Version (STANDARD)
Figure 2

LONG CONSTRUCTION
Figure 3

Ball valve, PN 40 (DN 15 to DN 50) / PN 25 (DN 65 to DN 125),

on one side welding end, on the other side flange according to DIN 2635, full bore

Housing steel, ball and control shaft stainless steel, anti-static protection, seals PTFE, leakage rate 1 passage, with hand lever, **Fire-Safe according to BS 6755 Part 2, marked according to AD leaflet A4**, **with component testing according to VDTÜV leaflet 1065 and APZ 3.1 according to EN 10204**

Order. No.	Nominal width	Length
9.18000	DN 15	230
9.18100	DN 20	250
9.18200	DN 25	260
9.18300	DN 32	250
9.18400	DN 40	260
9.18500	DN 50	270
9.18600	DN 65	285
9.18700	DN 80	315
9.18800	DN 100	355

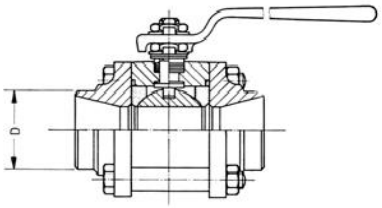
Attention: Deviations are possible in the construction lengths.

Other nominal diameters, special materials and designs for DME, ammonia etc. on request.

Ball valve, PN 40, with 3-part body made of C 22.8, with APZ 3.1 according to EN 10204,

Seals made of PTFE, control shaft made of stainless steel, **reduced passage** (full passage on request)

Order no	Order no	Order no	Nominal width	Order no
NPT thread	Pipe thread	Welding		Gasket set
9.20000	**9.21000**	**9.22000**	1/4" - DN 10	**9.24000**
9.20100	**9.21100**	**9.22100**	3/8" - DN 10	**9.24100**
9.20200	**9.21200**	**9.22200**	1/2" - DN 15	**9.24200**
9.20300	**9.21300**	**9.22300**	3/4" - DN 20	**9.24300**
9.20400	**9.21400**	**9.22400**	1" - DN 25	**9.24400**
9.20500	**9.21500**	**9.22500**	1 1/4" - DN 32	**9.24500**
9.20600	**9.21600**	**9.22600**	1 1/2" - DN 40	**9.24600**
9.20700	**9.21700**	**9.22700**	2" - DN 50	**9.24700**
9.20800	----------	**9.22800**	2 1/2" - DN 65	**9.24800**
9.20900	----------	**9.22900**	3" - DN 80	**9.24900**



Ball valve PN40 (DN 15 to DN 50) / PN 25 (DN 65 to DN 125)

one-piece Version, with welding ends on both sides made of St 35.8I, full bore, body steel, ball and stem stainless steel, anti-static protection, PTFE seals, leakage rate 1, with hand lever, **Fire-Safe acc. to BS 6755 Part 2**, **marked acc. to AD leaflet A4, with component test acc**. to **VDTÜV leaflet 1065 and APZ 3.1 according to EN 10204**

Order No.	Nominal size	Order. No.	Nominal size
9.26000	15	**9.26500**	DN 50
9.26100	20	**9.26600**	DN 65
9.26200	25	**9.26700**	DN 80
9.26300	32	**9.26800**	DN 100
9.26400	40	**9.26900**	DN 125

Multi-way ball valve, PN 25, with APZ 3.1 according to EN 10204,

Body steel, ball stainless steel, seals PTFE, marked according to AD leaflet A4

Version A: 3-way compact ball valve with flange connection, L- or T-bore **Version B**: 3-way compact ball valve with threaded connection, L- or T-bore **Version C**: 4-way compact ball valve with flange connection, L/T or X-bore **Version D**: 4-way compact ball valve with threaded connection, L/T or X bore

Order. No. Version A	Order. No. Version B	Order. No. Version C	Order. No. Version D	Nominal size		
9.27000	9.28000	9.29000	9.30000	DN	15 / 1/2"	NPT
9.27100	9.28100	9.29100	9.30100	DN	20 / 3/4"	NPT
9.27200	9.28200	9.29200	9.30200	DN	25 / 1"	NPT
9.27300	9.28300	9.29300	9.30300	DN	32 / 1 1/4"	NPT
9.27400	9.28400	9.29400	9.30400	DN	40 / 1 1/2"	NPT
9.27500	9.28500	9.29500	9.30500	DN	50 / 2"	NPT
9.27600	-------	9.29600	-------	DN	65	
9.27700	-------	9.29700	-------	DN	80	
9.27800	-------	9.29800	-------	100		

Ball valve, PN 40

Body made of MS 58 (nickel plated), ball made of MS 58 (hard chrome plated) , with full bore, seals made of PTFE, with hand lever**, marked according to AD leaflet A4**

Version A: internal thread on both sides, **DIN-DVGW approval up to PN 5**
Version B: internal thread on one side, external thread on the other

Order No. Version A	Order. No. Version B	Nominal size
9.31000	9.32000	R 1/4"
9.31100	9.32100	R 3/8"
9.31200	9.32200	R 1/2"
9.31300	9.32300	R 3/4"
9.31400	9.32400	R 1"
9.31500	9.32500	R 1 1/4"
9.31600	9.32600	R 1 1/2"
9.31700	9.32700	R 2"
9.31800	--------	R 2 1/2"
9.31900	--------	R 3"

Ball valve, body steel, seals PTFE, with APZ 3.1 according to EN 10204,

marked according to AD leaflet A4

Version A: female G-thread on both sides, DIN-DVGW approval up to PN 16 **Version B:** female NPT-thread on both sides, without DIN-DVGW approval **Version C:** cutting ring connection on both sides, DIN-DVGW approval up to PN 40

Order No. Version A	Order. No. Version B	Order. no Version.: C		Connection A / B	Connection
9.33000	9.34000	9.35000	PN 100	1/4"	12 mm
9.33100	9.34100	9.35100	PN 100	3/8"	15 mm
9.33200	9.34200	9.35200	PN 100	1/2"	18 mm
9.33300	9.34300	9.35300	PN 63	3/4"	22 mm
9.33400	9.34400	9.35400	PN 63	1"	28 mm

Quick-closing ball valve, PN 40, "Fire-Safe Version",

Completely assembled with a pneumatic drive, incl. mounting kit

consisting of:

a) **Ball valve PN 40, "Fire-safe Version to BS 6755 Part 2",** anti-static protection, full bore, maintenance free, body forged steel or equivalent, ball stainless steel, ball sealing PTFE,
Anti-blow-out Version, leakage rate 1 to DIN 3230, **with APZ 3.1 to EN 10204**

b) **Pneumatic actuator,** compact Version, single-acting, with local position indicator, emergency manual operation, angle of rotation 90°, maintenance-free, reset in case of power failure, closing by spring force (fail-safe circuit)

The pneumatic actuator is designed for a control air pressure of at least 5 bar. The maximum control air pressure is 8 bar.

Version A: Ball valve with **flange on both sides** according to DIN 2635, low-priced make

Version B: Ball valve with **flange on both sides** according to DIN 2635, **with component testing**

Version C: Ball valve on **one side flange**, **on the other side welding end**, **with component testing**

Version D: Ball valve **weld-on end on both sides**, **with component testing**

Order No. Version: A	Order. No. Version: B	Order. No. Version: C	Order. No. Version: D	Nominal size DN	Overall length Version A/B	Overall length Version C	Overall length Version D
9.40000	**9.41000**	**9.42000**	**9.43000**	15	115	230	270
9.40100	**9.41100**	**9.42100**	**9.43100**	20	120	250	270
9.40200	**9.41200**	**9.42200**	**9.43200**	25	125	260	270
9.40300	**9.41300**	**9.42300**	**9.43300**	32	130	250	210
9.40400	**9.41400**	**9.42400**	**9.43400**	40	140	260	210
9.40500	**9.41500**	**9.42500**	**9.43500**	50	150	270	220
9.40600	**9.41600**	**9.42600**	**9.43600**	65	170	285	235
9.40700	**9.41700**	**9.42700**	**9.43700**	80	180	315	265
9.40800	**9.41800**	**9.42800**	**9.43800**	100	190	355	275
9.40900	**9.41900**	**9.42900**	**9.43900**	125	325	----	300

Accessories:

9.45000 Surcharge for 3/2-way solenoid valve G 1/4", operating pressure 1-10 bar Medium compressed air, **230 V**, 50 Hz, explosion-proof, with ATEX approval

9.45100 Surcharge for 3/2-way solenoid valve G 1/4", operating pressure 1-10 bar Medium compressed air, **24 V DC**, Ex-protected, with ATEX approval

9.45200 Surcharge for silencer

9.45300 Surcharge for limit switch remote indication, with local indication, Ex zone 1 / ATEX, for 24 V and 230 V

Solenoid valve, not explosion-proof, **with DIN-DVGW approval for** gas

Operating range 0-200 mbar or 0-360/1800 mbar, normally closed, 230 V, 50 Hz, robust and maintenance-free

Version A: Operating range 0-200 (or 130 mbar from 2"), 230V 50Hz
Version B: Operating range 0-200 (or 130 mbar from 2"), 24V DC (direct current)
Version C: Operating range 0-1800 mbar (or 1000 mbar from 1 1/2"), 230V 50Hz
Version D: Operating range 0-1800 mbar (or 1000 mbar from 1 1/2"), 24V DC (direct current)

Order No.				Connection
Version: A	Version: B	Version: C	Version: D	
9.50000	9.50005	9.51000	9.51005	G 1/2" female
9.50100	9.50105	9.51100	9.51105	G 3/4" female
9.50200	9.50205	9.51200	9.51205	G 1" IT
9.50300	9.50305	9.51300	9.51305	G 1 1/4" IT
9.50400	9.50405	9.51400	9.51405	G 1 1/2" IT
9.50500	9.50505	9.51500	9.51505	G 2" IT
9.50600	9.50605	9.51600	9.51605	G 3" IT

Solenoid valve, PN 25, Ex-protected, threaded connection

normally closed, with forced lifting, brass housing, operating pressure 0-25 bar, with ATEX approval, with APZ 3.1 according to EN 10204

Version A: Connection G-thread, 230V 50Hz
Version B: Connection G-thread, 230V 50Hz with electrical position indicator
Version C: Connection G-thread, 24V DC (direct current)
Version D: Connection G-thread, 24V DC (direct current) with electrical position indicator
Execution E: Connection NPT thread, 230V 50Hz
Execution F: Connection NPT thread, 230V 50Hz with electrical position indicator
Execution G: Connection NPT thread, 24V DC (direct current)
Execution H: Connection NPT thread, 24V DC (direct current) with electrical position indicator

Order No.								Connection	Length	Weight
Version: A	Version: B	Version:C	Version:D	Version:E	Version:F	Version:G	Version:H			
9.52000	9.52005	9.52010	9.52015	9.53000	9.53005	9.53010	9.53015	1/2" IG	67	1.4
9.52100	9.52105	9.52110	9.52115	9.53100	9.53105	9.53110	9.53115	3/4" IG	95	3.2
9.52200	9.52205	9.52210	9.52215	9.53200	9.53205	9.53210	9.53215	1" IT	95	3.5
9.52300	9.52305	9.52310	9.52315	9.53300	9.53305	9.53310	9.53315	1 1/4" IG	127	4.8
9.52400	9.52405	9.52410	9.52415	9.53400	9.53405	9.53410	9.53415	1 1/2 female	132	5.0
9.52500	9.52505	9.52510	9.52515	9.53500	9.53505	9.53510	9.53515	2" IT	160	6.5

Solenoid valve, PN 25, Ex-protected, flange connection according to DIN 2635,

normally closed, with forced lifting, housing cast steel GS-C25, non-ferrous metal free, operating pressure 0-25 bar, with ATEX approval, with APZ 3.1 according to EN 10204

Version A: 24V DC (direct current)
Version B: 24V DC (direct current) with electrical position indicator
Version C: 230V 50Hz
Version D: 230V 50Hz with electrical position indicator

Order No.				Connection
Version: A	Version: B	Version:C	Version:D	
9.54000	9.54005	9.55000	9.55005	DN 15
9.54100	9.54105	9.55100	9.55105	DN 20
9.54200	9.54205	9.55200	9.55205	DN 25
9.54300	9.54305	9.55300	9.55305	DN 32
9.54400	9.54405	9.55400	9.55405	DN 40
9.54500	9.54505	9.55500	9.55505	DN 50
9.54600	9.54605	9.55600	9.55605	DN 65
9.54700	9.54705	9.55700	9.55705	DN 80
9.54800	9.54805	9.55800	9.55805	DN 100

Shut-off, quick-acting and overflow valves

Overflow valve, PN 25, straight through, **make P&A**, **with APZ 3.1 to EN 10204** Particularly suitable for pressure boosting systems, as a constant differential pressure is always guaranteed. With spring loading, back pressure dependent, overflow pressure adjustable, flanges to DIN 2635,

Housing made of steel C22.8 or ST 52-3 or stainless steel, with double O-ring seal and gas-tight cap

Adjustment range using different springs: 1 - 6 bar or 2 - 16 bar

Version A: **Without bellows, steel housing,** Pressure-dependent, particularly suitable for pump systems, as a constant differential pressure is always ensured.

Version B: **With bellows, steel housing,** independent of back pressure = constant pressure

Version C: **Without bellows, stainless steel housing,** Pressure-dependent, particularly suitable for pump systems, as a constant differential pressure is always guaranteed.

Version D: **With bellows, stainless steel housing,** independent of back pressure = constant pressure

Order No. Version A	Order. No. Version B	Order. No. Version C	Order. No. Version D	Nominal width	Length
9.60000	**9.61000**	**9.62000**	**9.63000**	DN15	130
9.60100	**9.61100**	**9.62100**	**9.63100**	DN20	150
9.60200	**9.61200**	**9.62200**	**9.63200**	DN25	160
9.60300	**9.61300**	**9.62300**	**9.63300**	DN32	180
9.60400	**9.61400**	**9.62400**	**9.63400**	DN40	200
9.60500	**9.61500**	**9.62500**	**9.63500**	DN50	230
9.60600	**9.61600**	**9.62600**	**9.63600**	DN65	290
9.60700	**9.61700**	**9.62700**	**9.63700**	DN80	310
9.60800	**9.61800**	**9.62800**	**9.63800**	DN100	350

Attention: Please be sure to specify the desired setting range when ordering!

version A

Version B

Overflow valve, PN 25, with spring loading and NPT female thread, WZ 2.2 to EN 10204,

Through form

Order No.	Nominal size	Calibration range	Fisher	Weight	Figure
9.65000	3/4"	5 - 10.5 bar	N110-06-2	1.5	1
9.65100	1"	5 - 10.5 bar	N110-08-2	1.6	1

Corner shape

Order No.	Nominal size	Calibration range	Blackmer	Weight	Figure
9.66000	3/4"	5 - 7 bar	BV 3/4"	2.2	2
9.66100	1"	5 - 7 bar	BV 1"	2.3	2
9.66200	1 1/4"	5 - 8 bar	BV 1 1/4"	3.4	2
9.66300	1 1/4"	8 - 10.5 bar	BV 1 1/4"	3.4	2
9.66400	1 1/2"	5 - 8 bar	BV 1 1/2"	3.5	2
9.66500	1 1/2"	8 - 10.5 bar	BV 1 1/2"	3.5	2
9.66600	2"	6 - 8 bar	BV 2"	7.5	2

Figure 1

Figure 2

Overflow valve, PN 25, with spring loading, **self degassing**

Self-degassing at pump standstill by connecting the return line into the gas phase of the container.

Version A: Make P&A - with APZ 3.1 according to EN 10204, gas-tight cap

Version B: USA make - with WZ 2.2 according to EN 10204

Order No. Version A	Order. no Version B	Nominal width		Calibration range P&A	Calibration range Corken	PA	Corken
9.70000	**9.71000**	3/4"	NPT	3.0-13.0 bar	3.5-10.5 bar	PA-ÜSV-20	B166-3/4
9.70100	**9.71100**	1"	NPT	3.0-13.0 bar	3.5-10.5 bar	PA-ÜSV-25	B166-1
9.70200	**9.71200**	3/4"	NPT	5.0-15.0 bar	7.5-15.0 bar	PA-ÜSV-20	B166-3/4
9.70300	**9.71300**	1"	NPT	5.0-15.0 bar	7.5-15.0 bar	PA-ÜSV-25	B166-1

Version A

Version B

Dry evaporator, Type ET 8.TO, indirectly electrically heated, cylindrical Version,

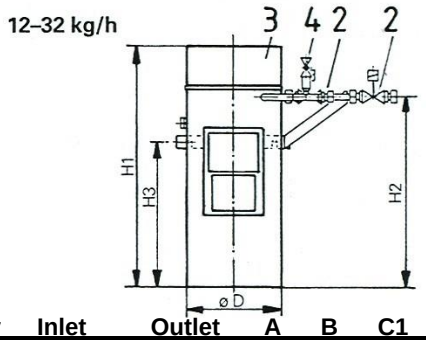
Evaporator Version according to 97/23 EC (DGRL), AD regulations, TRB 801 Annex 25 and DIN 30696,
Version according to 94/9/EC (ATEX-RL), use within protection zone 2 EC type examination certificate SNCH 03 ATEX 3474
Ex-Classification : Ex II 3G3 EEx nAR IIA T3

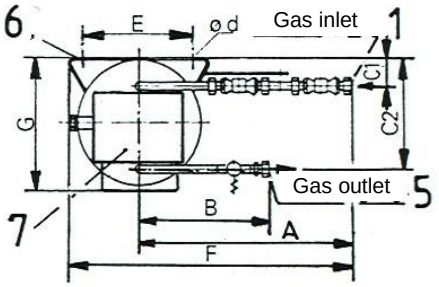
Evaporator housing in strong, double-walled sheet steel construction with intermediate insulation and wall bracket. The heat transfer medium is an aluminium core in which the heating coil and evaporator coil are cast without cavities.
The heating and monitoring of the heat transfer medium is thermostatically controlled within the specified limit values. After reaching the required evaporation temperature, the two solenoid valves in the inlet open, liquid gas enters the evaporator and is converted into the gaseous phase there without pressure change up to the specified nominal capacity. The modern design immediately detects fluctuations in the gas flow rate and quickly adjusts the required heating Outlet according to the changed working parameters.
In case of overload and power failure, the solenoid valves close. An additional safety limiter monitors and prevents an impermissibly high increase in the gas outlet temperature. The Version and construction guarantee safe and fully automatic evaporator operation.

Scope of delivery:

a) **Evaporator housing** in sheet steel construction with internal aluminium core, Intermediate insulation, cover and wall bracket
b) **Heating and evaporator co ils**, cavity-free cast, pressure part made of seamless precision steel tube
c) **Heating temperature control** within the limits specified in accordance with DIN 30696 fully automatic thermostat-controlled
d) **Safety valve** in the gas phase
e) **Flood protection/undertemperature protection** consisting of two (redundant) thermostatically controlled solenoid valves in the liquid gas inlet
f) **Overheating protection** with safety cut-out
g) **Electrical equipment** according to VDE 0165 for Ex zone II, protection class IP 54, power connection 230 V, 50 Hz (from 32 kg evaporator capacity 400 V, 50 Hz), wired ready for connection

1 = Gas inlet
2 = Solenoid valve
3 = Hood
4 = Safety valve
5 = Gas outlet
6 = Wall bracket
7 = Electrical box



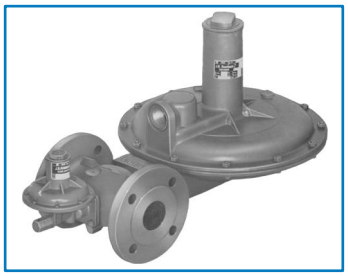


Order No.	capacity	Inlet	Outlet	A	B	C1	ØD	E	F	G	H1	H2	Connection	Weight
	kg/h	DN	DN	mm	mm	mm	mm	mm	mm	mm	mm	mm	value	kg
10.00000	12	15	15	392	237	50	223	200	527	237	487	370	2 KW (230V)	27
10.00100	24	15	15	392	237	50	223	200	527	237	559	442	4 kW (230V)	34
10.00200	32	15	15	392	237	50	223	200	527	237	559	442	6 kW (400V)	34
10.00300	60	15	22	457	297	160	303	230	770	322	688	553	1 2 kW (400V)	76
10.00400	100	15	22	457	297	160	303	230	770	322	912	777	1 8 kW (400V)	105

Accessories/spare parts:

Order no: 10.00500 Liquid gas trap at the outlet as redundant, diversitary safety device for flood protection
Order no: 10.00600 Heating thermostat 75° C (red)
Order no: 10.00700 Limiter thermostat 95° C (black)
Order no: 10.00800 Solenoid valve thermostat 50° C (grey)
Order no: 10.00900 Solenoid valve 230 V
Order no: 10.01000 Evaporator contactor

PA evaporator system completely mounted in the protective cabinet
Capacity: 20 kg/h to 800 kg/h



e.g. also available as 2.1 to evaporator KOMPAKT system with protective cabinet

Evaporator unit completely mounted in the cabinet, e.g. type PA/P-150, capacity 150 kg/h, outlet EO 22 Version B= with medium and low pressure regulator, suitable for installation in Ex zone 2, Ex components with ATEX approval, electrical equipment according to VDE, protection class IP 54, electrical connection 400V, 50 Hz approx. 26.000 W

Version A: Evaporator with medium pressure regulator (other capacities on request):

Item no. 1013000	Type PA/P-20	20 kg/h	3,700 W	230V
Item no. 1013020	Type PA/P-30	30 kg/h	4,500 W	230V
Item no. 1013100	Type PA/P-40	40 kg/h	7,000 W	400V
Item no. 1013200	Type PA/P-80	80 kg/h	13,000 W	400V
Item no. 1013300	Type PA/P-120	120 kg/h	20,000 W	400V
Item no. 1013400	Type PA/P-150	150 kg/h	26,000 W	400V
Item no. 1013500	Type PA/P-160	160 kg/h	26,000 W	400V
Item no. 1013700	Type PA/P-320	320 kg/h	52,000 W	400V

Version B: Evaporator with medium and low pressure regulator:

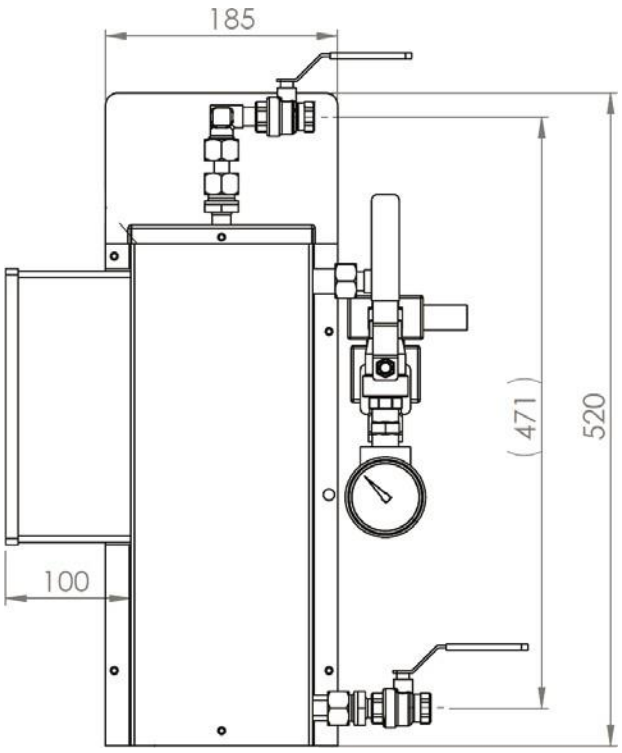
Item no. 1014050	Type PA/P-20	20 kg/h	3,700 W 230V
Item no. 1014070	Type PA/P-30	30 kg/h	4,500 W 230V
Item no. 1014150	Type PA/P-40	40 kg/h	7,000 W 400V
Item no. 1014250	Type PA/P-80	80 kg/h	13,000 W 400V
Item no. 1014350	Type PA/P-120	120 kg/h	20,000 W 400V
Item no. 1014450	Type PA/P-150	150 kg/h	26,000 W 400V
Item no. 1014550	Type PA/P-160	160 kg/h	26,000 W 400V
Item no. 1014750	Type PA/P-320	320 kg/h	52,000 W 400V

PA Propane & Ammonia Plants GmbH

Erzwäsche 50-51
38229 Salzgitter OT Gebhardshagen
Phone (05341) 8 76 88-0
Fax (05341) 8 76 88-191
eMail info@pa-salzgitter.de
www.pa-salzgitter.de

Dry evaporator PA

Capacity 20 kg/h Part no: 1002000 - Type PA/P20



As special features of the P&A evaporator system in comparison
Unlike the other models on the market, a separator with a float shut-off is installed in the evaporator. This ensures the redundant and diverse security requirement. The great advantage of this Version is that reduced olefin separation is to be expected, since the separator is located in the evaporator housing and the gas therefore always has a relatively high temperature. Nevertheless, it is possible to drain any residues from the evaporator. Therefore, a service-friendly expansion connection was provided in the evaporator system.

Scope of delivery:

- Dry evaporator type PA/P-20, PN 25
- Solenoid valve in the inlet
- Olefin separator and mechanical liquid gas trap in the evaporator outlet
- Ball valve and dirt trap in the inlet
- Safety valve, 25 bar, with TÜV approval
- Ball valve in the gas outlet
- with CE marking and the required approvals

SPECIFICATIONS:

- Suitable for installation in Ex zone 2
- Ex components with ATEX approval
- Electrical equipment according to VDE
- Protection class IP 54
- Electrical connection 230 V AC
- approx. 3700 W Inlet capacity
- Temperature of the environment, -20°C to +40°C
- Gas outlet temperature +50°C to +75°C
- Nominal pressure rating PN25

Options:

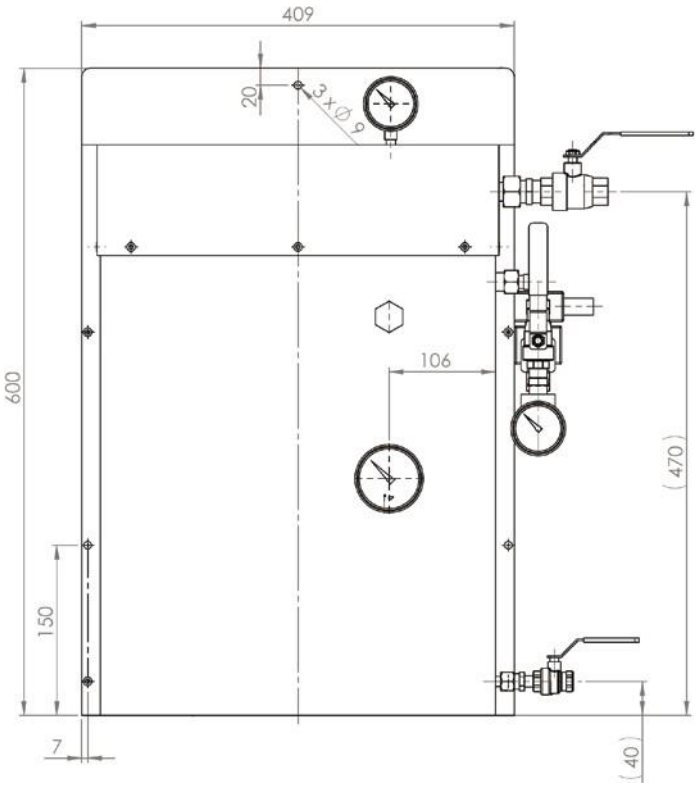
- Liquiphant Namur Article no: 1412005
- Liquiphant 2-wire Article no.: 1412002
- Gas phase regulator

Evaporation capacities:

Medium	kg/h
Propane	20.0
Butane	22.6
Propylene	20.0
Butylene	22.6
Ammonia	6.0
Diethyl ether (DME)	18.0
Diethylethylamine (DMEA)	22.6
Diethylisopropylamine (DMPIA)	25.0
Triethylamine (TEA)	26.7
Trimethylamin	22,6
Methylamin	10,0
Ethylamin	14,0
Dimethylamin	14,7

Dry evaporator PA

Capacity 40 kg/h Part no: 1002010 - Type PA/P40



As special features of the P&A evaporator system in comparison
Unlike the other models on the market, a separator with a float shut-off is installed in the evaporator. This ensures the redundant and diverse security requirement. The great advantage of this Version is that reduced olefin separation is to be expected, since the separator is located in the evaporator housing and the gas therefore always has a relatively high temperature. Nevertheless, it is possible to drain any residues from the evaporator. Therefore, a service-friendly expansion connection was provided in the evaporator system.

Scope of delivery:

- Dry evaporator type PA/P-40, PN 25
- Solenoid valve in the inlet
- Olefin separator and mechanical liquid gas trap in the evaporator outlet
- Ball valve and dirt trap in the inlet
- Safety valve, 25 bar, with TÜV approval
- Ball valve in the gas outlet
- with CE marking and the required approvals

SPECIFICATIONS:

- Suitable for installation in Ex zone 2
- Ex components with ATEX approval
- Electrical equipment according to VDE
- Protection class IP 54
- Electrical connection 400 V AC
- approx. 6000 W Inlet capacity
- Temperature of the environment, -20°C to +40°C
- Gas outlet temperature +50°C to +75°C
- Nominal pressure rating PN25

Options:

- Liquiphant Namur Article no: 1412005
- Liquiphant 2-wire Article no.: 1412002
- Gas phase regulator

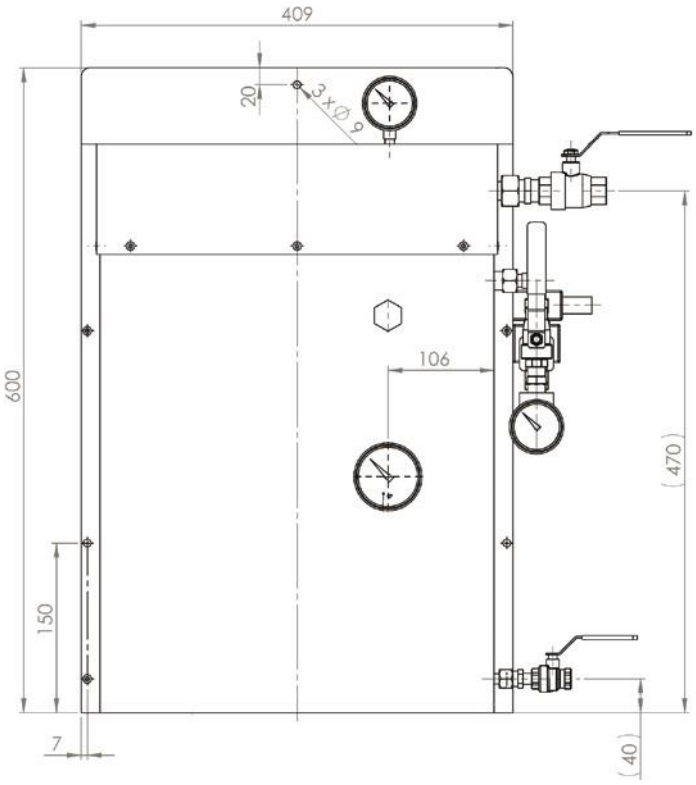
Evaporation capacities:

Medium	kg/h
Propane	40.0
Butane	45.2
Propylene	40.0
Butylene	45.2
Ammonia	12.0
Diethyl ether (DME)	36.0
Diethylethylamine (DMEA)	45.2
Diethylisopropylamine (DMPIA)	48.0
Triethylamine (TEA)	51.0
Trimethylamin	45,2
Methylamin	20,0
Ethylamin	28,0
Dimethylamin	29,2

PROPAN UND AMMONIAK ANLAGEN SALZGITTER

Dry evaporator PA

Capacity 80 kg/h Part no: 1002020 - Type PA/P80



As special features of the P&A evaporator system in comparison
Unlike the other models on the market, a separator with a float shut-off is installed in the evaporator. This ensures the redundant and diverse security requirement. The great advantage of this Version is that reduced olefin separation is to be expected, since the separator is located in the evaporator housing and the gas therefore always has a relatively high temperature. Nevertheless, it is possible to drain any residues from the evaporator. Therefore, a service-friendly expansion connection was provided in the evaporator system.

Scope of delivery:

- Dry evaporator type PA/P-40, PN 25
- Solenoid valve in the inlet
- Olefin separator and mechanical liquid gas trap in the evaporator outlet
- Ball valve and dirt trap in the inlet
- Safety valve, 25 bar, with TÜV approval
- Ball valve in the gas outlet
- with CE marking and the required approvals

SPECIFICATIONS:

- Suitable for installation in Ex zone 2
- Ex components with ATEX approval
- Electrical equipment according to VDE
- Protection class IP 54
- Electrical connection 400 V AC
- approx. 12000 W Inlet capacity
- Temperature of the environment, -20°C to +40°C
- Gas outlet temperature +50°C to +75°C
- Nominal pressure rating PN25

Options:

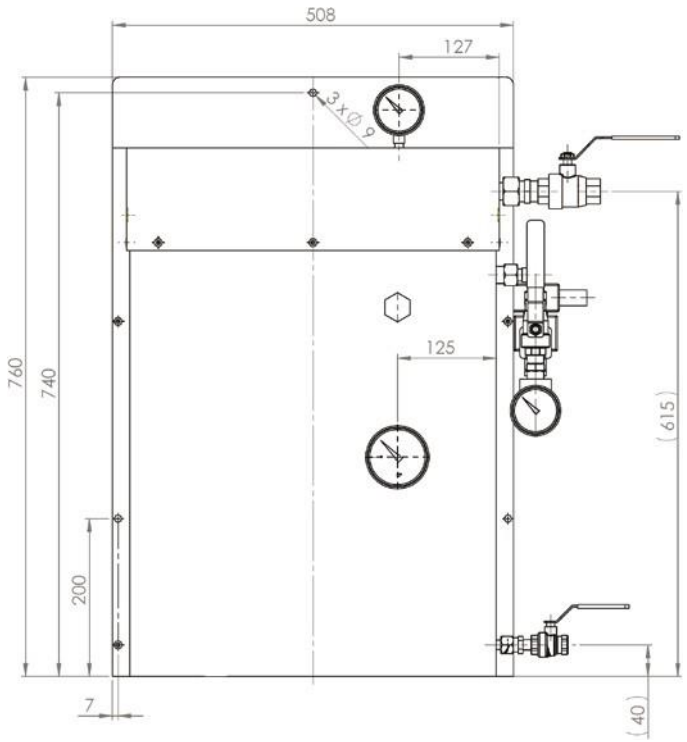
- Liquiphant Namur Article no: 1412005
- Liquiphant 2-wire Article no.: 1412002
- Gas phase regulator

Evaporation capacities:

Medium	kg/h
Propane	80.0
Butane	86.2
Propylene	80.0
Butylene	85.2
Ammonia	24.0
Diethyl ether (DME)	70.0
Diethylethylamine (DMEA)	82.2
Diethylisopropylamine (DMPIA)	96.0
Triethylamine (TEA)	102.0
Trimethylamin	82,2
Methylamin	39,0
Ethylamin	55,0
Dimethylamin	56,2

Dry evaporator PA

Capacity 120 kg/h Part no: 1002030 - Type PA/P120



As special features of the P&A evaporator system in comparison
Unlike the other models on the market, a separator with a float shut-off is installed in the evaporator. This ensures the redundant and diverse security requirement. The great advantage of this Version is that reduced olefin separation is to be expected, since the separator is located in the evaporator housing and the gas therefore always has a relatively high temperature. Nevertheless, it is possible to drain any residues from the evaporator. Therefore, a service-friendly expansion connection was provided in the evaporator system.

Scope of delivery:
- Dry evaporator type PA/P-120, PN 25
- Solenoid valve in the inlet
- Olefin separator and mechanical liquid gas trap in the evaporator outlet
- Ball valve and dirt trap in the inlet
- Safety valve, 25 bar, with TÜV approval
- Ball valve in the gas outlet
- with CE marking and the required approvals

SPECIFICATIONS:
- Suitable for installation in Ex zone 2
- Ex components with ATEX approval
- Electrical equipment according to VDE
- Protection class IP 54
- Electrical connection 400 V AC
- approx. 18000 W Inlet capacity
- Temperature of the environment, -20°C to +40°C
- Gas outlet temperature +50°C to +75°C
- Nominal pressure rating PN25
- Gas outlet temperature +50°C to +75°C
- Nominal pressure rating PN25

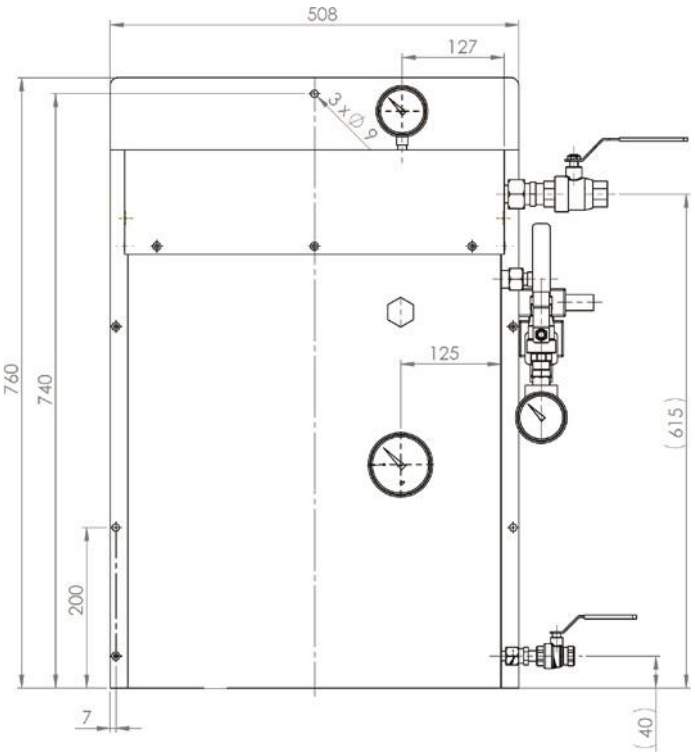
Options:
- Liquiphant Namur Article no: 1412005
- Liquiphant 2-wire Article no.: 1412002
- Gas phase regulator

Evaporation capacities:

Medium	kg/h
Propane	120.0
Butane	130.2
Propylene	120.0
Butylene	130.2
Ammonia	37.0
Diethyl ether (DME)	108.0
Diethylethylamine (DMEA)	130.2
Diethylisopropylamine (DMPIA)	148.0
Triethylamine (TEA)	157.0
Trimethylamin	130,2
Methylamin	60,0
Ethylamin	85,0
Dimethylamin	87,2

Dry evaporator PA

Capacity 160 kg/h Article no: 1002040 - Type PA/P160



As special features of the P&A evaporator system in comparison
Unlike the other models on the market, a separator with a float shut-off is installed in the evaporator. This ensures the redundant and diverse security requirement. The great advantage of this Version is that reduced olefin separation is to be expected, since the separator is located in the evaporator housing and the gas therefore always has a relatively high temperature. Nevertheless, it is possible to drain any residues from the evaporator. Therefore, a service-friendly expansion connection was provided in the evaporator system.

Scope of delivery:

- Dry evaporator type PA/P-160, PN 25
- Solenoid valve in the inlet
- Olefin separator and mechanical liquid gas trap in the evaporator outlet
- Ball valve and dirt trap in the inlet
- Safety valve, 25 bar, with TÜV approval
- Ball valve in the gas outlet
- with CE marking and the required approvals

SPECIFICATIONS:

- Suitable for installation in Ex zone 2
- Ex components with ATEX approval
- Electrical equipment according to VDE
- Protection class IP 54
- Electrical connection 400 V AC
- approx. 26000 W Inlet capacity
- Temperature of the environment, -20°C to +40°C
- Gas outlet temperature +50°C to +75°C
- Nominal pressure rating PN25

Options:

- Liquiphant Namur Article no: 1412005
- Liquiphant 2-wire Article no.: 1412002
- Gas phase regulator

Evaporation capacities:

Medium	kg/h
Propane	160.0
Butane	173.2
Propylene	160.0
Butylene	173.2
Ammonia	49.0
Diethyl ether (DME)	140.0
Diethylethylamine (DMEA)	172.2
Diethylisopropylamine (DMPIA)	192.0
Triethylamine (TEA)	204.0
Trimethylamin	173,2
Methylamin	78,0
Ethylamin	110,0
Dimethylamin	113,2

Evaporator, Type ES, indirectly electrically heated, PN 25, cabinet Version,

Evaporator Version according to 97/23 EC (PED), AD regulations, TRB 801 Annex 25 and DIN 30696,
Version according to 94/9/EC (ATEX Directive), in explosion-proof Version for zone 1,
G-type examination certificate PTB 03 ATEX 1184, Ex-classification : Ex II 2G EEx nAR IIA T3

The Torpedo liquid gas evaporator type ES is indirectly electrically heated and operates with a liquid heat transfer medium consisting of a glysantine/water mixture 40% / 60%. The evaporator coil and the heating rod connection box are located on the front side of the evaporator is flange mounted. The evaporator is put into operation electrically via the control cabinet. The heating and monitoring of the heat transfer medium is thermostatically controlled within the limits specified by DIN-DVGW. After reaching the required evaporation temperature, the solenoid valves open. Liquefied gas enters the evaporator, where it is converted without pressure changes. converted into the gas phase up to the specified nominal capacity. In case of overload and power failure, the solenoid valves close.
An additional safety limiter monitors and prevents an impermissibly high increase in the gas outlet temperature.
The Version and construction of the evaporator guarantee safe and fully automatic evaporator operation.

Scope of delivery:

a) **Evaporator housing** in sheet steel construction prepared for floor mounting,
b) **Heating** coil consisting of plenum box with round tube radiator
c) **Evaporator coil,** pressure part made of precision steel tube with pressure test 32.5 bar
d) **Heating temperature control** within the specified limit values fully automatic thermostat controlled
e) **Safety valve** in the gas phase
f) **Flood protection/undertemperature protection** consisting of two (redundant) thermostatically controlled solenoid valves in the liquid phase with redundant flood protection
g) **Overheating protection** with safety cut-out and restart lockout
h) **Electrical equipment** according to VDE 0171/DIN EN 50014, protection class IP 54, power connection 400 V, 50 Hz, with separate control cabinet, wired ready for connection

The torpedo evaporator is available in the following versions:

The evaporator is Ex-protected for installation within the protected area.
The control cabinet is not Ex-protected and must be installed outside the evaporator room or the protected area.

Order no.	Perform.	Inlet	Outlet	Length	Height	Width	Connection (kW)		Capacity	Weight (kg)
	kg/h	DN	DN	mm	mm	mm	Total	1st/2nd stage	ltr.	Normal
10.03000	60	15	15	855	1185	385	12	12/---	55	100
10.03100	100	15	20	945	1280	435	18	6/12	92	150
10.03200	200	15	32	1060	1295	530	36	12/24	154	240
10.03300	300	20	40	1060	1660	530	54	18/36	205	310
10.03400	400	25	40	1060	1660	530	72	24/48	318	320
10.03500	500	25	50	1410	1885	530	90	30/60	348	430
10.03600	600	32	50	1410	1885	530	90	30/60	540	470
10.03700	700	32	65	1410	2030	530	112.5	75/38	650	540
10.03800	800	32	65	1410	2030	530	112.5	75/38	650	550

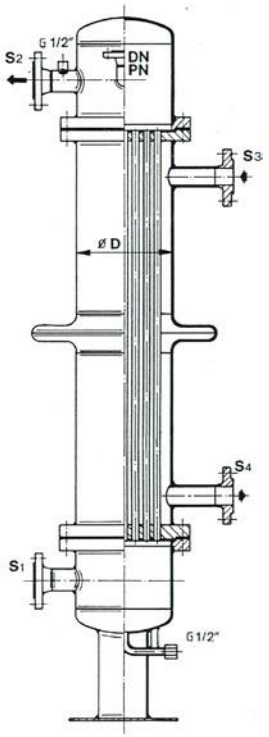
Additional prices:
Order no.10.05000 Liquid gas trap in the evaporator outlet as redundant, diverse safety device for flood protection

Shell and tube evaporator, PN 25, indirectly hot water heated, type PA-RV,

Evaporator Version according to 97/23 EC (DGRL), AD regulations, TRB 801 Annex 25 and DIN 30696,
Suitable for installation in Ex zone 1, Ex components with **PTB/ATEX approval**, Electrical equipment according to VDE, Protection class IP 54, Electrical connection 230 V, 50 Hz, Hot water 90/70 C (flow/return)

Scope of delivery:

- Shell and tube evaporator
- Redundant explosion-proof solenoid valves in the inlet
- Double thermostat for monitoring the gas temperature
- Thermometer for gas temperature
- Thermometer for in-water inlet and outlet
- Ball valves for draining and venting
- Flood protection via a level sensor
- Safety valve
- Electrical control cabinet for installation outside the hazardous area, type P&A



Order No.	capacity	Inlet	Outlet	Inlet	Outlet	Height	Weight
	kg/h	GAS S3	GAS S4	WW S1	WW S2	mm	kg
10.08000	200	20	40	25	25	1980	125
10.08100	300	25	50	32	32	2500	140
10.08200	400	32	65	40	40	2000	200
10.08300	500	32	65	50	50	2500	230
10.08400	800	40	65	50	50	2000	270
10.08500	1000	40	65	50	50	2100	310
10.08600	1500	50	80	50	50	2600	380
10.08700	2000	50	80	50	50	2650	400
10.08800	2500	50	80	50	50	3100	450
10.08900	3000	65	80	65	65	3250	650

HW-heated evaporator and heating system

Completely mounted in two steel containers

consisting of:

- Shell and tube evaporator (see above for technical description)
- Ball valves in the inlet and outlet of the evaporator
- Dirt traps
- Medium pressure controlled system with SAV in the evaporator outlet
- Pressure gauge and pressure gauge shut-off valve
- Oil separator with gas deflection
- Heating system with circulation pump, expansion vessel and fittings
- 2 pieces of container to accommodate the evaporator and heating system
- Exhaust gas chimney for the boiler
- Lighting for the evaporator and heating container
- Connecting line between the two containers
- Complete assembly and piping of the two units
- Separate MSR control cabinet for the control of the system
- MOT acceptance of the evaporator system

Order No.	Performance	Order. No.	Performance
	kg/h		kg/h
10.10000	200	**10.10500**	1000
10.10100	300	**10.10600**	1500
10.10200	400	**10.10700**	2000
10.10300	500	**10.10800**	2500
10.10400	800	**10.10900**	3000

10.11500 Additional price for redundant medium pressure control system
10.11600 Surcharge for a low-pressure regulator with the associated fittings

On request, we also rent out HW-heated evaporator systems or deliver and build them according to your specifications.

Evaporator system completely mounted in the cabinet, P&A make,

Suitable for installation in Ex zone 2, Ex components with **PTB/ATEX approval**, Electrical equipment according to VDE, Protection class IP 54, Electrical connection 230 V, 50 Hz (up to 24 kg/h), 400 V, 50 Hz (from 32 kg/h)

Scope of delivery:

- Dry evaporator type ET 8.TO, PN 25, Evaporator Version according to 97/23 EC (DGRL), AD regulations, TRB 801 Annex 25 and DIN 30696
- Redundant solenoid valves in the inlet
- Ball valve and dirt trap in the inlet, with APZ 3.1 according to EN 10204
- Safety valves 1/4" NPT, 25 bar, with component testing and TÜV approval
- Oil separator in the evaporator outlet, make P&A, with APZ 3.1 according to EN 10204
- Medium pressure regulator with SAV and SBV, with DIN-DVGW approval, PN 25
- Ball valves and pressure gauge in the gas outlet
- Sturdy protective cabinet, lockable, primed and painted
- Small parts, piping, brackets etc.

Version A: Outlet pressure 0.8 or 1.5 bar
Version B: additionally with an LP controller with SAV/SBV - Outlet pressure 50 mbar

Order No. Outlet A	Order. No. Version B	capacity kg/h	Inlet DN	Outlet DN
10.12000	**10.14000**	12	12	18
10.12100	**10.14100**	24	15	18
10.12200	**10.14200**	32	15	18
10.12300	**10.14300**	60	18	22
10.12400	**10.14400**	100	18	22

Additional equipment:

10.15000	TÜV acceptance with construction, pressure and leak test
10.15100	Insulation piece with isolating spark gap **according to ATEX** in the inlet
10.15200	Insulating piece with isolating spark gap **according to ATEX** in the outlet
10.15300	additional switching and operation via the gas phase of the vessel including vessel medium pressure regulator
10.15400	Base frame for the evaporator

KOMPAKT evaporator unit with tank and protective cabinet, Make P&A,

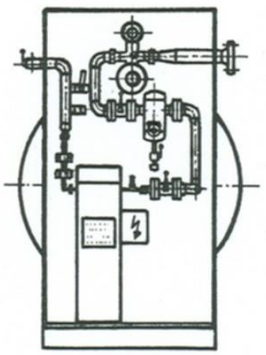
Version of the system in accordance with 97/23 EC (DGRL), AD regulations, TRB 801 Annex 25 and DIN 30696, suitable for installation in Ex zone 2.

Scope of delivery:

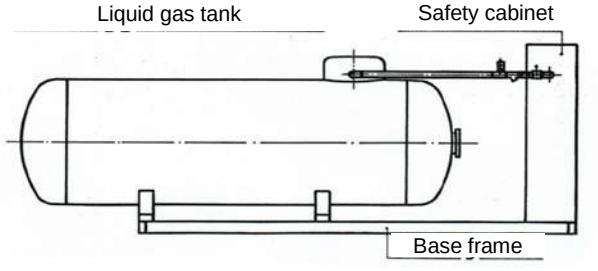
- Above-ground **2.1 t liquid gas container** with base frame
- Dry evaporator type ET 8.TO, PN 25, Evaporator Version according to 97/23 EC (DGRL),
- Redundant solenoid valves in the inlet
- Ball valve and dirt trap in the inlet, with APZ 3.1 according to EN 10204
- Safety valves 1/4" NPT, 25 bar, with component testing and TÜV approval
- Oil separator in the evaporator outlet, with APZ 3.1 according to EN 10204
- Medium pressure regulator with SAV and SBV, with DIN-DVGW approval, PN 25
- Ball valves and pressure gauge in the gas outlet
- Sturdy protective cabinet, lockable, primed and painted
- Complete piping of the system incl. small parts and brackets etc.
- TÜV acceptance of the complete KOMPAKT evaporator system in the manufacturer's factory

Version A: Outlet pressure 0.8 or 1.5 bar
Version B: additional: LP regulator (Pa = 50 mbar) with SAV/SBV

Door open



Order No. Outf. A	Order. No. Version B	capacity kg/h	Outlet DN
10.16000	**10.17000**	12	18
10.16100	**10.17100**	24	18
10.16200	**10.17200**	32	18
10.16300	**10.17300**	60	22
10.16400	**10.17400**	100	22
10.18000	**Additional price for a 2.9 t container**		



SIHI side channel pump for propellant gas, LPG and pressure boosting systems

Version according to ATEX, TRG and with CE marking

In order to meet the increased performance and quality requirements for Propellant gas and LPG systems, P&A-Salzgitter is increasingly pushing the use of a robust and powerful SIHI side channel pump in the LPG sector (very good service life).

APPLICATION:

The SIHI side channel pump type PA-SC 2003/5 is self-priming, gas-entraining and low noise. The NPSH pre-stage is particularly noteworthy, allowing propane/butane to be pumped with ease even under unfavourable suction-side delivery conditions. The SIHI side channel pump ensures perfect operation even at low inlet heights (unlike the makes Viking, Blackmer, Disco etc.).

MODEL:

The SIHI side channel pump type PA-SC 2003/5 is a horizontal, self-priming, gas-entraining pump in ring-section Version with open impellers and an upstream centrifugal stage to achieve a favourable net positive suction head (NPSH). This is a high-speed pump (max. speed
3000 rpm) were designed with special emphasis on low noise. Very good pressure-dependent control is possible due to the steep characteristic curve.

SPECIFICATIONS:

■ **Housing pressure:**	PN 25
■ **Temperature range:**	-25° C to +60° C
■ **Shaft seal:**	simple, highly effective, dynamically balanced mechanical seal
■ **Housing material:**	GGG 40.3 (with hydrostatic pressure test of 33 bar)
■ **Conveying medium:**	Propane/butane and their blends
■ **Socket position:**	Suction connection horizontal, discharge connection radially upwards (standard) Height UK base plate to OK flange = approx. 240 mm
■ **Direction of rotation:**	right (as seen from the drive towards the pump)

Performance data:

■ **Motor:**	2.5 KW ex-motor with ATEX approval
■ **Voltage**	230/400 V, 50 Hz
■ **Max. Pressure increase:**	11-12 bar at a capacity of Q = approx. 15-20 l/min Pressure increase approx. 7 bar at a capacity of approx. 40 l/min Pressure increase approx. 5 bar at a capacity of approx. 50 l/min

Order no. **11.00000 ---** SIHI side channel pump type PA-SC 2003/5 (without motor etc.)
Order no. **11.00100 ---** SIHI pump unit with base plate, coupling, coupling guard and 2.5 KW ex-motor
Order no. **11.00500 ---** SIHI side channel pump, 4-stage, type PA-SC 2004/5 (without motor etc.)
Order no. **11.00600 ---** SIHI pump unit with base plate, coupling, coupling guard and 3.3 KW ex-motor

SIHI side channel submersible pump for propellant gas, LPG and pressure boosting systems

Version according to ATEX, TRG and with CE marking

APPLICATION:

The SIHI side channel submersible pump type CEBA 2003/1 is used for pumping propane/butane from underground LPG tanks. The pump is mounted above the tank on a flange (DN 125); the lower pump part (suction) is in the liquid. The engine is outside the tank. The pump is characterised by a special suction stage with an extremely favourable NPSH value. This results in problem-free delivery of the liquid gas even at low tank level.

MODEL:

It is a vertical side-channel submersible pump with upstream NPSH pre-stage and a shaft extension - the construction length can be adapted to the tank diameters (installation length between 1.3 and 3.0 m)

SPECIFICATIONS:

- **Housing pressure:** PN 40
- **Temperature range:** -40° C to +60° C
- **Shaft seal:** Hermetically sealed magnetic coupling
- **Housing material:** GGG 40.3
- **Conveying medium:** Propane/butane and their blends

PERFORMANCE DATA:

- **Motor:** 3.3 KW ex-motor with ATEX approval
- **Voltage** 400 V, 50 Hz
- **Max. Pressure increase:** 8.3 bar at a capacity of Q = approx. 50 l/min

Order no. 11.01000 ----- SIHI submersible pump type CEBA 2003/1 - for tank diameters up to 1.25 m
Order no. 11.01001 ----- SIHI submersible pump type CEBA 2003/1 - for tank diameters up to 2.00 m
Order no. 11.01002 ----- SIHI submersible pump type CEBA 2003/1 - for tank diameters up to 2.50 m
Order no. 11.01003 ----- SIHI submersible pump type CEBA 2003/1 - for tank diameters larger than 2.5 m

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Veeder-Root - Submersible Pump Red Jacket LPG Premier

for propellant gas, LPG and pressure boosting systems, Version according to ATEX

APPLICATION:

The Red Jacket LPG Premier submersible pump is used for pumping propane/butane from underground LPG tanks. The pump part and the submersible motor are completely mounted in the tank. The pump is attached (2" NPT thread) and the pressure line and electrical supply are connected via a "mounting unit" (Fig. 3), which is mounted on the tank with a DN 125 flange.
If the submersible pump is to be changed when the tank is full, a pump sluice (Fig. 2) must be used.

MODEL:

It is a multi-stage vertical submersible pump - the immersion depth can be adjusted to suit the tank dimensions.
The pump is a centrifugal pump with a split pump and motor Version. An optimised suction/inlet system for the liquid gas to be pumped and a cooling and lubrication system for the bearings and motor ensure high flow rates and smooth running of the pump.

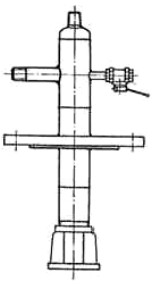


Figure 3

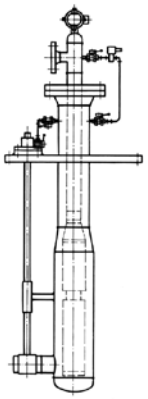


Fig. 2

Fig. 1

SPECIFICATIONS:

- **Housing pressure:** PN 25
- **Temperature range:** -40° C to +40° C
- **Conveying medium:** Propane/butane and their blends

PERFORMANCE DATA:

- **Motor:** 2.25 / 3.75 KW ex-motor with ATEX approval
- **Voltage** 400 V, 50 Hz
- **Max. Pressure increase:** approx. 8 bar at a capacity of Q = approx. 50 l/min

Order no. 11.01500 -------- Red Jacket submersible pump LPG300V17-21 Premier with 2.25 kW ex-motor (Figure 1)
Order no. 11.01600 -------- Red Jacket submersible pump LPG500V17-24 Premier HiFlow with 3.75 kW ex-motor
Order no. 11.01700 -------- Mounting unit for Red Jacket submersible pump for LPG 300 (without fittings)
Order no. 11.01800 -------- Mounting unit for Red Jacket submersible pump for LPG 500 (without fittings)

Gates for Red Jacket submersible pumps (with or without fittings) on request

Liquid gas pump PN 25, make Viking, with WZ 2.2 according to EN 10204,

max. differential pressure 7 bar, max. working pressure 17 bar, housing made of GG-25, with ATEX approval

The Viking pumps are gear pumps that are equipped with mechanical shaft seal (integrated bypass valve - see under additional prices)
They are particularly suitable for propellant filling and low outlet pressure boosting systems.
Standard direction of rotation --- Clockwise (viewed from shaft end) **Attention**: Please note that this pump type (single mechanical seal) no longer meets the requirements of TRB 801 or UVV (VBG 61).

Version A: Viking pump without accessories, without overflow valve
Version B: Viking pump unit complete with an ex-motor, clutch and clutch guard mounted on a base plate, primed and painted, motor 1500 rpm. 230/400 V, 50 Hz

Order No. Version: A	Order No. Version: B	Type	Power	Connection	Bypass Connection	Motor	Weight A	Weight B
			without integrated bypass valve					
11.02100	**11.03100**	HJ-4195 G	50 l/min	1 1/2" NPT	3/4" NPT	1,35 KW	19.0	45.0
11.02200	**11.03200**	HL-4195 G	75 l/min	1 1/2" NPT	3/4" NPT	2,00 KW	19.0	45.0
			with integrated bypass valve					
11.02101	**11.03101**	HJ-4195 G	50 l/min	1 1/2" NPT	3/4" NPT	1,35 KW	19.0	45.0
11.02201	**11.03201**	HL-4195 G	75 l/min	1 1/2" NPT	3/4" NPT	2,00 KW	19.0	45.0

The indicated pump capacities refer to a differential pressure of 5 bar!
If a Viking pump breaks down, we can repair it quickly and at low cost!

Liquid gas pump PN 25, make Blackmer, with WZ 2.2 according to EN 10204

Due to its robust Version, the Blackmer pump can be used in almost all areas of liquid gas transfer, e.g. LPG filling stations, stationary installations, road tankers, etc. With single mechanical seal, housing made of ASTM A536

Standard direction of rotation: "CLOCKWISE" (viewed from the shaft end)
Attention: Please note that for this pump type (single mechanical seal) an increased inspection effort is required according to TRB 801 or UVV (VBG 61).

Version A: Blackmer pump without accessories
Version B: Blackmer pump unit complete with a ex-motor, coupling and coupling guard mounted on a base plate, primed and painted, 230/400 V, 50 Hz

Order No. Version: A	Order. No. Version: B	Type	Power	max. diff. pressure	Connection	Motor	Speed	Weight A/B
11.05000	**11.06000**	LGB 1	20 l/min	8.6 bar	1" NPT	1,00 KW	1500 rpm	9.0 / 31.0
11.05100	**11.06100**	LGB 1P	35 l/min	8.6 bar	1" NPT	1,00 kW	1500 rpm	9.0 / 31.0
11.05200	**11.06200**	LGL 1,25	50 l/min	10.5 bar	1 1/4" NPT	1,35 kW	1500 rpm	14.0 / 44.0
11.05300	**11.06300**	LGL 1,5	90 l/min	10.5 bar	1 1/2" NPT	2,00 kW	1500 rpm	14.0 / 50.0
11.05400	**11.06400**	LGL D2	220 l/min	10.5 bar	2" NPT	5,00 kW	650 rpm	40.0 / 158.0
11.05500	**11.06500**	LGL D3	490 l/min	10.5 bar	3" NPT	10,00 kW	650 rpm	75.0 / 225.0
11.05600	**11.06600**	LGL D4	950 l/min	10.5 bar	4" NPT	15,00 kW	650 rpm	90.0 / 410.0
11.07000	Surcharge for conversion from clockwise to anticlockwise rotation							

The indicated pump capacities refer to a differential pressure of 5 bar.
The Blackmer pumps are equipped with a built-in overflow valve. This overflow valve may only be used as a return for short-term operation. For continuous operation, an additional overflow valve is required in the pressure line!
Attention: We supply the complete Blackmer spare parts programme at favourable prices!

Liquid gas pump PN 25, make Blackmer, with WZ 2.2 according to EN 10204,

max. differential pressure 13.8 bar, max. working pressure 29.3 bar, mono. Mechanical seal, Housing made of ASTM A536 (ductile iron)
The Blackmer pumps are equipped with a built-in overflow valve. This overflow valve may only be used as a return for short-term operation. For continuous operation, an additional overflow valve is required in the pressure line!
Despite small dimensions, high flow rates and high differential pressures are achieved.

Order no	Type	Power	max. diff. pressure	Connection	Motor	Speed
11.08000	**LGL 158**	90 l/min	13.8 bar	DN 50 / 40	-	-
11.08100	**LGL 158**	90 l/min	13.8 bar	DN 50 / 40	3,2 kW	1450 rpm

The indicated pump capacity refers to a differential pressure of 10 bar.

Liquid gas pump PN 25, make Corken, with WZ 2.2 according to EN 10204,

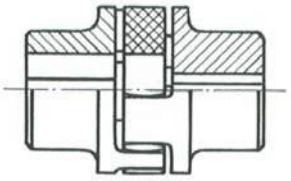
max. differential pressure 12 bar, max. working pressure 27.6 bar, single mechanical seal, housing made of ASTM A536 (ductile iron)
The Corken pump is a single-stage turbine pump that achieves high flow rates and high differential pressures despite its small dimensions. This makes the unit well suited for use in car gas tank systems with several dispensers.

Order. No.	Type	Power	max. diff. pressure	Connection	Motor	Speed
11.09000	Coro-Flo 150	85 l/min	12 bar	DN 32 / 25	-	-
11.09100	Coro-Flo 150	85 l/min	12 bar	DN 32 / 25	5.0 kW	3000 rpm

The indicated pump capacity refers to a differential pressure of 10 bar.

Attention: We supply the complete Corken pump range at favourable prices!

Rotex couplings for pumps and motors, Material: steel, size: Rotex 24



Order no.	Shaft diameter	suitable for:
11.10000	12.7 without groove	Viking pump GG
11.10100	19H7 with groove	Viking pump HJ + HL + MAG-895
11.10200	17.46 with groove	Blackmer pump LGL 1"
11.10300	22.22 with groove	Blackmer pump LGL 1 1/4" + 1 1/2"
11.10400	14H7 with groove	SIHI pump type SC-2003/5 + 2004/5
11.10500	16H7 with groove	SIHI pump type CDHL 1403
11.10600	24H7 with groove	Motor 1 KW + 1,35 KW
11.10700	28H7 with groove	Motor 2 KW, 2,5 KW and 3,3 kW

11.11000 Sprocket made of plastic for Rotex couplings (size: Rotex 24) **11.11100**
Sprocket made of plastic for Rotex couplings (size: Rotex 28) **11.11200**
Aluminium coupling guard for pump and motor (specify pump type)

Additional equipment for pump systems according to TRB 801

Electronic dry-running protection for installation in the control cabinet

The dry-running protection monitors the systems electronically according to the principle of "phase angle measurement". The electronic component is connected directly into the motor's supply line and housed in a control cabinet, for example.

Please state the existing voltage and motor capacity when ordering!

Order No. 3.29700 **for engines up to 5 KW** **Figure 1** **) the images are in group 14,**
Order No. 3.29800 **for engines over 5 KW** **Figure 2** **) page 115.**
(with current transformer)

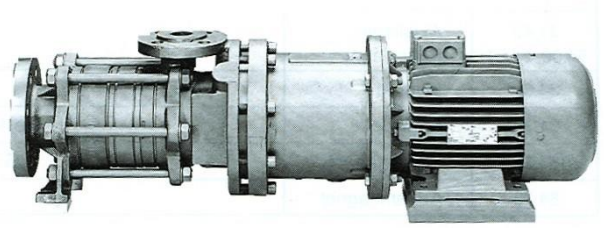
Temperature monitoring of the magnetic coupling consisting of:

Order No. 11.13500 ---------- Resistance thermometer PT 100 with stainless steel probe, G 1/2".
Order No. 11.13600 ---------- Extension sleeve (only required for Sihi pumps)
Order No. 11.13700 ---------- Limit switch for control cabinet installation, set to 55°C
Intrinsically safe input with relay output, 230 V, 50 Hz

SIHI side channel pump unit with magnetic coupling

for supply and suction operation, PN 40, medium propane/butane, flange connection DIN 2635, for stationary systems, horizontal, self-priming side channel pump in ring-section Version,
with NPSH pre-stage, pump housing made of GGG 40.3, speed 1500 rpm nozzle position: Suction nozzle axial, discharge nozzle radial upwards

The offered pumps type CEHY have been developed with special consideration of LPG operation.



They guarantee:

-- Gas co-flow without interruption of the flow rate
-- lowest inlet heights with trouble-free operation
-- Characteristic curves that ensure the system continues to pump properly as back pressure increases.
-- quiet conveying operation

Order No.	Input	Output	Motor capacity	Pump capacity	Housing stages	Type
	DN	DN	kW	m3/h	Quantity	CEHY
11.20000	40	20	0.75	Up to 2.5	2	1202
11.20100	40	20	1.00	Up to 2.5	3	1203
11.20200	40	20	1.35	Up to 2.5	4	1204
11.20300	40	20	2.00	Up to 2.5	5	1205
11.20400	40	20	2.00	Up to 2.5	6	1206
11.20500	40	20	2.00	Up to 2.5	7	1207
11.20600	40	20	2.50	Up to 2.5	8	1208
11.21000	65	32	2.00	1.0 - 5.0	2	3102
11.21100	65	32	2.50	1.0 - 5.0	3	3103
11.21200	65	32	3.60	1.0 - 5.0	4	3104
11.21300	65	32	3.60	1.0 - 5.0	5	3105
11.21400	65	32	5.00	1.0 - 5.0	6	3106
11.21500	65	32	5.00	1.0 - 5.0	7	3107
11.21600	65	32	6.80	1.0 - 5.0	8	3108
11.22000	65	32	2.00	3.5 - 7.5	2	3602
11.22100	65	32	2.50	3.5 - 7.5	3	3603
11.22200	65	32	3.60	3.5 - 7.5	4	3604
11.22300	65	32	3.60	3.5 - 7.5	5	3605
11.22400	65	32	5.00	3.5 - 7.5	6	3606
11.22500	65	32	5.00	3.5 - 7.5	7	3607
11.22600	65	32	6.80	3.5 - 7.5	8	3608
11.23000	80	40	3.60	6.0 - 12.0	2	4102
11.23100	80	40	5.00	6.0 - 12.0	3	4103
11.23200	80	40	5.00	6.0 - 12.0	4	4104
11.23300	80	40	6.80	6.0 - 12.0	5	4105
11.23400	80	40	10.00	6.0 - 12.0	6	4106
11.23500	80	40	10.00	6.0 - 12.0	7	4107
11.23600	80	40	10.00	6.0 - 12.0	8	4108
11.24000	100	50	6.80	10.0 - 20.0	2	5102
11.24100	100	50	10.00	10.0 - 20.0	3	5103
11.24200	100	50	13.50	10.0 - 20.0	4	5104
11.24300	100	50	15.00	10.0 - 20.0	5	5105
11.24400	100	50	15.00	10.0 - 20.0	6	5106
11.24500	100	50	17.50	10.0 - 20.0	7	5107
11.24600	100	50	24.00	10.0 - 20.0	8	5108
11.25000	100	65	10.00	15.0 - 35.0	2	6102
11.25100	100	65	15.00	15.0 - 35.0	3	6103
11.25200	100	65	24.00	15.0 - 35.0	4	6104
11.25300	100	65	24.00	15.0 - 35.0	5	6105
11.25400	100	65	30.00	15.0 - 35.0	6	6106
11.25500	100	65	36.00	15.0 - 35.0	7	6107
11.25600	100	65	44.00	15.0 - 35.0	8	6108

Temperature monitoring see page 74, dry-running protection see pages 16, 74,115

We supply the complete Sihi spare parts range and repair your pumps in our workshop!

P&A --- Your Corken representative in Germany

Corken dry-running compressor, PN 25, with WZ 2.2 according to EN 10204,

for transferring liquefied gases, propane, butane, ammonia, natural gas etc. from tankers, rail tank cars or road tank cars into liquefied gas containers.
Single compressor with drive V-belt pulley, suction, pressure and oil pressure gauges, but otherwise without further accessories, cylinder and cylinder head from ASTM A536

Version with single piston rod seal

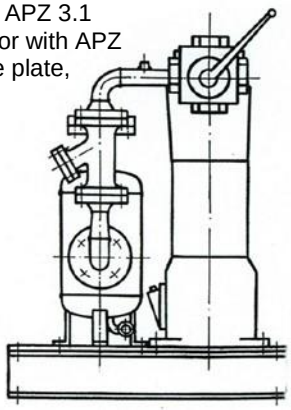
Order No.	Type	Connection	max. flow rate (825 rpm)	
11.30100	291	3/4" NPT female	25.4	m^3/h
11.30200	491	1 1/4" NPT IT	60.3	m^3/h
11.30300	691	1 1/2" NPT IT	102.3	m^3/h

Version with double piston rod seal

Order No.	Type	Connection	max. flow rate (825 rpm)	
11.30500	**D** 291	3/4" NPT female	25.4	m^3/h
11.30600	**D** 491	1 1/4" NPT IT	60.3	m^3/h
11.30700	**D** 691	1 1/2" NPT IT	102.3	m^3/h

Complete dry-running compressor unit, PN 25, for road tankers, without motor,

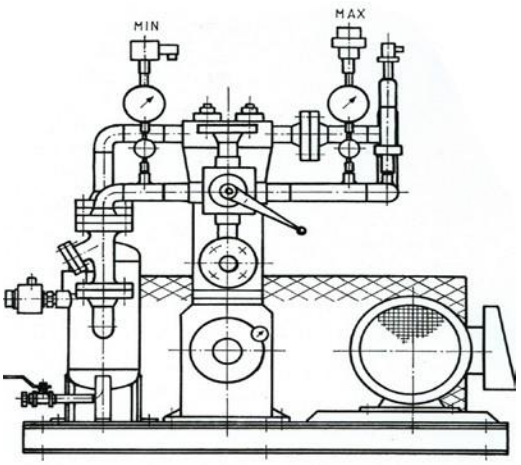
make P& A, with pressure/leakage test and APZ 3.1 according to EN 10204 (fittings/welded parts) **consisting of**: Dry-running compressor with suction, discharge and Oil pressure gauge, four-way ball valve with APZ 3.1 according to EN 10204, dirt trap with APZ 3.1 according to EN 10204, mechanical liquid gas separator with APZ 3.1 according to EN 10204 and TÜV approval, all parts are completely piped and mounted on a base plate, welded, painted and primed



Order No.	Type	Connection	max. flow rate (825 rpm)	
11.31000	291	3/4" NPT female	25.4	m^3/h
11.31100	491	1 1/4" NPT IT	60.3	m^3/h

Complete dry-running compressor unit, PN 25, for stationary installations,

make P& A, with pressure and leak test as well as APZ 3.1 according to EN 10204 for the fittings/welded parts **consisting of**: Dry-running compressor with suction, discharge and Oil pressure gauge, four-way ball valve with APZ 3.1 according to EN 10204, dirt trap with APZ 3.1 according to EN 10204, mechanical liquid gas separator with APZ 3.1 according to EN 10204 and TÜV approval, safety valve with TÜV approval and component testing, V-belt tensioning device, V-belt, V-belt pulley, Belt guard and ex-proof three-phase motor 400/690 V all parts are completely piped and mounted on a base plate, welded, primed and painted.



Order No.	Type	Connection	max. feed vol. (825 rpm)	
11.31500	291	3/4" NPT female	25.4	m^3/h
11.31600	491	1 1/4" NPT IT	60.3	m^3/h
11.31700	691	1 1/2" NPT IT	102.3	m^3/h
11.31800	**D** 291	3/4" NPT female	25.4	m^3/h
11.31900	**D** 491	1 1/4" NPT IT	60.3	m^3/h
11.32000	**D** 691	1 1/2" NPT IT	102.3	m^3/h

Additional prices according to TÜV requirements or customer request

Order No. 11.33000	Hydrostatic test with 52 bar for the single compressor
Order No. 11.33100	Leakage and pressure test of the piping system with 32.5 bar by TÜV (complete unit)
Order No. 11.33200	Safety valve in flange Version, with TÜV approval and component testing
Order No. 11.33300	Liquid trap with electrical shut-off via an electronic limit switch (1" NPT ET)
Order. No. 11.33400	Liquid trap with electrical shut-off via electronic limit switch (flange DN 32)
Order. No. 11.33500	Signal conditioning instrument for the electronic limit switch
Order No. 11.33600	Liquid trap with a "fire-safe ball valve" for condensate drainage
Order No. 11.33700	Additional pressure gauge with pressure gauge shut-off valve, Material: steel in inlet and outlet
Order No. 11.33800	Minimum pressure monitoring in intrinsically safe Version in the compressor inlet incl. isolating switchgear
Order No. 11.33900	Maximum pressure monitoring in intrinsically safe Version in the compressor outlet incl. isolating switchgear
Order No. 11.34000	Thermometer in the compressor outlet
Order No. 11.34100	Temperature monitoring in the compressor Outlet consisting of resistance thermometer and measuring amplifier
Order No. 11.34200	Non-destructive testing (10 %) of the pipeline
Order No. 11.34300	Four-way ball valve with pneumatic actuator (see catalogue page 78 -- article no. .11.41000 to 11.41600)

SPECIFICATIONS:

Type	291	D291	491	D491	691	D691
Number of cylinders	2	2	2	2	2	2
Piston stroke	63.5	63.5	76.2	76.2	101.6	101.6
min. Intake pressure (bar)	1.04	1.04	1.04	1.04	1.04	1.04
Connection (NPT)	1"	1"	1 1/4"	1 1/4"	1 1/2"(2“)	1 1/2"(2“)
Max. outlet pressure (bar)	24.1	24.1	24.1	24.1	24.1	24.1
Max. compression ratio	7	7	7	7	7	7
Max. displacement volume flow m³/h	28	28	61	61	103	103
Rated speed min-1	825	825	825	825	825	825
Engine capacity (KW)	5.0	5.0	10.0	10.0	17.5	17.5

Original Cork spare parts and accessories

Order no	**11.35000**	Repair kit for type 290/291	**Order no**	**11.35400**	Repair kit for type D291
Order no	**11.35100**	Repair kit for type 490/491	**Order no**	**11.35500**	Repair kit for type D491
Order no	**11.35200**	Repair kit for type 690/691	**Order no**	**11.35600**	Repair kit for type D691
Order no	**11.35300**	Liquid gas separator for Type 290, 291, 490 and 491	**Order no**	**11.35700**	Liquid gas separator for Type 690 u. 691

On request, we can also supply all wearing parts and repair your Corken compressor!

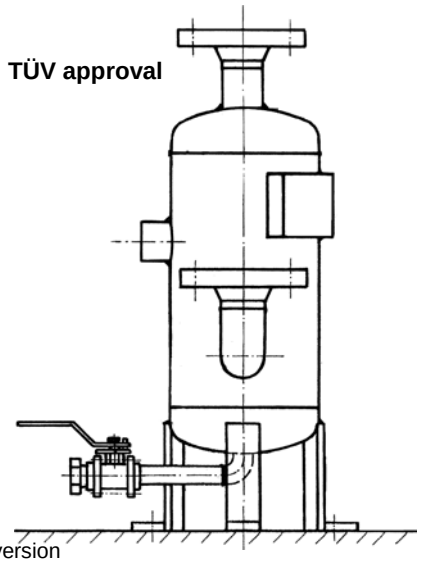
Attention: We also supply Blackmer compressors and spare parts at reasonable prices!

--- please inquire ---

Safety devices and accessories for compressor units

Liquid gas separator, PN 25, make P&A,

built according to AD data sheet and TRD, with APZ 3.1 according to EN 10204 and TÜV approval



Version A: Liquid gas separator with mechanical shut-off (float)
Version B: Liquid gas separator with electrical shut-off via a level sensor.
Version C: Liquid gas separator with mechanical shut-off (float) and
Additionally with electrical shut-off via a fill level sensor

Order No. Version: A	Order. No. Version: B	Order. No. for compressor Version: C		Connection	Capacity
11.36000	**11.36500**	**11.37000**	290/291/D291	25	5.8 l
11.36100	**11.36600**	**11.37100**	490/491/D491	32	7.8 l
11.36200	**11.36700**	**11.37200**	690/691/D691	40	7.8 l

Accessories for the P&A liquid gas separator

Order No. 14.12001 **Level limit switch**PN 25, **connection 1" NPT ET,**
approved for Ex-Zone 1, with ATEX approval, L = 128 mm, Namur version

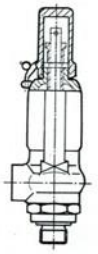
Order No. 14.12101 **Level limit switch**PN 25, **connection flange DN 32**,
approved for Ex-Zone 1, with ATEX approval, L = 128 mm, Namur version

Order No. 14.11000 **Isolating switch amplifier** for the level limit switch, with intrinsically safe intrinsic circuit and relay outlet, 230 V, 50 Hz

Order No. 14.11100 **Isolating switch amplifier** for the level limit switch, with intrinsically safe intrinsically safe outlet circuit and relay outlet, 24 V

Safety valve with soft seal, PN 25, with component testing and TÜV approval,

Set pressure 19 bar, angular shape, inlet G 3/4" ET, outlet G 1/2" IT



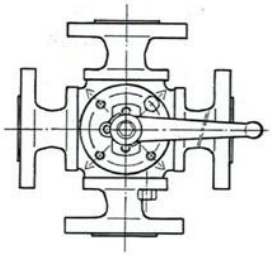
Order No. 11.38000
Order No. 11.38100 Surcharge for APZ 3.1 according to EN 10204

Four-way ball valve, PN 40, body steel, with APZ 3.1 according to EN 10204

Version A: Four-way ball valve with hand lever and X-bore
Version B: Four-way ball valve with pneumatic actuator (control air pressure min. 5 bar), type P&A

Order No. Version: A	Order. No. Version: B	Connection	Weight A	Weight B	Compressor type
11.40000	**11.41000**	1" NPT	7.0	18.0	290/291 and D291
11.40100	**11.41100**	1 1/4" NPT	7.1	18.1	490/491 and D491
11.40200	**11.41200**	1 1/2" NPT	7.2	18.2	690/691 and D691
11.40400	**11.41400**	Flange DN 25	7.0	18.0	290/291 and D291
11.40500	**11.41500**	Flange DN 32	12.0	23.0	490/491 and D491
11.40600	**11.41600**	Flange DN 40	14.0	25.0	690/691 and D691

Accessories:



11.42000 Surcharge for 5/2-way solenoid valve G 1/4", operating pressure 1-10 bar
Medium compressed air, **230 V**, 50 Hz, Ex-protected, ATEX

11.42100 Surcharge for 5/2-way solenoid valve G 1/4", operating pressure 1-10 bar
Medium compressed air, **24 V DC**, Ex-protected, ATEX

11.42200 Surcharge for silencer

11.42300 Surcharge for limit switch remote indication with local indication, Ex-protected, type P&A

Fully electronic filling and control floor scales, Make P&A,

Type PA-LC IT3000Ex/7002, IP 65, intrinsically safe Version for operation in Ex zone 1, with ATEX approval for automatic filling of 5, 11 and 33 kg propane cylinders ** **Compressed air required on site** **

- Load capacity 150kg
- Weighing surface 520x400x90 mm (stainless steel, powder-coated)
- Digit step 0-150 kg = 50 g
- Convenient operator guidance via a display
- Special filling software for gas filling
- EX II 2(2) G Ex e mb ib [ib] IIC T4, 230 V, 50 Hz
- Data interface for external printer or computer

Consisting of:
Back frame, folding element filter, mechanical or pneumatic filling connection, bellows with balancer, LPG high-pressure hose, pneumatic shut-off valve, folding platform, factory calibration, required certificates.

Order no		
12.00000	-	**Filling and checking floor scale with** mechanical filling connection
12.00300	-	**Filling and checking floor scale with pneumatic filling connection**

Accessories for mechanical, pneumatic and electronic filling scales

Order no 12.00500 — **Folding platform**
For convenient filling of 5 and 11 kg cylinders

Order no 12.00700 — **Pleated element filter**
with replaceable filter insert, W 21.8x1/14" left. female/female

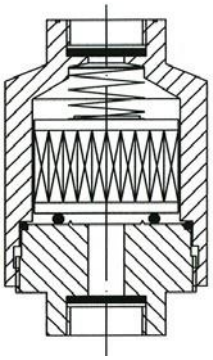
Order no 13.77700 — **Balancer**
For weight-relieved suspension of the filling connection

Order no 12.01000 — **Boom**
for suspension of the filling connection or balancer

Order no 12.02000 — **LPG high-pressure hose DN 10, PN 25**
Length 1.7 m, both sides W21.8x1/14" left. ÜF

Order no 12.02500 — **Compressed air supply unit**
for pneumatic filling scales

Order no 12.03000 — **Foundation frame**
for the installation of the scales onto the floor



Pneumatic filling connection

Version as pneumatic quick-connect coupling with check valve

Article-No.	Inlet	Type	Weight
12.05000	W21,8x1/14" left female	PA6124	2,5 kg

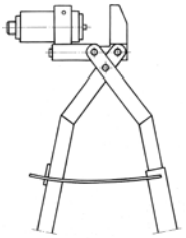
Mechanical filling connection

With aluminium handwheel and built-in check valve

Order no.	Inlet	Outlet	Type	Weight
12.06000	W21.8x1/14" left male	W21.8x1/14" left female	PA1072	1.0 kg

Filling tongs for 5, 11 and 33 kg bottles, PN 25, make P&A,

Pressure part made of steel **with inspection certificate 3.1 according to EN 10204**



Order no	Inlet	Cylinder connection	Weight
12.06500	W21.8x1/14" left IG	GF	2.0 kg
12.06600	W21.8x1/14" left IG	Combi	2.0 kg
12.06700	10er EO	GF	2.0 kg
12.06800	10er EO	Combi	2.0 kg

Old filling tongs are repaired inexpensively in our workshop

Tilting bogie / emptying unit for 5, 11 and 33 kg cylinders

Incl. a sturdy base frame made of U-iron, primed and painted, **P&A make**.
With this tipping rack, overfilled propane cylinders can be turned upside down without much effort and then emptied by means of an ejector, hand pump or pneumatic pump

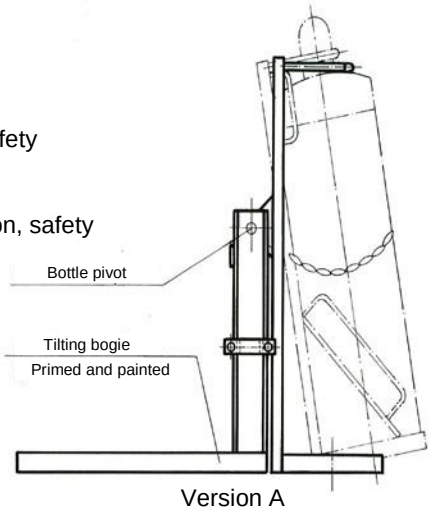
Version A: Tilt bogie as described above, without accessories

Version B: Bottle emptying unit with **Wall holder** for the overfilled/defective cylinders, hand pump, fittings, LPG hoses, cylinder filling connection, safety valve

Version C: Cylinder emptying system with tilting bogie, Hand pump, fittings, LPG hoses, cylinder filling connection, safety valve, completely piped.

Version D: Cylinder emptying system with tilting bogie, Pneumatic pump, fittings, LPG hoses, cylinder filling connection, safety valve, complete pipework

Execution E: Cylinder emptying system with tilting bogie, Ejector, fittings, LPG hoses, cylinder filling connection, safety valve, completely piped.



Version A

Order no	**12.07000**	Version A
Order no	**12.07100**	Version B
Order no	**12.07200**	Version C
Order no	**12.07300**	Version D
Order no	**12.07400**	Version E

Manual transfer pump PN 25, manufactured by Krug, with WZ 2.2 according to EN 10204,

with safety valve, response pressure 25 bar, capacity per stroke approx. 0.5 l

Connection suction side: 1" NPT IT
Connection pressure side: 3/4" NPT IT
Weight: approx. 27 kg

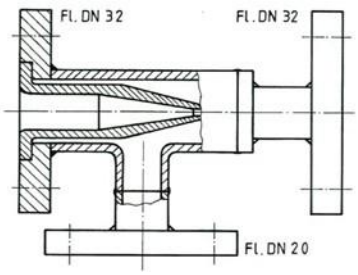
Order No.	**12.08000**	
Order No.	**12.08500**	Seal kit for the hand pump

Ejector (liquid jet pump), PN 25, with APZ 3.1 according to EN 10204,

suitable for emptying overfilled or defective gas cylinders, Material: steel, galvanised

Performance data (example):

Suction flow:	1.2 m³/h (propane liquid)
Suction pressure:	10 bar
Counter-pressure:	11 bar
Driving current pressure:	15 bar
Driving current:	1.2 m³/h (propane liquid)
Connection:	DN 32 / DN 20 / DN 32
Order No.	**12.09000**



Cylinder filling line in a 10-foot sea container, make P&A,

consisting of:

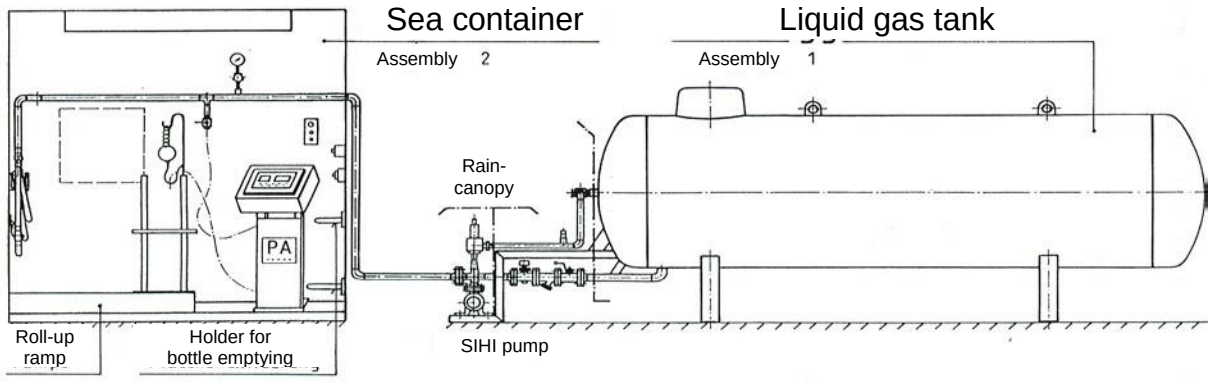
- **2.1 to liquid gas container** with standard fittings, bottom dispensing pipe and a riser pipe into the gas phase space of the container for the return line as well as a welded-on bracket to accommodate the pump and fittings etc. (special Version).
- **SIHI side channel pump** with NPSH pre-stage (low inlet heights) and single mechanical seal, capacity 70 l/min at a pressure increase of 7 bar, max. differential pressure approx. 11-12 bar at a capacity of 15-20 l/min, with base plate and 2.5 kW ex-motor
- Pump protection housing for the pump unit and the overflow valve
- Electronic dry-running protection (installed in the control cabinet)
- Ball valves PN 40, with APZ 3.1 according to EN 10204
- Dirt trap DN 25, PN 40, with APZ 3.1 according to EN 10204
- Ex-protected solenoid valve DN 25, PN 25, Material: brass, with APZ 3.1 according to EN 10204
- 10 feet sea container for installation of the filling and checkweigher, floor lined with non-slip sheet steel, ventilation openings each 1/100 of the floor area, dimension 3x2.5x2.6 m (LxWxH)
- Ex-protected on/off button
- Fully electronic filling and control floor scale for 5, 11 and 33 kg propane cylinders, complete with folding platform, folding element filter, gallows, mechanical filling connection and LPG connection hoses
- Electric lighting for the container, explosion-proof, incl. on/off switch
- Ex-protected emergency stop button
- Pipe rupture valve, safety valves, pressure gauges, pressure gauge shut-off valves and small parts
- Control cabinet for controlling the pump, motor protection switch, dry-running protection, emergency stop button and the solenoid valve, completely wired, incl. circuit diagram (installation outside the Ex-area).
- Pressure and leak tests carried out by TÜV NORD

The P&A bottling line consists of two assemblies.

Assembly 1: Tank with pressure boosting system and fittings
Assembly 2: Container with electronic filling and control floor scales as well as the pipe fittings. The system Version conforms to the EC directives (97/23/EC - DGR**,** 98/37/EC - Mach.Dir, 94/9/EC- ATEX-Dir.**)** as well as AD-2000 and TRG 404.

Order no:

12.10000



Additional prices for additional requirements (according to customer request)

12.11000	**2.9 to liquid gas container** with bottom extraction pipe (special Version)
12.11100	**20 feet container,** dimension 6 x 2,5 x 2,6 m (LxWxH)
12.11200	**PTB- and BAM-tested gas warning system** with one measuring head in the container incl. wiring
12.11300	**Additional filling and checkweigher** for 5-33 kg bottles incl. accessories and piping
12.11400	**Emptying system** for overfilled gas cylinders, compl. with tipping frame, hand pump, fittings, LPG hose and the necessary pipework
12.11500	Forced ventilation of the container by an **explosion-proof fan**
12.11600	**Additional explosion-proof solenoid valve** in the inlet upstream of the filling chamber or container
12.11700	**Non-destructive testing of weld seams** according to AD data sheet HP 5/3 (10 %)
12.11800	Preparation of the permit application in accordance with the Pressure Vessel Ordinance
12.11900	Laying of the connecting cable, electrical work and commissioning of the two assemblies on site

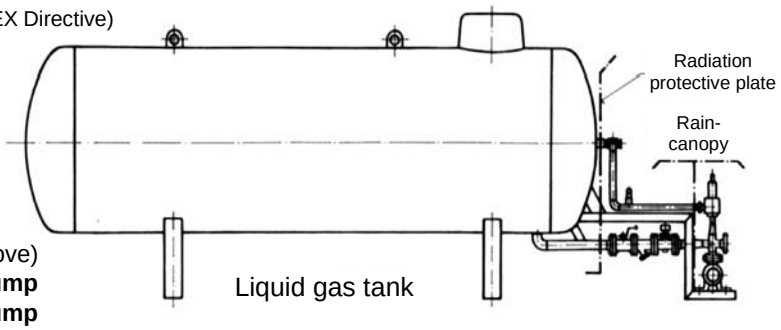
Pressure boosting system with SIHI pump (without base frame)

Make P&A - Particularly suitable for small filling lines
consisting of:

- **2.1 to liquid gas tank** with standard fittings, ground sampling pipe and a shut-off valve for the return line as well as a welded-on console to accommodate the pump, fittings, etc.
- **SIHI side channel pump** with NPSH pre-stage (low inlet heights) and single mechanical seal, capacity 50 l/min at a pressure increase of 7 bar, max. differential pressure approx. 11-12 bar at a capacity of 15-20 l/min, with base plate and 2.5 kW ex-motor
- Pump protection housing for the pump unit and the overflow valve
- Ball valve and dirt trap PN 40, with APZ 3.1 according to EN 10204
- Ex-protected solenoid valve DN 25, PN 25, Material: brass, with APZ 3.1 according to EN 10204
- Ex-protected on/off button
- Overflow valve, safety valves, pressure gauge, pressure gauge shut-off valves and small parts
- Electronic dry-running protection (installed in the control cabinet)
- Control cabinet for controlling the pump, motor protection switch, dry-running protection, emergency stop button and the solenoid valve, completely wired, incl. circuit diagram (installation outside the Ex-area).
- Pressure and leak tests carried out by TÜV NORD

The system Version conforms to the EC Directives
(97/23/EC - DGR, 98/37/EC - Machinery Directive, 94/9/EC - ATEX Directive)
as well as AD 2000 and TRG 404

Order no. 12.15000



12.16000	**2.9 to** liquid gas container (as described above)
12.16500	**2.1 to** booster system **with submersible pump**
12.16600	**2.9 to** booster system **with submersible pump**

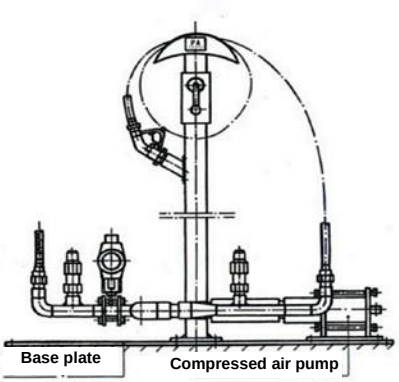
Pressure boosting system with pneumatic liquid gas pump

(standard household container on site) - consisting of:

- Base plate made of steel, primed and painted, for the assembly of the pressure boosting system
- **Compressed air pump for liquid gas**, PN 40, capacity approx. 6-15 l/min (depending on the strokes and the amount of compressed air available, delivery rate per stroke = 0.15 litre, approx. 60-100 strokes per minute, optimum drive air requirement approx. 1.15 Nm³/h (approx. 7.5 KW compressor), drive pressure 5-7 bar
- **Ball valve** DN 20, PN 25, **with pneumatic actuator as quick-closing fitting**
- 3/2-way manual lever valve with spring return **(dead man's control)** and pressure relief hole
- **Overflow valve** PN 25, for protection of the discharge line with a closed valve, return to the suction line
- Dirt trap in the pump inlet
- Safety valve on the suction and discharge side of the compressed air pump, set pressure 25 bar
- Pressure gauge with glycerine filling on the pressure side
- Construction, pressure and leak test by the manufacturer P&A incl. CE marking
- Small parts such as Ermeto pipe and screw connections incl. assembly of the complete filling system incl. pipework

Order no.

12.18000	**complete system** (as described above)
12.18500	**Stainless steel corrugated ring hose** L = 3 m, PN 25, for connection tank/plant
12.18600	**Compressor** for pneumatic pump with pressure reducer and filter
8.61000	**Water separator**
12.18800	**Filling hose DN 16,** PN 25, L = 3 m, compl. with breakaway coupling and filling pistol



Propellant gas KOMPAKT system with an above-ground tank and a 3-stage SIHI side-channel pump

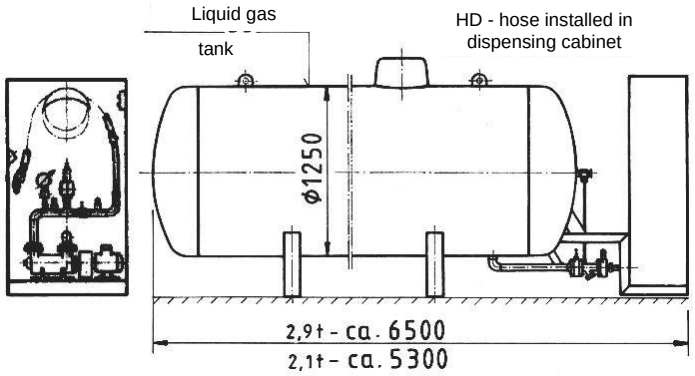
- Above-ground liquefied gas container with standard fittings and DN 25 bottom outlet pipe as well as a 3/4" NPT angle valve in the dished bottom with a riser pipe into the gas phase chamber for the return and a check valve (screwed into the angle valve) in accordance with the requirements of the VdTÜV bulletin "Pressurised gases 513".
- **P&A special Version** with welded-on console for holding the SIHI pump, the dispensing cabinet and the fittings or alternatively with a stable base frame made of 120 mm U-steel.
- **3-stage SIHI side channel pump unit** with NPSH pre-stage, self-priming and gas entrainment, simple mechanical seal, with base plate, coupling protection and 2.5 KW ex-motor, 230/400 V, 3000 rpm
  Advantages: very high differential pressure, very good performance parameters, good price/performance ratio, very robust ⇒ long service life, very good NPSH values = low intake height, proven technology, relatively low noise/vibration
  Performance data: max. pressure increase approx. 11-12 bar ⇒ Q = approx. 15-20 l/min,
  Pressure increase approx. 7 bar ⇒ Q = approx. 50 l/min, max. Outlet approx. 75 l/min ⇒ a pressure increase of approx. 4 bar
- External overflow valve with self degassing, make P&A, with APZ 3.1 according to EN 10204
- Sturdy protective cabinet made of sheet steel, primed and painted, lockable, dim. 1600 x 1000 x 400 mm (HxWxD)
- LPG high-pressure hose DN 16, PN 25, length approx. 4.5 m, complete with the required connection fittings and breakaway coupling (can be coupled under pressure).
- Filling gun with safety filling coupling and dead man's function, type ZVG or equivalent
- Dirt trap PN 40, DN 25, steel body, with APZ 3.1 to EN 10204
- Ball valve PN 40, DN 25, steel body, with APZ 3.1 according to EN 10204
- Explosion-proof solenoid valve, PN 25, Material: brass, normally closed, 230 V, 50 Hz, with APZ 3.1 according to EN 10204 and ATEX approval
- explosion-protected on-off button with ATEX approval, mounted in the dispensing cabinet
- Electronic dry-running protection for the pump (installed in the electrical control cabinet)
- Electrical control cabinet with emergency stop button, motor protection switch, time relay for controlling the pump and the solenoid valve, completely wired, with circuit diagram
  ***** Supplied loose or mounted on the dispenser cabinet - at extra cost, see options page 85**
- Small parts such as small shut-off valves, safety valves, screw connections etc.
- Radiation protection plate (galvanised)
- Pressure and leak tests carried out by TÜV NORD

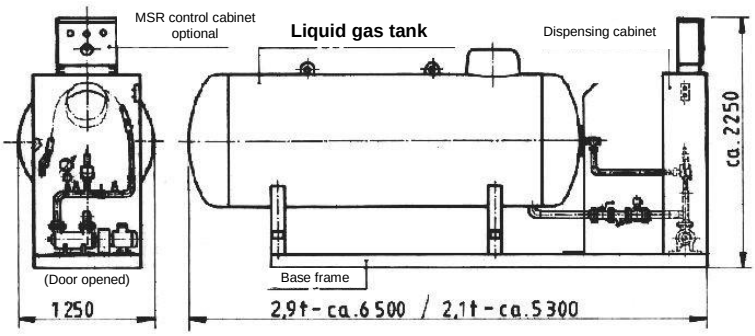
All parts and fittings are installed on the container with the necessary pipes. The system Version conforms to the EC directives (97/23/EG-DGR, 98/37/EC-Mach. Dir., 94/9/EG-ATEX-DIR) as well as AD-2000 and TRG 404.

Version without base frame (bracket welded to the container) Order no.

	Weight
1.2 to - 13.01000	**1000 kg**
2.1 to - 13.01100	**1300 kg**
2.9 to - 13.01200	**1600 kg**

Optional:
- **MSR**
- **Ring piston counter**
- **EMERGENCY stop lockable**





Version with base frame (primed and painted)

Order no.	**Weight**
1.2 to - 13.02000	**1100 kg**
2.1 to - 13.02100	**1400 kg**
2.9 to - 13.02200	**1700 kg**

Propellant gas KOMPAKT system with an above-ground tank and a submersible pump

- Above-ground liquid gas tank with standard fittings and DN 125 flange to accommodate the submersible pump as well as a 3/4" NPT angle valve in the dished end with a riser pipe into the gas phase chamber for the return and a check valve (screwed into the angle valve) in accordance with the requirements of the VdTÜV leaflet "Pressurised gases 513".
- **P&A special Version** with welded-on console for holding the dispensing cabinet and fittings or alternatively with a stable base frame made of 120 mm U-steel
- **Red-Jacket submersible pump**, type PA 300V17-21LPG-Premier, 21-stage, capacity approx. 50 l/min at a pressure-
- increase of approx. 8 bar, complete with DN 125 mounting unit, DN 25 outlet pressure line system and ex terminal box.
- Dry-running protection via a differential pressure switch
- Explosion-proof solenoid valve, PN 25, material brass, normally closed, 230 V, 50 Hz, with APZ 3.1 according to EN 10204 and ATEX approval
- LPG high-pressure hose DN 16, PN 25, length approx. 4.5 m, complete with the necessary connection fittings, Pipe break valve and breakaway coupling (can be coupled under pressure)
- Filling gun with safety filling coupling and dead man's function, type ZVG or equivalent
- External overflow valve with self degassing, make P&A, with APZ 3.1 according to EN 10204
- Dirt trap, safety valve, pressure gauge, ball valves as well as welding and small parts
- Sturdy tap cabinet with hose holder, lockable, primed and painted
- explosion-protected on-off button with ATEX approval, mounted in the dispensing cabinet
- MSR control cabinet, make P&A, for controlling the submersible pump, differential pressure monitor, solenoid valve and a separate emergency stop button, completely wired, with switching and terminal diagram, IP 55
  ***** Supplied loose or mounted on the dispenser cabinet - at extra cost - see options page 85***.**
- Pressure and leak tests carried out by TÜV NORD

All parts and fittings are installed on the container with the necessary pipes. The system Version conforms to the EC directives (97/23/EG-DGR**,** 98/37/EC-Mach. Dir., 94/9/EG-ATEX-DIR**)** as well as AD-2000 and TRG 404.

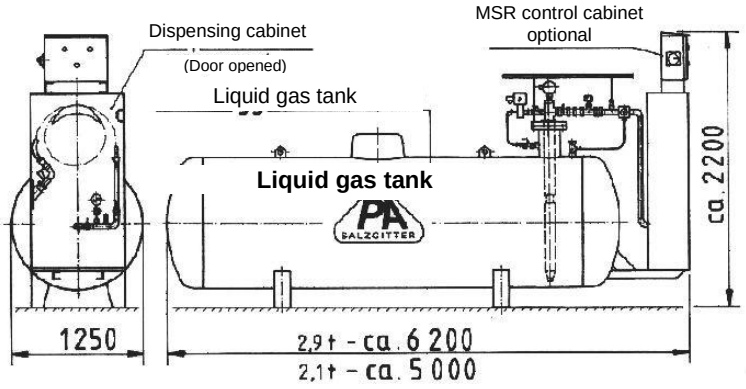
Version without base frame (bracket welded to the container)

Order no.

1.2 to - 13.03000
2.1 to - 13.03100
2.9 to - 13.03200

Weight:

1.2 to 1000 kg
2.1 to 1300 kg
2.9 to 1600 kg



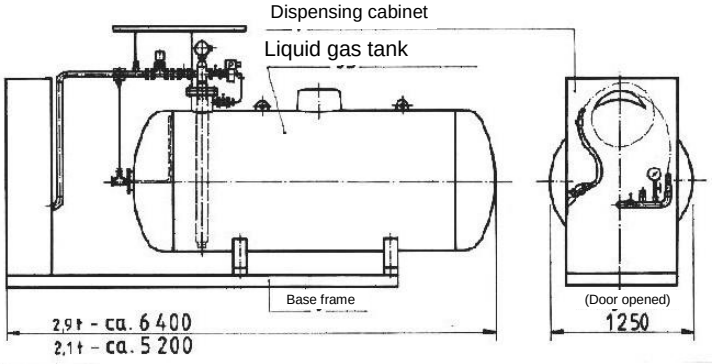
Version with base frame (primed and painted)

Order no.

1.2 to - 13.04000
2.1 to - 13.04100
2.9 to - 13.04200

Weight:

1.2 to 1100 kg
2.1 to 1400 kg
2.9 to 1700 kg



Additional options for PROPELLANT GAS SYSTEMS

Order no.	
13.10000	more powerful 4-stage SIHI pump unit
13.10100	More powerful Red Jacket submersible pump type LPG500V17-24 HiFlow
13.10200	Tap cabinet rotated by 90°
13.10300	Dispensing cabinet/dispensing column on the longitudinal side of the container - centered (ZBLM)
13.10400	Dispensing cabinet/dispensing column on the longitudinal side of the container - right hand (ZBLR)
13.10500	Dispensing cabinet/dispensing column on the longitudinal side of the container - left hand (ZBLL)
13.10600	System version with base frame and 1-sided collision protection
13.10700	System version with base frame and 2-sided collision protection
13.10800	System version with base frame and 3-sided collision protection
13.10900	System version with base frame and 4-sided collision protection
13.11000	Radio remote transmission of the container contents
13.11100	electronic flow meter for Ex-zone 2, capacity 50 l/min., not calibratable, incl. Installation in the system and brackets (installation outside the dispensing cabinet), temperature range -10 to + 60° C
13.11200	Mechanical ring piston meter with recirculation and totalising counter (not resettable), spheroidal cast iron housing, flange on both sides DN 25, PN 25, measuring range 75 - 3000 l/h, not calibratable, incl. installation in the system (in the tap cabinet) and brackets.
13.11300	Data acquisition system with code entry (not calibratable), incl. piston counter and the Required fittings, incl. installation in the system (in/on the dispensing cabinet) and brackets.
13.11400	Data acquisition system with chip card (not calibratable), incl. piston meter and the required fittings, incl. installation in the system (in/on tap cabinet) and brackets
13.11500	Installation of the control cabinet on the dispensing cabinet, incl. the complete electrical cabling of the system.
13.11600	Stainless steel protective cabinet (analogue to a dispenser housing in H-shape) incl. installation of the plant control/data acquisition system in the tap head
13.11700	Maintenance contract for the propellant gas plant
13.11800	Provision of a crane vehicle for unloading the plant
13.11900	Preparation of application documents
13.12000	Electronic dead man's switch

Freight and commissioning costs see page 106

Balloon bottle filling system with a hand pump (household container on site)

- Base frame made of sturdy U-steel for holding the hand transfer pump, primed and painted,
- LPG high-pressure hose DN 16, PN 25, length 4 m, complete with the required connection fittings and a pipe rupture valve.
- Ball valve PN 25 at the end of the high-pressure hose with Rego balloon cylinder connection
- Safety valve 1/4" NPT, component tested with TÜV approval
- Manual transfer pump PN 25, inlet 1" NPT, outlet 3/4" NPT, capacity per stroke 0.5 l
- Pressure gauge 0-25 bar and pressure gauge shut-off valve
- Rain protection roof and hose holder for the balloon filling unit
- Small parts such as Ermeto tube and fittings
- All listed fittings and parts are mounted on the base frame with the required piping.

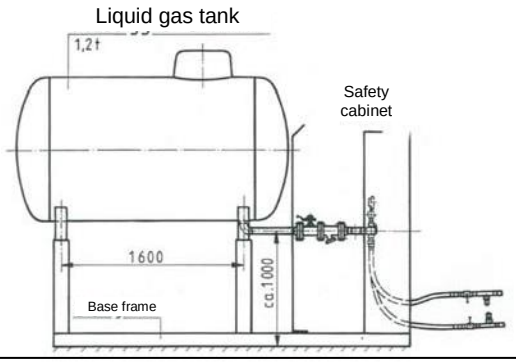
For the system with hand pump, any standard container can be used. The connection is made at the liquid withdrawal valve.
The connecting line from the container to the filling plant must be laid on site by a specialist company or by P&A.
Please check whether a calibrated control scales is additionally required for filling.

Order . No. 13.20000

Balloon cylinder filling system "overflow principle"

With this Version, the container is placed approx. 1 m higher than the filling unit. The liquid gas flows into the balloon cylinder due to the withdrawal from the bottom of the container and the difference in height. Filling using the overflow principle is additionally supported by the dip valve on the bottle.

The overflow system essentially consists of the following parts:
1.2 to tank with lower extraction, base frame for the tank, shut-off fittings, dirt trap, radiation plate, protective cabinet with filling hose and balloon bottle connection



Order No. 13.20100
Order No. 13.20200 - 2.1 to balloon system
Order No. 13.20300 - Surcharge for each additional dispensing hose
Order No. 13.20400 - Surcharge for an additional hand pump for residual filling during pressure equalisation

Balloon cylinder filling unit with pneumatic liquid gas pump, make P&A, PN 25, completely mounted on a base plate.

For the technical description and scope of delivery, please refer to our catalogue, page 82.

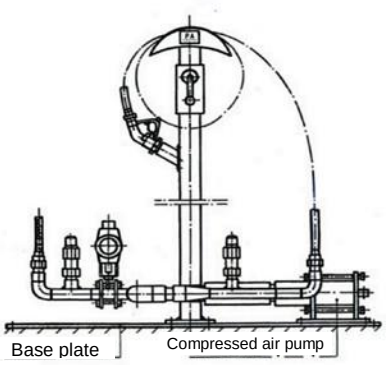
Order no

13.20800 **System according to description page 82**

12.18500 **Stainless steel corrugated ring hose** L = 3 m, PN 25 for the connection tank/plant

12.18600 **Compressor** for pneumatic pump with pressure reducer and filter

12.18700 **Water separator**



LPG KOMPAKT system with an above-ground tank and a 3-stage SIHI side-channel pump

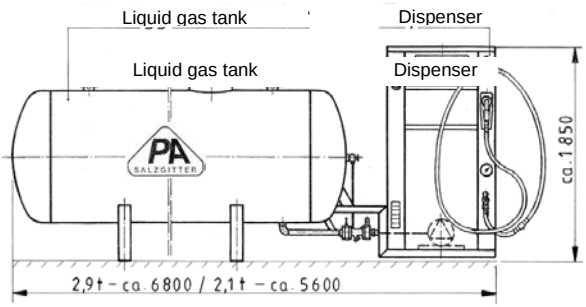
- Above-ground liquefied gas tank with standard fittings and ground sampling pipe DN 25 as well as 2 pcs. angle valves 3/4" NPT in the dished bottom and two riser pipes into the gas phase chamber (return gas phase and return pipe).
  P&A special Version with welded-on bracket for holding the SIHI pump, fuel dispenser and fittings or alternatively with a stable base frame made of 120 U steel.
- **3-stage SIHI side channel pump unit,** with NPSH pre-stage, self-priming and gas entrainment, simple mechanical seal, with base plate, coupling protection and 2.5 KW ex-motor, 230/400 V, 3000 rpm,
  Advantages: very high differential pressure, very good performance parameters, good price/performance ratio, very robust ⇒ long service life, very good NPSH values = low intake height, proven technology, relatively low noise and vibration Performance data: max. pressure increase approx. 11-12 bar ⇒ Q = approx. 15-20 l/min,
  Pressure increase approx. 7 bar ⇒ Q = approx. 50 l/min, max. Outlet approx. 75 l/min ⇒ a pressure increase of approx. 4 bar
- Overflow valve with self degassing, make P&A, with APZ 3.1 according to EN 10204
- Ball valve, dirt trap, safety valve with technical inspection certificate, etc.
- Explosion-proof solenoid valve, PN 25, normally closed, 230 V, 50 Hz, with APZ 3.1 to EN 10204 and ATEX approval.
- Shut-off valve in the overflow pipe and gas phase return flow, PN 25
- **Electronic liquid gas dispenser,** type PA-4-H-HEC-..., H-form, calibratable version, with PTB approval for custody transfer, complete with illuminated, electronic, one-sided counting and calculating unit, electronic Hectronic calculator, dead man's button, fine filter, gas bubble separator, piston meter for liquid gas Outlet: 5 – 50 l/min, back-pressure valve, differential pressure valve with integrated emergency stop valve,
  Pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose DN 16, L = 4.5 m, breakaway coupling with component test (can be coupled under pressure), filling gun with safety filling coupling,
  consisting of: **System control / MSR control cabinet**,
  Completely installed in the electronics area of the fuel dispenser incl. the necessary electrical wiring for the SIHI pump, solenoid valve, dry-running protection, fuel dispenser, external EMERGENCY STOP button, lighting, etc. as well as a cold check at the manufacturer's works, incl. electronic dry-running protection.
- Pressure and leak tests carried out by TÜV NORD

All parts and fittings are installed on the container with the necessary pipes. The system Version conforms to the EC directives (97/23/EC - DGR, 98/37/EC - Masch.DIR, 94/9/EC -ATEX-DIR as well as AD-2000 and TRG 404

Version without base frame (bracket welded to the container)

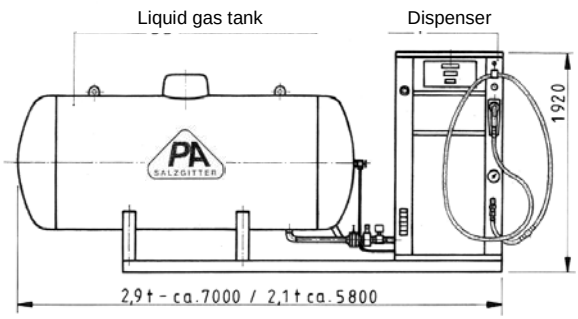
Order no
1.2 to 13.30000
2.1 to 13.30100
2.9 to 13.30200

Weight
1.2 to 1100 kg
2.1 to 1500 kg
2.9 to 1800 kg



Version with base frame (primed and painted) Order no
1.2 to 13.30500
2.1 to 13.30600
2.9 to 13.30700

Weight
1.2 to 1200 kg
2.1 to 1600 kg
2.9 to 1900 kg



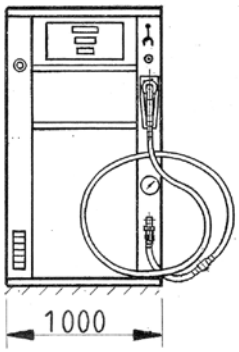
LPG KOMPAKT system with an above-ground tank, a submersible pump and an LPG dispenser type PA-4-H-HEC-...

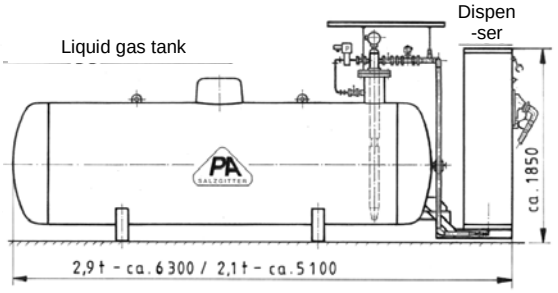
- Above-ground liquid gas tank with standard fittings and DN 125 flange to accommodate the submersible pump as well as two 3/4" NPT angle valves screwed into the dished bottom with check valve (as required by the VdTÜV leaflet on compressed gases 513) and two riser pipes into the gas phase room (return: Gas phase and return) P&A special Version with welded-on console for holding the LPG dispenser and fittings or alternatively with a stable base frame made of 120 U steel (primed and painted).
- **Red-Jacket submersible pump**, type PA 300V17-21LPG-Premier, 21-stage, capacity approx. 50 l/min at a pressure increase of approx. 8 bar, complete with intake unit DN 125, pressure pipe system outlet DN 25 and ex terminal box
- Dry-running protection via a differential pressure switch
- Explosion-proof solenoid valve, PN 25, Material: brass, normally closed, 230 V, 50 Hz, with APZ 3.1 according to EN 10204
- Overflow valve with self degassing, PN 25, connection 3/4" NPT, with APZ 3.1 according to EN 10204
- Shut-off valve in the overflow line and gas phase recirculation, PN 25
- **Electronic liquid gas dispenser, type PA-4-H-HEC-...**, stainless steel housing, calibratable version, with PTB approval for custody transfer, complete with a single-sided electronic EURO/litre display and an electronic Hectronic calculator, dead man's button, fine filter, gas bubble separator, special piston meter for liquid gas capacity: 5 - 50 l/min, pulse generator, check valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose L = 4.5 m, DN 16, hose retraction, breakaway coupling with component test (can be coupled under pressure), filling pistol with safety filling coupling, with official calibration of the fuel dispenser
- **Plant control/MSR control cabinet,** Ccmpletely installed in the electronics area of the dispenser incl. the necessary electrical wiring for the submersible pump, solenoid valve, dry-running protection, dispenser, external EMERGENCY STOP button, lighting, etc. as well as a cold check in the manufacturer's factory, incl. a differential pressure monitor as dry-running protection.
- Emergency stop panel as required by the TÜV leaflet, for remote acknowledgement of the emergency stop function, incl. operating light and additional emergency stop button, not explosion-protected, for installation e.g. in the cashier's office.
- Pressure and leak tests carried out by TÜV NORD

The listed fittings and parts are mounted on the tank with the required piping. The plant Version conforms to the EC directives (97/23/EC - DGR**,** 98/37/EC - Mach.Dir, 94/9/EC-ATEX-DIR**)** as well as AD-2000 and TRG 404

Version without base frame (console welded to the container)

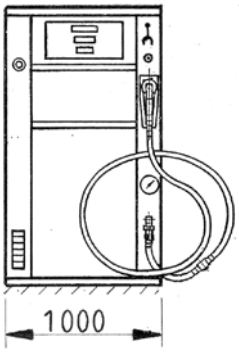
Order no.	Weight
1.2 to - 13.31000	1100 kg
2.1 to - 13.31100	1500 kg
2.9 to - 13.31200	1800 kg

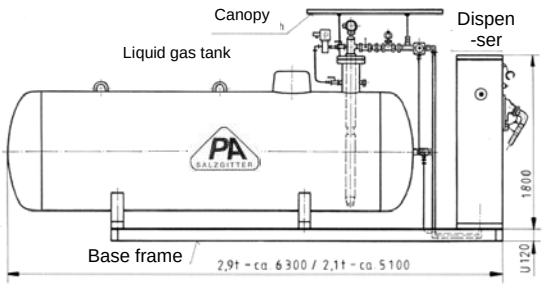




Version with base frame (primed and painted)

Order no.	Weight
1.2 to - 13.31500	1200 kg
2.1 to - 13.31600	1600 kg
2.9 to - 13.31700	1900 kg





LPG KOMPAKT system with an above-ground tank, a 3-stage SIHI pump and a fuel dispenser with a data acquisition system

- Above-ground liquid gas container with standard fittings and flange DN 125 as well as 2 pieces of 3/4" NPT angle valves screwed into the dished bottom with check valve (in accordance with the requirement of the VdTÜV leaflet on compressed gases 513) and two riser pipes into the gas phase room (return: Gas phase and return) P&A special Version with welded-on console for holding the LPG dispenser and fittings or alternatively with a stable base frame made of 120 U steel (primed and painted).
- **3-stage SIHI side channel pump unit,** with NPSH pre-stage, self-priming and gas entrainment simple mechanical seal, with base plate, coupling protection and 2.5 KW ex-motor, 230/400 V, 3000 rpm, Advantages: very high differential pressure, very good performance parameters, good price/performance ratio, very robust ⇒ long service life, very good NPSH values = low inlet head, proven technology, relatively low noise and vibration Performance data: max. pressure increase approx. Pressure increase approx. 11-12 bar ⇒ Q = approx. 15-20 l/min, pressure increase approx. 7 bar ⇒ Q = approx. 50 l/min, max. capacity approx. 75 l/min ⇒ a pressure increase of approx. 4 bar
- Overflow valve with self degassing, make P&A, with APZ 3.1 according to EN 10204
- Ball valve, dirt trap, safety valve with technical inspection certificate, etc.
- Explosion-proof solenoid valve, PN 25, normally closed, 230 V, 50 Hz, APZ 3.1 according to EN 10204 and ATEX-approval.
- Shut-off valve in the overflow line and gas phase recirculation, PN 25
- **Electronic liquid gas dispenser, type PA-5-H-AS-.** .., stainless steel housing, calibratable version, with PTB approval for custody transfer, complete with an **electronic data acquisition system (description see page 108),** pulse transmitter, dead man's button, fine filter, gas bubble separator, special piston meter for liquid gas Q = 5-50 l/min, check valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (LPG high-pressure hose L = 4.5 m, DN 16, hose retraction, tear-off coupling with component test (can be coupled under pressure), filling gun with safety filling coupling,
  with official calibration of the fuel dispenser
- **System control / MSR control cabinet,** completely installed in the electronics area of the fuel dispenser incl. the necessary electrical wiring for the SIHI pump, solenoid valve, dry-running protection, fuel dispenser, external EMERGENCY STOP button, lighting etc. as well as a cold check in the manufacturer's works, incl. electronic dry-running protection.
- Emergency stop panel as required by the TÜV leaflet, for remote acknowledgement of the emergency stop function, incl. operating light and additional emergency stop button, not explosion-protected, for installation e.g. in the cashier's office.
- Pressure and leak tests carried out by TÜV NORD

The listed fittings and parts are mounted on the tank with the required piping. The system Version conforms to the EC directives (97/23/EC-DGR**,** 98/37/EC-MaschDIR, 94/9/EC-ATEX-DIR**)** as well as AD-2000 and TRG 404.

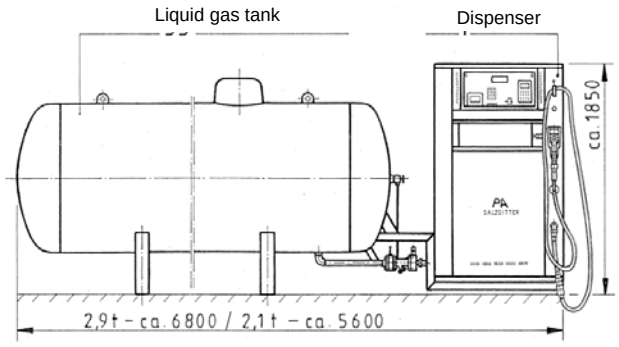
Version without base frame (console welded to the container)

without EC system

Order no
1.2 to 13.32000
2.1 to 13.32100
2.9 to 13.32200

with EC system

Order no
1.2 to 13.32500
2.1 to 13.32600
2.9 to 13.32700



Representation: Data acquisition with EC system, fuel dispenser rotated by 90 ° (option)

Version with base frame (primed and painted)

without EC system

Order No.
1.2 to - 13.33000
2.1 to – 13.33100
2.9 to - 13.33200

Data collection with customer card

with EC system

Order No
1.2 to - 13.33500
2.1 to – 13.33600
2.9 to - 13.33700

Data collection with EC system

LPG-KOMPAKT system with one above-ground tanka submersible pump and a dispenser with an integrated data acquisition system

- Above-ground liquid gas tank with standard fittings and DN 125 flange to accommodate the submersible pump as well as two 3/4" NPT angle valves screwed into the dished bottom with check valve (as required by the VdTÜV leaflet on compressed gases 513) and two riser pipes into the gas phase room (return: Gas phase and return) P&A special Version with welded-on console for holding the LPG dispenser and fittings or alternatively with a stable base frame made of 120 U steel (primed and painted).
- **Red-Jacket submersible pump**, type PA 300V17-21LPG-Premier, 21-stage, capacity approx. 50 l/min at a pressure increase of approx. 8 bar, complete with intake unit DN 125, pressure pipe system outlet DN 25 and ex terminal box
- Dry-running protection via a differential pressure switch
- Explosion-proof solenoid valve, PN 25, Material: brass, normally closed, 230 V, 50 Hz, with APZ 3.1 according to EN 10204
- Overflow valve with self degassing, PN 25, connection 3/4" NPT, with APZ 3.1 according to EN 10204
- Shut-off valve in the overflow line and gas phase recirculation, PN 25
- **Electronic liquid gas dispenser, type PA-5-H-AS-... (H-shape),** stainless steel housing, with PTB approval for custody transfer, complete with an **electronic data acquisition system (description see p. 108)**, pulse generator, dead man's button, fine filter, gas bubble separator, special piston meter for LPG Q = 5-50 l/min, check valve, differential pressure valve with integrated pipe break valve, pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose.LPG high-pressure hose L = 4.5 m, DN 16, hose retraction, breakaway coupling with component test (can be coupled under pressure), filling nozzle with safety filling coupling, with official calibration of the dispenser.
- **System control/MSR control cabinet,** completely installed in the electronics area of the dispenser incl. the necessary electrical wiring for the submersible pump, solenoid valve, dry-running protection, dispenser, external EMERGENCY STOP button, lighting, etc. as well as a cold check in the manufacturer's factory, incl. differential pressure switch as dry-running protection.
- Emergency stop panel as required by the TÜV leaflet, for remote acknowledgement of the emergency stop function, incl. operating light and additional emergency stop button, not explosion-protected, for installation e.g. in the cashier's office.
- Pressure and leak tests carried out by TÜV NORD

The listed fittings and parts are mounted on the tank with the required piping. The plant Version conforms to the EC directives (97/23/EC - DGR**,** 98/37/EC - Mach.Dir, 94/9/EC-ATEX-DIR**)** as well as AD-2000 and TRG 404

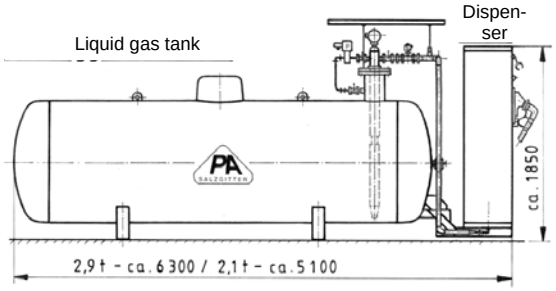
Version without base frame (console welded to the container)

without EC system

Order. no
1.2 to 13.40000
2.1 to 13.40100
2.9 to 13.40200

with EC system

Order no
1.2 to 13.40500
2.1 to 13.40600
2.9 to - 13.40700



Representation: Data acquisition with EC system

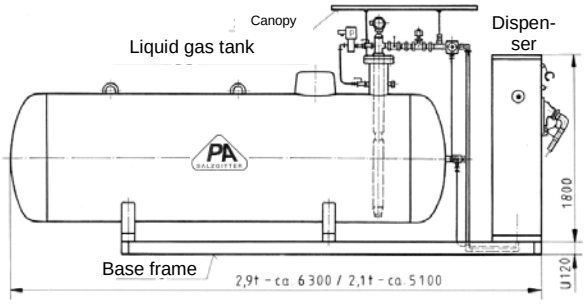
Version with base frame (primed and painted)

without EC system

Order. no
1.2 to - 13.41000
2.1 to 13.41100
2.9 to 13.41200

with EC system

Order no
1.2 to 13.41500
2.1 to 13.41600
2.9 to 13.41700



Representation: Data acquisition with EC system

LPG-KOMPAKT systemwith a buried tank with welded-on dispenser console, a submersible pump and a liquid gas dispenser type PA-4-H-HEC-...

- Underground liquid gas tank with EPOXID coating and standard fittings, additionally with a DN 125 flange to accommodate the submersible pump, with a round dome shaft, diameter approx. 1.0 m
  P&A special version with welded-on bracket/pedestal for direct installation of the dispenser on the container
- **Red-Jacket submersible pump**, type PA 300V17-21LPG-Premier, 21-stage, capacity approx. 50 l/min at a pressure increase of approx. 8 bar, complete with intake unit DN 125, pressure pipe system outlet DN 25 and ex terminal box
- Dry-running protection via a differential pressure switch
- Explosion-proof solenoid valve, PN 25, Material: brass, normally closed, 230 V, 50 Hz, with APZ 3.1 according to EN 10204
- Overflow valve with self degassing, PN 25, connection 3/4" NPT, with APZ 3.1 according to EN 10204
- Shut-off valve in the overflow line and gas phase recirculation, PN 25
- **Electronic liquid gas dispenser, type PA-4-H-HEC-... (H-shape)**, stainless steel housing, with PTB approval for custody transfer, complete with one-sided electronic EURO/litre display and electronic Hectronic calculator, dead man's button, pulse generator, fine filter, gas bubble separator, special piston meter for LPG Q = 5-50 l/min, back pressure valve, differential pressure valve with integrated pipe break valve, pressure gauge 0-25 bar (liquid filled), LPG high pressure valve with integrated pipe break valve, pressure gauge 0-25 bar (liquid filled).differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose L = 4.5 m, DN 16, hose retraction, breakaway coupling with component test (can be coupled under pressure), filling pistol with safety filling coupling, with official calibration of the dispenser.
- **System control/MSR control cabinet,** completely installed in the electronics area of the dispenser incl. the necessary electrical wiring for the submersible pump, solenoid valve, dry-running protection, dispenser, external EMERGENCY STOP button, lighting, etc. as well as a cold check in the manufacturer's factory, incl. differential pressure monitor as dry-running protection.
- Emergency stop panel as required by the TÜV leaflet, for remote acknowledgement of the emergency stop function, incl. operating light and additional emergency stop button, not explosion-protected, for installation e.g. in the cashier's office.
- Pressure and leak tests carried out by TÜV NORD
- **Magnesium anode** for the liquid gas tank, as the container must not have any connection to the potential equalisation
- **Foundation frame** for the liquid gas dispenser
- **Insulating piece DN 12 and insulating piece DN 22 with isolating spark gaps** with ATEX approval for the two pipelines

INCLUDING Services (on site) such as:

- Installation of the dispenser on the pedestal
- Connection of the pipelines pre-assembled in Salzgitter to the dispenser and the tank
- Re-insulation of the weld seams or soldered joints, ISOTEST, pressure and leak test of the pipeline
- Laying the pre-laid electrical cables to the field devices and the MSR control cabinet
- including travel costs, expenses, overnight stays, petrol costs and overtime allowances
- Including provision of an employee for TÜV approval
- including commissioning and instruction of the operating personnel
- including piping and electrical material

The listed fittings and parts are mounted on the tank with the required piping. The plant Version conforms to the EC directives (97/23/EC - DGR**,** 98/37/EC - Mach.Dir, 94/9/EC-ATEX-DIR**)** as well as AD-2000 and TRG 404

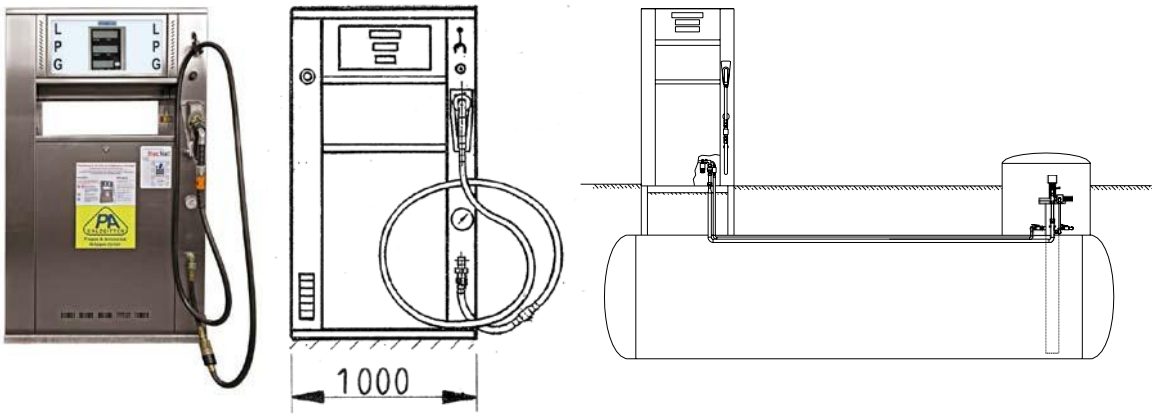
Version of the fuel dispenser with a HECTRONIC computer
(for other fuel dispenser computers, see below additional prices).

Order. no

1.2 to 13.43000
2.1 to 13.43100
2.9 to 13.43200

Weight

1.2 to 1100 kg
2.1 to 1500 kg
2.9 to 1800 kg



LPG KOMPAKT system with an underground tank with a welded dispenser console , a submersible pump and a liquid gas dispenser with an integrated data acquisition system

- Underground liquid gas tank with EPOXID coating and standard fittings, additionally with a DN 125 flange to accommodate the submersible pump, with a round dome shaft, diameter approx. 1.0 m,
  P&A special version with welded-on bracket/pedestal for direct mounting of the dispenser on the container
- **Red-Jacket submersible pump**, type PA 300V17-21LPG-Premier, 21-stage, capacity approx. 50 l/min at a pressure increase of approx. 8 bar, complete with intake unit DN 125, pressure pipe system outlet DN 25 and ex terminal box
- Dry-running protection via a differential pressure switch
- Explosion-proof solenoid valve, PN 25, Material: brass, normally closed, 230 V, 50 Hz, with APZ 3.1 according to EN 10204
- Overflow valve with self degassing, PN 25, connection 3/4" NPT, with APZ 3.1 according to EN 10204
- Shut-off valve in the overflow line and gas phase recirculation, PN 25
- **Electronic liquid gas dispenser, type PA-5-H-AS-... (H-shape),** stainless steel housing, with PTB approval for custody transfer, complete with pulse generator, dead man's button, fine filter, gas bubble separator, special piston meter for LPG Q = 5-50 l/min, check valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose L = 4 = 5 m, DN 16, hose retraction, tear-off coupling.LPG high-pressure hose L = 4.5 m, DN 16, hose retraction, breakaway coupling with component test (can be coupled under pressure), filling nozzle with safety filling coupling, with official calibration of the dispenser.

INCLUDING

- **Electronic data acquisition system** (installed in the fuel dispenser), calibratable, with the following features:
  The fuel terminal stores approximately the last 12000 refuelling operations. These can be called up on the display, the printer or via data medium. The printer prints a receipt for each refuelling operation, with price and quantity as well as the operator's address data. For the tank journal, there is a choice between new data since the last printout and all data in case a printout is lost. The stored data is transferred from the data acquisition system to the PC via data card (memory chip), data cable or modem.
  Suitable for operation with: Customer (chip) cards (OPTION: PREPAID and EC cards)
- **System control/MSR control cabinet,** completely installed in the electronics area of the dispenser incl. the necessary electrical wiring for the submersible pump, solenoid valve, dry-running protection, dispenser, external EMERGENCY STOP button, lighting, etc., as well as a cold check in the manufacturer's factory, incl. electronic dry-running protection as a differential pressure monitor.
- Emergency stop panel as required by the TÜV leaflet, for remote acknowledgement of the emergency stop function, incl. operating light and additional emergency stop button, not explosion-protected, for installation e.g. in the cashier's office.
- Pressure and leak tests carried out by TÜV NORD
- **Magnesium anode** for the liquid gas tank, as the container must not have any connection to the potential equalisation
- **Insulating piece DN 12 and insulating piece DN 22 with isolating spark gaps** with ATEX approval for the two pipelines

INCLUDING: Services (on site) such as:

- Installation of the dispenser on the pedestal
- Connection of the pipelines pre-assembled in Salzgitter to the dispenser and the tank
- Re-insulation of the weld seams or soldered joints, ISOTEST, pressure and leak test of the pipeline
- Laying the pre-laid electrical cables to the field devices and the MSR control cabinet
- including travel costs, expenses, overnight stays, petrol costs and overtime allowances
- Including provision of an employee for TÜV approval
- including commissioning and instruction of the operating personnel
- including piping and electrical material

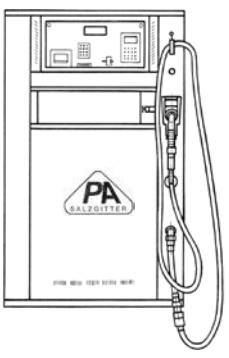
The listed fittings and parts are mounted on the tank with the required piping. The plant Version conforms to the EC directives (97/23/EC - DGR**,** 98/37/EC - Mach.Dir, 94/9/EC-ATEX-DIR**)** as well as AD-2000 and TRG 404

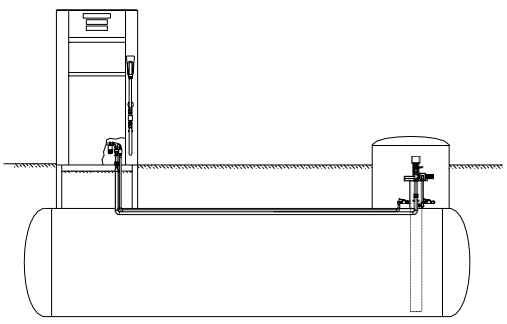
without EC system

Order no
1.2 to 13.44000
2.1 to 13.44100
2.9 to 13.44200

with EC system

Order no
1.2 to 13.44500
2.1 to 13.44600
2.9 to 13.44700





Representation of the petrol pump: Data acquisition with EC system

LPG SYSTEM(split Version) with an above-ground tank, a 3-stage SIHI pump and a fuel dispenser type PA-4-H-HEC-....

COMPONENT 1

- Above-ground liquefied gas tank with standard fittings and DN 25 bottom sampling pipe as well as 2 pieces of 3/4" NPT angle valves screwed into the dished bottom with check valve (in accordance with the requirement of the VdTÜV leaflet on compressed gases 513) and two riser pipes into the gas phase room (return: gas phase and return)
  P&A special Version with welded-on console for holding the LPG dispenser and fittings or alternatively with a stable base frame made of 120 mm U-steel (primed and painted).
- **3-stage SIHI side channel pump unit,** with NPSH pre-stage, self-priming and gas entrainment, simple mechanical seal, with base plate, coupling protection and 2.5 KW ex-motor, 230/400 V, 3000 rpm,
  Advantages: very high differential pressure, very good performance parameters, good price/performance ratio, very robust ⇒ long service life, very good NPSH values = low inlet height, proven technology, relatively low noise and vibration
  Performance data: max. pressure increase approx. 11-12 bar ⇒ Q = approx. 15-20 l/min,
  Pressure increase approx. 7 bar ⇒ Q = approx. 50 l/min, max. Outlet approx. 75 l/min ⇒ a pressure increase of approx. 4 bar
- Overflow valve with self degassing, make P&A, with APZ 3.1 according to EN 10204
- Ball valve, dirt trap, safety valve with technical inspection certificate, etc.
- Explosion-proof solenoid valve, PN 25, normally closed, 230 V 50 Hz, APZ 3.1 according to EN 10204 and ATEX approval.
- Shut-off valve in the overflow line and gas phase recirculation, PN 25

COMPONENTS 2:

- **Electronic liquid gas dispenser, type PA-4-H-HEC-.** .., stainless steel housing**,** with PTB approval for custody transfer, complete with one-sided electronic EURO/litre display and electronic Hectronic calculator, pulse generator, dead man's button, fine filter, gas bubble separator, special piston meter for liquid gas, capacity: 5-50 l/min, check valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose DN 16, L = 4.5 m, breakaway coupling with component test (can be coupled under pressure), filling gun with safety filling coupling, with official acceptance of the fuel dispenser
- Ex-protected shut-off solenoid valve PN 25, installed in the liquefied petroleum gas dispenser
- System control / MSR control cabinet, completely installed in the electronics area of the fuel dispenser incl. the necessary electrical wiring for the SIHI pump, solenoid valve, dry-running protection, fuel dispenser, external EMERGENCY STOP button, lighting etc. as well as a cold check in the manufacturer's works, incl. electronic dry-running protection.

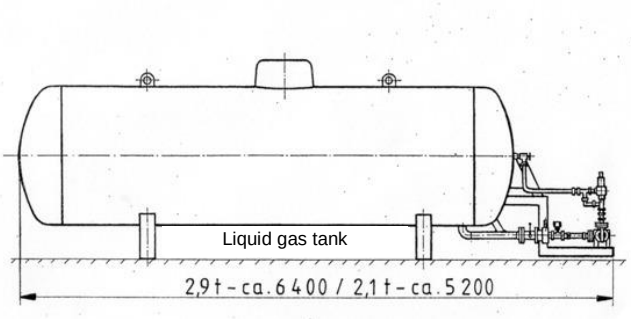
COMPONENTS 3:

Installation of the listed fittings and the dispenser, laying of the pipelines between the tank and the dispenser as WICU/copper/precision steel pipe, pressure and leak test as well as laying of the electrical lines between the tank and the dispenser, connection of the electrical supply lines laid on site and the control cabinet.
Including travel costs, expenses, overnight stays, petrol costs and overtime allowances, including
provision of an employee for TÜV approval
including commissioning and instruction of the operating personnel
Including piping and electrical material (5 m length each, see also options on page 102 for longer lengths) Including **foundation frame** for the liquid gas dispenser
including **emergency stop panel** for remote acknowledgement of the emergency stop function,
incl. operating light and emergency stop button

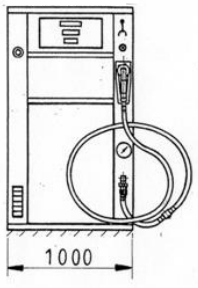
The listed fittings and parts are mounted on the tank with the required piping. The system Version conforms to the EC directives (97/23/EC-DGR**,** 98/37/EC-Masch.DIR, 94/9/EG-ATEX-DIR**)** as well as AD-2000 and TRG 404.

Order. no

1.2 to 13.45000
2.1 to 13.45100
2.9 to 13.45200



Dispenser



LPG SYSTEM(split Version) with one above-ground tank, one submersible pump and one dispenser type PA-4-H-HEC-....

COMPONENT 1

- Above-ground liquid gas tank with standard fittings and DN 125 flange for the installation of the submersible pump as well as 2 pieces of 3/4"NPT angle valves with check valve (as required by the VdTÜV leaflet on pressurised gases 513) and two riser pipes to the gas phase room (return): gas phase and return)
- **Red-Jacket submersible pump,** type PA 300V17-21LPG-Premier, 21-stage, capacity approx. 50 l/min at a pressure increase of approx. 8 bar, complete with intake unit DN 125, pressure line system outlet DN 25 and Ex terminal box
- **Dry-running protection via a differential pressure switch**
- Overflow valve with self degassing, make P&A, with APZ 3.1 according to EN 10204
- Ball valve, dirt trap, safety valve with technical inspection certificate, etc.
- Explosion-proof solenoid valve PN 25, normally closed, 230 V 50 Hz, APZ 3.1 according to EN 10204 and ATEX approval.
- Shut-off valve in the overflow line and gas phase recirculation, PN 25

COMPONENTS 2:

- **Electronic liquid gas dispenser, type PA-4-H-HEC-.** .., stainless steel housing**,** with PTB approval for custody transfer, complete with one-sided electronicEURO/litre display and electronic Hectronic calculator, pulse generator, dead man's button, fine filter, gas bubble separator, special piston meter for liquid gas, capacity: 5-50 l/min, check valve, differential pressure valve with integrated pipe break valve,
  Pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose DN 16, L = 4.5 m, breakaway coupling with component test (can be coupled under pressure), filling gun with safety filling coupling,
  with official calibration of the fuel dispenser
- Ex-protected shut-off solenoid valve PN 25, installed in the liquefied petroleum gas dispenser
- System control / MSR control cabinet, completely installed in the electronics area of the dispenser incl. the necessary electrical wiring for the submersible pump, solenoid valve, dry-running protection, dispenser, external EMERGENCY STOP button, lighting, etc., as well as a cold check in the manufacturer's factory, incl. dry-running protection via a differential pressure monitor.

COMPONENTS 3:

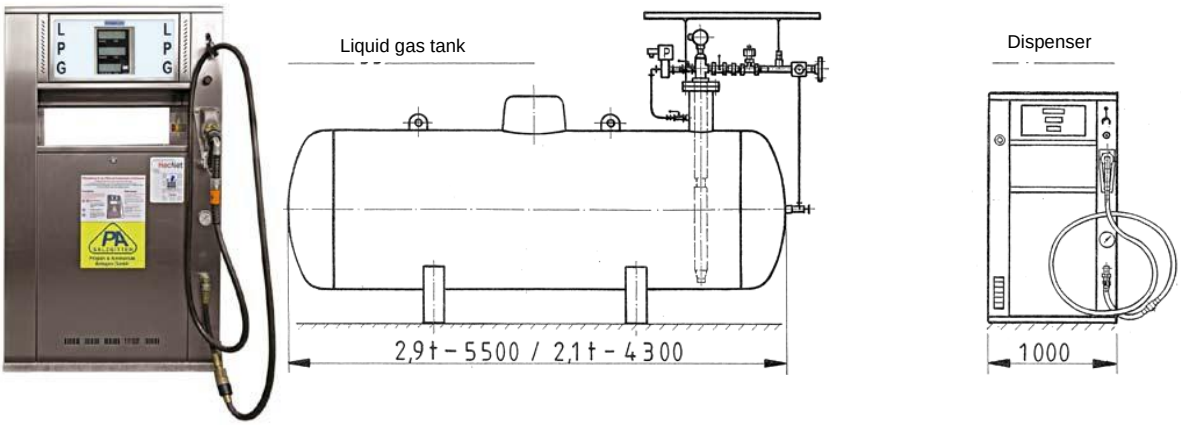
Installation of the listed fittings and the dispenser, laying of the pipelines between the tank and the dispenser as WICU/copper/precision steel pipe, pressure and leak test as well as laying of the electrical lines between the tank and the dispenser, connection of the electrical supply lines laid on site and the control cabinet.
Including travel costs, expenses, overnight stays, petrol costs and overtime allowances,
Including provision of an employee for TÜV approval
Including commissioning and instruction of the operating personnel
Including piping and electrical material (5 m length each, see also options page 102 for longer lengths)
Including **foundation frame** for the liquid gas dispenser
Including **emergency stop panel** for remote acknowledgement of the emergency stop function, incl. operating light and emergency stop button

The listed fittings and parts are mounted on the tank with the required piping. The system Version conforms to the EC directives (97/23/EC-DGR**,**98/37/EC-Mach.Dir. 94/9/EC-ATEX-DIR**)** as well as AD-2000 and TRG 404.

Order. no
1.2 to 13.46000
2.1 to 13.46100
2.9 to 13.46200

Weight

1.2 to 1200 kg
2.1 to 1600 kg
2.9 to 1900 kg



LPG SYSTEM(split Version) with an above-ground tank, a 3-stage SIHI pump and an LPG dispenser
Type PA-5-H-AS-... (EC) with an integrated data acquisition system

COMPONENT 1

- Above-ground liquefied gas tank with standard fittings and DN 25 bottom sampling pipe as well as 2 pieces of 3/4" pipe screwed into the dished bottom." NPT angle valves with check valve (as required by the VdTÜV leaflet on compressed gases 513) and two riser pipes into the gas phase chamber (return: gas phase and return)
  P&A custom-made with welded-on bracket for accommodating the pressure boosting system
- **3-stage SIHI side channel pump unit,** with NPSH pre-stage, self-priming and gas entrainment, simple mechanical seal, with base plate, coupling protection and 2.5 KW ex-motor, 230/400 V, 3000 rpm,
  Advantages: very high differential pressure, very good performance parameters, good price/performance ratio, very robust ⇒ long service life, very good NPSH values = low supply head, proven technology, relatively low noise and vibration
  Performance data: max. pressure increase approx. 11-12 bar ⇒ Q = approx. 15-20 l/min,
  Pressure increase approx. 7 bar ⇒ Q = approx. 50 l/min; max. Outlet approx. 75 l/min ⇒ a pressure increase of approx. 4 bar
- Overflow valve with self degassing, make P&A, with APZ 3.1 according to EN 10204
- Ball valve, dirt trap, safety valve with technical inspection certificate, etc.
- Explosion-proof solenoid valve, PN 25, normally closed, 230 V, 50 Hz, with APZ 3.1 EN 10204 and ATEX approval.

COMPONENTS 2:

- **Electronic liquid gas dispenser**, type PA-5-H-AS-... **(H-shape),** stainless steel housing, with PTB approval for custody transfer, complete with pulse generator, dead man's button, fine filter, gas bubble separator, special piston meter for LPG Q = 5-50 l/min, check valve, differential pressure valve with integrated pipe break valve, pressure gauge 0-25 bar (liquid-filled) no-return valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (liquid-filled),
  LPG high-pressure hose L = 4.5 m, DN 16, hose retraction, breakaway coupling with component test (can be coupled under pressure), filling pistol with safety filling coupling,
  with official calibration of the fuel dispenser

INCLUDING

- **Electronic data recording system** (installed in the fuel dispenser), calibratable, suitable for operation with: Customer (chip) cards (OPTION: PREPAID and EC cards)
  ***** For detailed description see page 108 *****
- Ex-protected shut-off solenoid valve ,PN 25, installed in the liquefied petroleum gas dispenser
- **System control / MSR control cabinet,** completely installed in the electronics area of the fuel dispenser incl. the necessary electrical wiring for the SIHI pump, solenoid valve, dry-running protection, fuel dispenser, external EMERGENCY STOP button, lighting etc. as well as a cold check in the manufacturer's works, incl. electronic dry-running protection.

COMPONENTS 3:

Installation of the listed fittings and the dispenser, laying of the pipelines between the tank and the dispenser as WICU/copper/precision steel pipe, pressure and leak test as well as laying of the electrical lines between the tank and the dispenser, connection of the electrical supply lines laid on site and the control cabinet.
Including travel costs, expenses, overnight stays, petrol costs and overtime allowances
Including provision of an employee for TÜV acceptance, commissioning and instruction of the operating personnel,
Including piping and electrical material (each 5 m long), as well as a galvanised pump protection housing
Including a **foundation frame for** the LPG dispenser.
Including **emergency stop panel** for remote acknowledgement of the emergency stop function, incl. operating light and emergency stop button

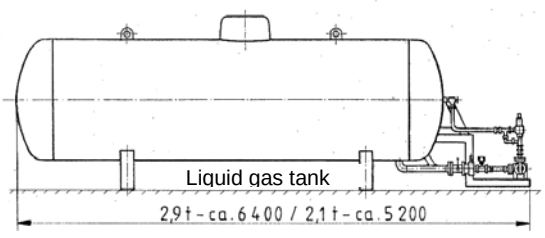
The listed fittings and parts are mounted on the tank with the required piping. The system Version conforms to the EC directives (97/23/EC-DGR**,** 98/37/EC-Mach.Dir, 94/9/EC-ATEX-DIR**)** as well as AD-2000 and TRG 404.

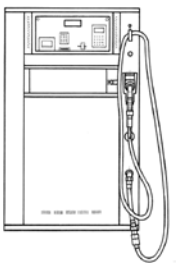
without EC system

Order. no
1.2 to 13.47000
2.1 to 13.47100
2.9 to 13.47200

with EC system

Order no
1.2 to 13.47500
2.1 to 13.47600
2.9 to 13.47700





LPG SYSTEM(split Version) with one above-ground tank, one submersible pump and one LPG dispenser type PA-5-H-AS-...(EC) with an integrated data acquisition system (OPTION: EC system)

COMPONENT 1

- Above-ground liquid gas tank with standard fittings and DN 125 flange for the installation of the submersible pump as well as 2 pieces of 3/4" NPT angle valves with check valve (as required by the VdTÜV leaflet on pressurised gases 513) and 2 riser pipes into the gas phase room (return: gas phase and return)
- **Red-Jacket submersible pump,** type PA 300V17-21LPG-Premier, 21-stage, capacity approx. 50 l/min at a pressure increase of approx. 8 bar, complete with intake unit DN 125, pressure line system outlet DN 25 and Ex terminal box
- Dry-running protection via a differential pressure switch
- Ball valve, dirt trap, safety valve with technical inspection certificate, etc.
- Explosion-proof solenoid valve PN 25, normally closed, 230 V 50 Hz, APZ 3.1 according to EN 10204 and ATEX approval.

COMPONENTS 2:

- **Electronic liquid gas dispenser**, **type PA-5-H-AS-**... **(H-shaped)**, stainless steel housing, with PTB approval for custody transfer, complete with pulse generator, dead man's button, fine filter, gas bubble separator, special piston meter for LPG Q = 5-50 l/min, return valve, differential pressure valve with integrated pipe break valve, manometer 0-25 bar (liquid-filled).check valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose L = 4.5 m, DN 16, hose retraction, breakaway coupling with component test (can be coupled under pressure), filling pistol with safety filling coupling,
- with official calibration of the fuel dispenser
- **Electronic data recording system** (installed in the fuel dispenser), calibratable, suitable for operation with: Customer (chip) cards (OPTION: PREPAID and EC cards)
  ***** For detailed description see page 108 *****
- **Ex-protected shut-off solenoid valve** PN 25, installed in the liquefied petroleum gas dispenser
- **System control / MSR control cabinet,** completely installed in the electronics area of the dispenser incl. the necessary electrical wiring for the submersible pump, solenoid valve, dry-running protection, dispenser, external EMERGENCY STOP button, lighting etc. as well as a cold check in the manufacturer's works, incl. dry-running protection via a differential pressure monitor.

COMPONENTS 3:

Installation of the listed fittings and the fuel dispenser, laying of the pipelines between the tank and the fuel dispenser as WICU/copper/precision steel pipe, pressure and leak test as well as laying of the electrical lines between the tank and the fuel dispenser, connection of the electrical supply lines laid on site and the control cabinet.
Including travel costs, expenses, overnight stays, petrol costs and overtime surcharges
Including provision of an employee for TÜV acceptance as well as commissioning and instruction of the operating personnel
Including piping and electrical material (5 m length each, see also options on page 102 for longer lengths)
Including **foundation frame** for the liquid gas dispenser
including **emergency stop panel** for remote acknowledgement of the emergency stop function, incl. operating light and emergency stop button

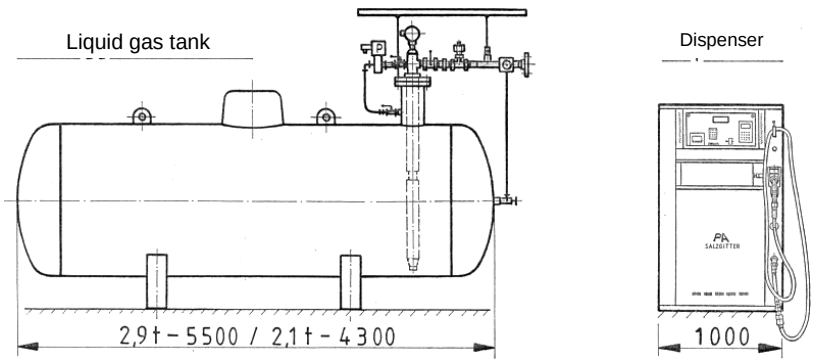
The listed fittings and parts are mounted on the tank with the required piping. The system Version conforms to the EC directives (97/23/EC-DGR**,** 98/37/EC-Mach.Dir, 94/9/EC-ATEX-DIR**)** as well as AD-2000 and TRG 404.

without EC system

Order no
1.2 to 13.48000
2.1 to 13.48100
2.9 to 13.48200

with EC system

Order no
1.2 to 13.48500
2.1 to 13.48600
2.9 to 13.48700



Representation of the petrol pump: Data acquisition with EC system

LPG SYSTEM(split Version) with one underground tank, one submersible pump and one LPG dispenser type PA-4-H-HEC-...

COMPONENTS 1:

- Underground liquid gas tank with EPOXID coating and standard fittings, additionally with a DN 125 flange to accommodate the submersible pump, with a round dome shaft, diameter approx. 1.0 m
  as well as 2 pieces 3/4 "NPT angle valves with check valve (as required by the VdTÜV leaflet on compressed gases 513)
- **Red-Jacket submersible pump**, type PA 300V17-21LPG-Premier, 21-stage, capacity approx. 50 l/min at a pressure increase of approx. 8 bar, complete with intake unit DN 125, pressure pipe system outlet DN 25 and ex terminal box
- Dry-running protection via a differential pressure switch
- Explosion-proof solenoid valve, PN 25, Material: brass, normally closed, 230 V, 50 Hz, with APZ 3.1 according to EN 10204
- Overflow valve with self degassing, PN 25, connection 3/4" NPT, make P&A, with APZ 3.1 according to EN 10204
- Shut-off valve in the overflow line and gas phase recirculation, PN 25

COMPONENTS 2:

- **Electronic liquid gas dispenser, type PA-4-H-HEC-... (H-shape)**, stainless steel housing, with PTB approval for custody transfer, complete with one-sided electronic EURO/litre display and electronic Hectronic calculator, dead man's button, pulse generator, fine filter, gas bubble separator, special piston meter for LPG Q = 5-50 l/min, check valve, differential pressure valve with integrated pipe break valve, pressure gauge 0-25 bar (liquid-filled), LPG-HEC-..., LPG-HEC-..., LPG-HEC-...differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose L = 4.5 m, DN 16, hose retraction, breakaway coupling with component test (can be coupled under pressure), filling pistol with safety filling coupling, with official calibration of the dispenser.
- **System control / MSR control cabinet,** completely installed in the electronics area of the dispenser incl. the necessary electrical wiring for the submersible pump, solenoid valve, dry-running protection, dispenser, external EMERGENCY STOP button, lighting etc. as well as a cold check in the manufacturer's factory, incl. a differential pressure monitor as dry-running protection.
- **Emergency stop panel** as required by the TÜV leaflet, for remote acknowledgement of the emergency stop function, incl. operating light and additional emergency stop button, not explosion-protected, for installation e.g. in the cashier's office.
- Pressure and leak tests carried out by TÜV NORD

COMPONENTS 3:

Installation of the listed fittings and the dispenser, laying of the pipelines between the tank and the dispenser as WICU/copper/precision steel pipe, pressure and leak test as well as laying of the electrical lines between the tank and the dispenser, connection of the electrical supply lines laid on site and the control cabinet.

Including travel costs, expenses, overnight stays, petrol costs and overtime pay.
Including piping and electrical material (5 m length each, see also options on page 102 for longer lengths)
Including **foundation frame** for the liquid gas dispenser
Including **magnesium anode** for the U-tank, as the tank must not have any connection to the equipotential bonding
Including **DN 12 and DN 22 insulating piece with isolating spark gaps** with ATEX approval for the two pipes
Including emergency stop **panel for remote acknowledgement of** the emergency stop function, incl. operating light and emergency stop button

The listed fittings and parts are mounted on the tank with the required piping. The plant Version conforms to the EC directives (97/23/EC-DGR**,** 98/37/EC-Mach.Dir, 94/9/EC-ATEX-DIR**)** as well as AD-2000 and TRG 404

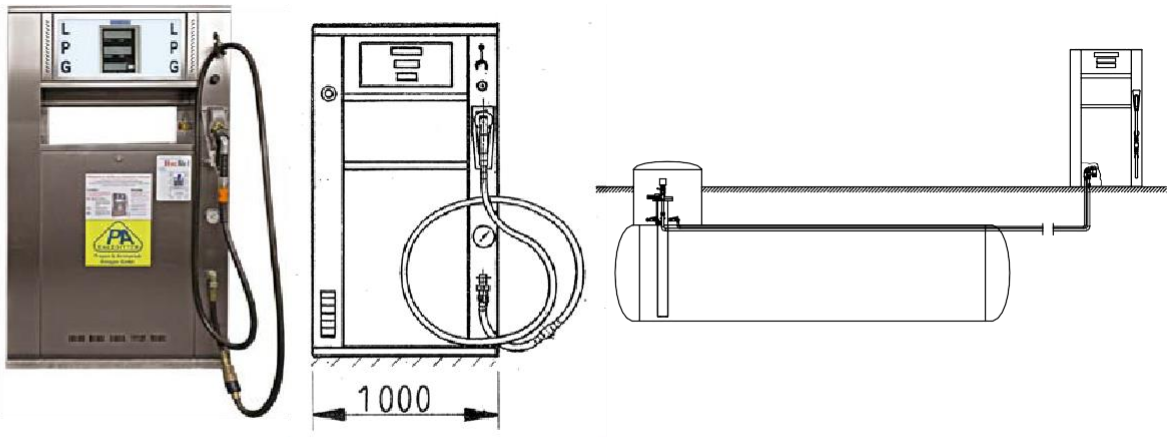
Version of the fuel dispenser with a HECTRONIC computer
(for other fuel dispenser computers, see below additional prices).

Order no.

1.2 to 13.49000
2.1 to 13.49100
2.9 to 13.49200

Weight

1.2 to 1100 kg
2.1 to 1500 kg
2.9 to 1800 kg



LPG SYSTEM(split Version) with one underground tank, one submersible pump and one LPG dispenser type PA-5-H-AS-...
with an integrated data acquisition system

COMPONENTS 1:

- Underground liquid gas tank with EPOXID coating and standard fittings, additionally with a DN 125 flange to accommodate the submersible pump, with a round dome shaft, diameter approx. 1.0 m
  as well as 2 pieces 3/4" NPT angle valves with check valve (according to the requirement of the VdTÜV leaflet on compressed gases 513)
- **Red-Jacket submersible pump**, type PA 300V17-21LPG-Premier, 21-stage, capacity approx. 50 l/min at a pressure increase of approx. 8 bar, complete with intake unit DN 125, pressure pipe system outlet DN 25 and ex terminal box
- Dry-running protection via a differential pressure switch
- Explosion-proof solenoid valve, PN 25, Material: brass, normally closed, 230 V, 50 Hz, with APZ 3.1 according to EN 10204
- Overflow valve with self degassing, PN 25, connection 3/4" NPT, make P&A, with APZ 3.1 according to EN 10204
- Shut-off valve in the overflow line and gas phase recirculation, PN 25

COMPONENTS 2:

- **Electronic liquid gas dispenser,** type PA-5-H-AS-... (H-shape), stainless steel housing, with PTB approval for custody transfer, complete with pulse generator, dead man's button, fine filter, gas bubble separator, special piston meter for LPG Q = 5-50 l/min, back pressure valve, differential pressure valve with integrated pipe break valve, pressure gauge 0-25 bar (liquid-filled), LPG high pressure valve,check valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose L = 4.5 m, DN 16, hose retraction, breakaway coupling with component test (can be coupled under pressure), filling pistol with safety filling coupling,
  with official calibration of the fuel dispenser
  Electronic data acquisition system (installed in the fuel dispenser), calibratable, Suitable for operation with: Customer (chip) cards (OPTION: PREPAID and EC cards)
  ***** For detailed description see page 108 *****
- Ex-protected shut-off solenoid valve, PN 25, installed in the liquefied petroleum gas dispenser
- **System control/MSR control cabinet,** installed in the electronics area of the fuel dispenser incl. the necessary electrical wiring for the SIHI pump, solenoid valve, dry-running protection, fuel dispenser, external EMERGENCY STOP button, lighting, etc. as well as a cold check in the manufacturer's factory.
- Emergency stop panel as required by the TÜV leaflet, for remote acknowledgement of the emergency stop function, incl. operating light and additional emergency stop button, not explosion-protected, for installation e.g. in the cashier's office.
- Pressure and leak tests carried out by TÜV NORD

COMPONENTS 3:

Installation of the listed fittings and the dispenser, laying of the pipelines between the tank and the dispenser as WICU/copper/precision steel pipe, pressure and leak test as well as laying of the electrical lines between the tank and the dispenser, connection of the electrical supply lines laid on site and the control cabinet.
including travel costs, expenses, overnight stays, petrol costs and overtime pay
Including provision of an employee for TÜV approval as well as commissioning and instruction of the operating personnel
Including piping and electrical material (each 5 m long, see also options page 102 for longer lengths)
Including **foundation frame** for the LPG dispenser
Including **magnesium anode** for the U-tank, as the tank must not have any connection to the equipotential bonding
Including **DN 12 and DN 22 insulating piece with isolating spark gaps** with ATEX approval for the two pipes
Including **emergency stop panel for remote acknowledgement** of the emergency stop function, incl. operating light and emergency stop button

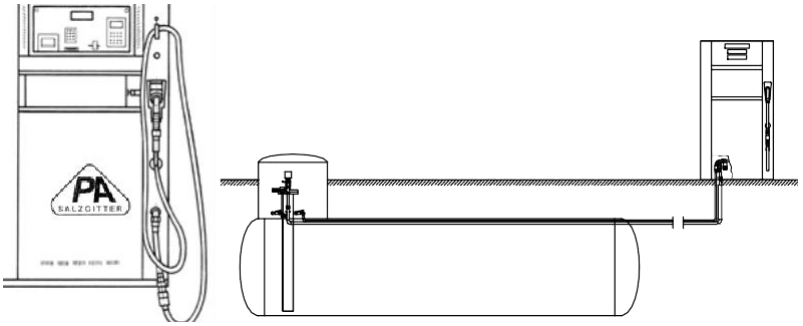
The listed fittings and parts are mounted on the tank with the required piping. The plant Version conforms to the EC directives (97/23/EC - DGR**,** 98/37/EC - Mach.Dir, 94/9/EC-ATEX-RL**)** as well as AD-2000 and TRG 404

without EC system

Order no
1.2 to 13.50000
2.1 to 13.50100
2.9 to 13.50200

with EC system

Order no
1.2 to 13.50500
2.1 to 13.50600
2.9 to 13.50700



Representation of the petrol pump: Data acquisition with EC system

LPG KOMPAKT system as a special version with an upright tank, a 3-stage SIHI side channel pump and a fuel dispenser type PA-4-H-HEC-.
alternatively with integrated data acquisition system (OPTION: EC system)

- **Above-ground standing liquefied gas tank** with standard fittings and DN 25 ground sampling pipe as well as 2 pieces of 3/4" NPT angle valves with check valve (in accordance with the requirement of VdTÜV leaflet on pressurised gases 513) and two riser pipes into the gas phase room (return: gas phase and return), with a stable base frame
- **3-stage SIHI side channel pump unit,** with NPSH pre-stage, self-priming and gas entrainment, simple mechanical seal, with base plate, coupling protection and 2.5 KW ex-motor, 230/400 V, 3000 rpm,
  Advantages: very high differential pressure, very good performance parameters, good price/performance ratio, very robust ⇒ long service life, very good NPSH values = low inlet height, proven technology, relatively low noise and vibration Performance data: max. pressure increase approx. 11-12 bar ⇒ Q = approx. 15-20 l/min,
  Pressure increase approx. 7 bar ⇒ Q = approx. 50 l/min, max. Outlet approx. 75 l/min ⇒ a pressure increase of approx. 4 bar
- Overflow valve with self degassing, make P&A, with APZ 3.1 according to EN 10204
- **Electronic container content display (special version)** - display pulled downwards
- **Plug for the overfill protection** pulled down
- Ball valve, radiation plate, dirt trap, safety valves with TÜV approval etc.
- Explosion-proof solenoid valve, PN 25, normally closed, 230 V, 50 Hz, APZ 3.1 according to EN 10204, ATEX-approved
- Shut-off valve in the overflow line and gas phase recirculation, PN 25
- **Electronic liquid gas dispenser, type PA-4-HEC-..., H-shape ,** stainless steel housing, with PTB approval for custody transfer, complete with one-sided electronic EURO/litre display and electronic Hectronic calculator, pulse generator, dead man's button, fine filter, gas bubble separator, special piston meter for liquid gas, capacity: 5-50 l/min, check valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (liquid-filled), LPG high-pressure hose DN 16, L = 4.5 m, breakaway coupling with component testing (can be coupled under pressure), filling pistol with safety filling coupling, with official calibration of the dispenser

ALTERNATIVE:

- **Electronic liquid gas dispenser, type PA-5-H-AS-...,** stainless steel housing, PTB approval for custody transfer, complete with an **integrated electronic data acquisition system (for description see p. 108)**.
- **System control / MSR control cabinet,** completely installed in the electronics area of the fuel dispenser incl. the necessary electrical cabling for the SIHI pump, solenoid valve, dry-running protection, fuel dispenser, external EMERGENCY STOP button, lighting, etc. as well as a cold check at the manufacturer's works, incl. electronic dry-running protection.
- **Emergency stop panel** as required by the TÜV leaflet, for remote acknowledgement of the emergency stop function, incl. operating light and additional emergency stop button, not explosion-protected, for installation e.g. in the cashier's office.
- Pressure and leak tests carried out by TÜV NORD

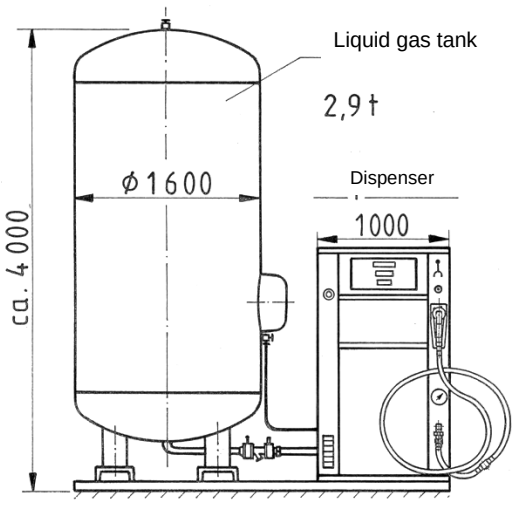
The listed fittings and parts are mounted on the tank with the required piping. The system Version conforms to the EC directives (97/23/EC-DGR**,** 98/37/EC-Mach.Dir, 94/9/EC-ATEX-Dir.**)** as well as AD-2000 and TRG404.

System configuration with a HECTRONIC dispenser computer (for other computers, see page 102)

Order no
2.1 to - 13.52000 (tank diameter = 1.25 m)
2.9 to - 13.52100 (container diameter = 1.60 m)

Version with a data acquisition system Order no
2.1 to - 13.53000 (container diameter = 1.25 m)
2.9 to - 13.53100 (container diameter = 1.60 m)

Version with an EC system Order, no
2.1 to - 13.54000 (container diameter = 1.25 m)
2.9 to - 13.54100 (container diameter = 1.60 m)



LPG SYSTEM (split Version) with one upright tank, a 3-stage SIHI side channel pump and a dispenser type PA-4-H-HEC-..., Alternatively with integrated data acquisition system

COMPONENT 1

- Above-ground standing liquefied gas container with standard fittings and DN 25 ground sampling pipe as well as 2 pieces of 3/4" NPT angle valves with check valve (in accordance with the requirement of VdTÜV leaflet on pressurised gases 513) and two riser pipes into the gas phase room (return: gas phase and return), with a stable base frame in special Version (primed and painted).
- **3-stage SIHI side channel pump unit,** with NPSH pre-stage, self-priming and gas entrainment, simple mechanical seal, with base plate, coupling protection and 2.5 KW ex-motor, 230/400 V, 3000 rpm,
- Overflow valve with self degassing, make P&A, with APZ 3.1acc. to EN 10204
- **Electronic container content display (special version)** - display pulled downwards
- Ball valve, radiation plate, dirt trap, safety valves with TÜV approval etc.
- Explosion-proof solenoid valve, PN 25, normally closed, 230 V, 50 Hz, APZ 3.1acc. to EN 10204, ATEX-approved.

COMPONENTS 2:

- **Electronic liquid gas dispenser, type PA-4-H-HEC-..., H-shape ,** stainless steel housing, with PTB approval for custody transfer, complete with one-sided electronic EURO/litre display and electronic Hectronic calculator, pulse generator, dead man's button, fine filter, gas bubble separator, special piston meter for liquid gas, capacity: 5-50 l/min, check valve, differential pressure valve with integrated pipe break valve, pressure gauge
  0-25 bar (liquid-filled), LPG high-pressure hose DN 16, L = 4.5 m, breakaway coupling with component test (can be coupled under pressure), filling nozzle with safety filling coupling, with official calibration of the dispenser

ALTERNATIVE:

- **Electronic liquid gas dispenser, type PA-5-H-AS-.** .., stainless steel housing, calibratable version, complete with an **integrated electronic data acquisition system** **(for description see page 108)**
- **System control / MSR control cabinet,** completely installed in the electronics area of the fuel dispenser incl. the necessary electrical wiring for the SIHI pump, solenoid valve, dry-running protection, fuel dispenser, external EMERGENCY STOP button, lighting etc. as well as a cold check in the manufacturer's works, incl. electronic dry-running protection.
- **Emergency stop panel** for remote acknowledgement of the emergency stop function, incl. operating light and additional emergency stop button
- Pressure and leak tests carried out by TÜV NORD

COMPONENTS 3:

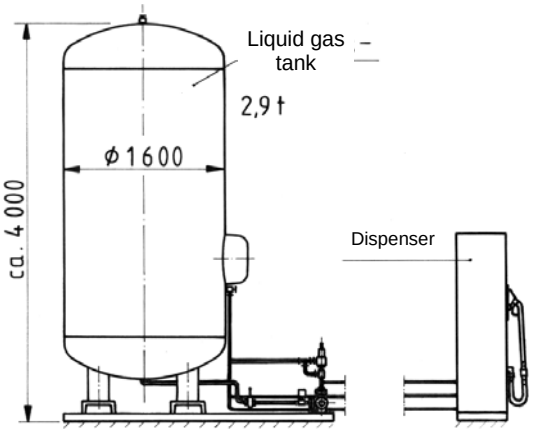
Installation of the listed fittings and the fuel dispenser, laying of the pipelines between the tank and the fuel dispenser as WICU/copper/precision steel pipe, pressure and leak test as well as laying of the electrical lines between the tank and the fuel dispenser, connection of the electrical supply lines laid on site and the control cabinet.
Including travel costs, expenses, overnight stays, petrol costs and overtime allowances
Including provision of an employee for TÜV acceptance as well as commissioning and instruction of the operating personnel
Including piping and electrical material (5 m length each) as well as a galvanised pump protection housing
Including **foundation frame** for the liquid gas dispenser.
Including **emergency stop panel** for remote acknowledgement of the emergency stop function, incl. operating light and emergency stop button

The listed fittings and parts are mounted on the tank with the required piping. The system Version conforms to the EC directives (97/23/EC-DGR**,** 98/37/EC-Mach.Dir, 94/9/EC-ATEX-Dir.**)** as well as AD-2000 and TRG404.

System Version with a HECTRONIC computer Order. no
2.1 to - 13.55000 (container diameter = 1.25 m)
2.9 to - 13.55100 (container diameter = 1.60 m)

Version with a data acquisition system Order no
2.1 to - 13.56000 (container diameter = 1.25 m)
2.9 to - 13.56100 (container diameter = 1.60 m)

Version with an EC system Order. no
2.1 to - 13.57000 (container diameter = 1.25 m)
2.9 to - 13.57100 (container diameter = 1.60 m)



Options / surcharges for all PLANT VERSIONS

Order no.	
13.60000	Preparation of application documents
13.60100	Construction management for turnkey plants incl. 1 on-site visit
13.60200	LPG dispenser as INSIDE VERSION (hose on the side)
13.60300	Liquid gas dispenser as INSIDE VERSION (hose on the side) in connection with a 3. Display e.g. of a separate EURO/litre remote display (see order no. 13.66500 + 13.66600)
13.60400	Petrol pump with a 2nd display (see order no. 13 .66500 + 13.66600). (1 measuring system)
13.60500	Double dispens er (2 measuring systems, 2 dispensing hoses, display on both sides, 2 x calibration)
13.**60600**	Dispenser version as C-shape (standard H-shape) - 1000 x 1800 x 500 mm (W x H x D)
13.60700	Dispenser version as CS-shape (standard H-shape) - 860 x 1800 x 500 mm (W x H x D)
13. **60800**	Dispenser Version as I-shape (standard H-shape) - 500 x 1710 x 500 mm (W x H x D)
13.60900	Dispenser Version as T-shape (standard H-shape) - 500 (700) x 1710 x 500 (W x H x D)
13.61000	Large weather protection roof type III, colour blue (RAL 5010 - standard) with advertising print "LPG" and with two side glass panes made of safety glass
13.61100	Large weather protection roof type I, colour blue (RAL 5010 - Standard) with advertising print "LPG" and with two side wire-glass inserts
13.61200	Dispenser weather protection roof type II made of ALU
13.61300	Lighting with twilight switch for the weather protection roof type I; II and III
13.61400	Flat-rate freight charge up to 100 km for the transport of the large weather protection roof
13 **.61500**	Flat-rate freight charge up to 101-200 km for the transport of the large weather protection roof
13.61600	Flat-rate freight charge up to 201-300 km for the transport of the large weather protection roof
13.61700	Flat-rate freight charge up to 301-400 km for the transport of the large weather protection roof
13. **61800**	Flat-rate freight charge up to 401-500 km for the transport of the large weather protection roof
13.61900	Flat-rate freight charge up to 501-600 km for the transport of the large weather protection roof
13. **62000**	Flat-rate freight charge up to 601-700 km for the transport of the large weather protection roof
13.62100	Wired remote transmission of the container contents incl. installation and 5 m cable laying
13.62200	Radio remote transmission of the container contents
13.62300	Remote container content display - transmission via GSM modem
13.62400	Maintenance contract for the LPG SYSTEM (without emergency service)
13.62500	Maintenance contract for the LPG SYSTEM with emergency service
13.62600	Service contract for the LPG SYSTEM with emergency service and calibration
1.19500	Complete set of adapters in plastic case (7 adapters)
1.19600	Complete set of adapters in plastic case (10 adapters)
13.62800	New truck toll per km
13.62900	Provision of a crane vehicle for unloading the plant
13.63000	EMERGENCY TELEPHONE with forwarding of the emergency stop function according to VdTÜV bulletin (wall-mounted device)
13.63100	EMERGENCY PHONE with forwarding of the emergency stop function in accordance with the VdTÜV bulletin Version as pedestal with lighting, additional emergency stop button and information plate
13.63200	Sticking the petrol pump in the colours of the mineral oil companies
13.63210	Sticking the container with a provided advertising print
13.63300	Additional price for an electronic mass flow measuring system instead of a piston meter

Options / additional prices for LPG COMPACT SYSTEMS

Order no	
13.65000	System version with base frame (primed and painted)
13.65100	Dispenserturned 90° - tank right - dispenser left
13.65200	Dispenser turned 90° - tank left - dispenser right
13.10300	Dispensing pump/ dispensing cabinet on the longitudinal side of the container - centre (ZBLM)
13.10400	Dispensing pump/ dispensing cabinet on the longitudinal side of the container - right (ZBLR)
13.**10500**	Dispenser/tap cabinet on the longitudinal side of the container - left (ZBLL)
13.10600	System version with base frame and 1-sided collision protection
13.**10700**	System version with base frame and 2-sided collision protection
13.10800	System version with base frame and 3-sided collision protection
13.10900	System version with base frame and 4-sided collision protection

Options for all LPG SYSTEMS with a dispenser calculator

13.66000	Additional price for a TOKHEIM WWC calculator for a TOKHEIM POS system
13.66100	Additional price for a Scheidt & Bachmann calculator TMS 20 for an S+B cash register system
13.66200	Additional price for a GILBARCO - calculator EC2000 "two wire" for Gilbarco cash register system
13.66300	Additional price for a Dresser Wayne calculator IGEM for a Dresser Wayne POS system
13.66400	Additional price for a Hectronic ER5 computer with DART protocol
13.66500	Surcharge for an EPSI interface incl. Gilbarco calculator for EPSI-capable POS systems
13.66600	Surcharge for a EURO/litre remote display (standard version)
13.66700	Additional price for a EURO/litre remote display with additional remote control of the fuel pump from the Cashier's room (exclusive version)
13.66800	Additional price for a 2-stage ex-protected solenoid valve for a cash dispenser
13.63300	Additional price for an electronic mass flow meter system instead of a piston meter

Options for LPG SYSTEMS with a data acquisition system

13.67000	Customer card for a data acquisition system
13.67100	PREPAID card for a data acquisition system
13.67200	Creation of a print template (3-colour) for the customer and prepaid cards
13.67300	EURO/litre remote display for the data acquisition system with switchover from daytime to Night operation
13.67400	Additional price for a PREPAID card system (rechargeable cards)
13.67500	Surcharge for an EC or PREPAID card system
13.67600	Cash dispenser incl. a 2-stage solenoid valve for "cent-precise cut-off".
13.67700	Fill level monitoring and transmission of tank data via internet (4-20 mA)
13.67800	Price display type TP 2007 - Dimension: 980 x 600 x 100 mm (WxHxD)
13.67900	Price display type TP 2007 Big - Dimension: 1520 x 1000 x 100 mm (WxHxD)
13.63300	Additional price for an electronic mass flow meter system instead of a piston meter

Options for "split" LPG SYSTEMS

13.68500	Additional price for piping per metre (base = 5 m)
13.68600	Additional price for the electrical cables per metre (base = 5 m)
13.68700	Surcharge (flat rate) for the installation of stainless steel corrugated flex pipe (base = 5 m)
13.68800	Surcharge for each additional metre of "stainless steel flexible corrugated tube
13.68900	Surcharge for 2 pieces of flexible stainless steel hose for the movable connection of the rigid Pipeline when laid from the building to the petrol station roof
13.69000	Surcharge for step protection (galvanised sheet metal channel) for pipelines laid above ground (per metre)
13.10100	Additional price for a more powerful Red Jacket submersible pump type LPG500V17-24 HiFlow
13.69100	Surcharge for a more powerful SIHI submersible pump type CEBA 2003
13.10000	Surcharge for a more powerful 4-stage SIHI pump unit
13.69200	Pump protection housing made of galvanised sheet steel
13.69300	Pump protection housing made of galvanised sheet steel with sound insulation
13.69400	Surcharge for an additional explosion-proof solenoid valve for the bypass line
13.69500	Insulating pieces and isolating spark gaps (set) for an underground tank/tap column
13.69600	Foundation frame for a P&A dispenser, primed and painted incl. **2 pcs. shear-off/ Breakage protection with predetermined breaking point** according to DIN EN 14678-1 / VdTÜV MB 513 (draft)
13.69650	Foundation frame for the PA liquid gas dispenser, primed and painted
13.69700	Surcharge for 2 shear-off/break-off devices with predetermined breaking point (installed in the PA foundation frame according to DIN EN 14678-1and VdTÜV MB 513(draft)
13.69800	Surcharge for a completely drive-over container (15 t axle load) with concrete shaft cover
13.69900	Magnesium anode for an underground tank

SPARE PARTS FOR DISPENSER COLUMNS:

MEASUREMENT SYSTEM:

13.71000 Piston meter for liquid gas, make Migas
13.71100 Piston meter for liquid gas, make Kalvacha/Schwelm, clockwise rotation
13.71140 Piston meter for liquid gas, make Kalvacha/Schwelm, counterclockwise rotation
13.71200 Piston meter for liquid gas, make Nouvo Pignone
13.71300 Steel check valve, for installation upstream of the piston meter, PN 25, E0 22
13.71400 Pressure retaining valvewith pipe break valve, PN 25, Migas make
13.71500 Pressure retaining valvewith pipe break valve, PN 25, make Kalvacha/Schwelm
13.71600 Gas separator PN 25, with integrated fine screen, make P&A

PULSE GENERATOR:

13.71700 Eltomatic pulse generator for MIGAS piston meter - type Gearbox 1:1
suitable for Tokheim, Hectronic, Gilbarco, Dresser-Wayne and ASKI calculators
13.71800 Eltomatic pulse generator for KALVACHA/SCHWELM piston meters - type Gearbox 2:1
suitable for Tokheim, Hectronic, Gilbarco, Dresser-Wayne and ASKI calculators
13.71900 NP pulse generator for Nuovo Pignone piston meters
13.72000 Scheidt & Bachmann pulse generator for MIGAS piston meters - type IG10/T20-1:1
13.72100 Scheidt & Bachmann Pulse generator for KALVACHA Piston counter – Type IG10/T20-2:1

HECTRONIC SINGLE FUEL CALCULATOR:

13.72202 Hectronic ER5 calculator with ER3 protocol (1-substance calculator)
13.72300 Hectronic ER5 calculator with DART protocol (1-substance calculator)
13.72400 Hectronic ER5 calculator with LON protocol (1-substance calculator)
13.72500 Power supply unitfor a Hectronic ER4/ER5 calculator (1-substance calculator)
13.72600 LCD display for a Hectronic ER4/ER5 calculator (1u.2-substance calculator)

HECTRONIC DUAL FUEL CALCULATOR:

13.72701 Hectronic ER5 calculator with ER3 protocol (2-substance calculator)
13.72800 Hectronic ER5 calculator with DART protocol (2-substance calculator)
13.72900 Hectronic ER5 calculator with LON protocol (2-substance calculator)
13.73000 Power supply unitfor a Hectronic ER4/ER5 calculator (2-substance calculator)
13.72600 LCD display for a Hectronic ER4/ER5 calculator (1u.2-substance calculator)

GILBARCO-ONE/TWO-SUBSTANCE-CALCULATOR:

13.73200 Gilbarco EC2000 computer with a TwoWire protocol
13.73300 Gilbatco EC2000 computer with an ER3 protocol
13.73400 Gilbarco EC2000 computer with a LON protocol
13.73500 Gilbarco EC2000 calculator with an EPSI protocol
13.73600 Power supply unitfor a Gilbarco EC2000 computer
13.73700 LCD display for a Gilbarco EC2000 calculator
13.73800 Hydraulic controller for a Gilbarco EC2000 computer
13.73900 Changeover switch for a Gilbarco EC-2000 computer
13.74000 Data line for a Gilbarco EC-2000 computer

TOKHEIM-ONE/TWO-SUBSTANCE-CALCULATOR:

13.74100 Tokheim WWC calculator with an EPS protocol
13.74200 Tokheim WWC computer with a Tokheim protocol
13.74300 Tokheim WWC calculator with an ZSR protocol
13.74400 Tokheim WWC calculator with an LON protocol
13.74500 Power supply unit for a Tokheim WWC computer
13.74600 LCD display for a Tokheim WWC computer
13.74700 EPSI/ZSR interface for a Tokheim WWC computer

SCHEIDT & BACHMANN-ONE/TWO-SUBSTANCE-CALCULATOR:

13.75390	Computer module, T20 computer, 64K Multi-Media
13.75000	Dialogue module LON-T20 for a Scheidt & Bachmann T20 computer
13.75100	Power module LON-T20 for a Scheidt & Bachmann T20 computer
13.75200	Dialogue module V11-T20 for a Scheidt & Bachmann T20 computer
13.75400	LCD display for a Scheidt & Bachmann calculator

DRESSER-WAYNE-ONE/DRESSER CALCULATOR:

13.75500	Dresser-Wayne IGEM computer with a DART protocol or LOOP protocol
13.75700	Power supplyIGEM-24VDC-100W for a Dresser-Wayne IGEM computer
13.75800	Security barrier for a Dresser-Wayne IGEM calculator
13.75900	Display for a Dresser-Wayne IGEM Calculator
13.76000	WIP with drive for LPG (pre-calibrated)

DATA RECORDING SYSTEM:

13.76100	Data collection system for loyalty cards, type II, not pre-tested (no distribution to third parties)
13.76200	Data acquisition system for customer cards, type II, pre-tested
13.76300	Data acquisition system for customer, prepaid and EC cards, type II, pretested
13.76400	Receipt printer incl. 24 V power supply unit
13.76500	TA Manager Software
13.67300	EURO/litre remote display for the customer card system
13.76720	EC PinPad OPP-B50 for a Hectronic Provider
13.76820	EC-PinPad OPP-B50 for a TeleCash Provider

TAP HOSES:

1.15200	ZVG filling gun with magnetic contact, connection M30x1.5lks. x 1 3/4" ACME
1.15700	DISH filling gun (clamp connection) with magnetic contact, make Nettuno or equivalent
1.15500	Connecting piece between the hose and the DISH filling gun (G1 "male x M30x1,5lks.male)
13.76900	Filling gun holder with reed contact, Material: stainless steel, make P&A
13.77000	Filling gun holder with reed contact, Material: cast aluminium, make P&A, type Schwelm
13.77100	LPG high-pressure hose, PN 25, DN 16, length 300 mm, completely bound in
13.77200	LPG high-pressure hose, PN 25, DN 16, length 2500 mm, completely bound in
13.77300	LPG high-pressure hose, PN 25, DN 16, length 3000 mm, completely bound in
13.77400	LPG high-pressure hose, PN 25, DN 16, length 3500 mm, completely bound in
13.77500	LPG high-pressure hose, PN 25, DN 16, length 4000 mm, completely bound in
5.60100	Hose breakaway coupling, PN 25, on both sides M30x1,5kls. male
13.77600	Hose holder/collar for one high-pressure hose LPG 16
13.77700	Hose retractor/balancer (without accessories)
13.77800	Hose retractor/balancer with hose holder/cuff and accessories

OTHER MECHANICAL COMPONENTS FOR DISPENSERS:

13.77900	Ex-protected solenoid valve made of brass, PN 25, G 3/4", for installation in the inlet of the Petrol pump or in the bypass line
9.35000	Steel ball valve, PN 40, E0 12 on both sides, for installation in the outlet of the fuel dispenser
9.35300	Steel ball valve, PN 40, E0 22 on both sides, for installation in the inlet of the fuel dispenser
13.78000	Fine filter PN 25, EO 22 on both sides, for installation upstream of the measuring system, make P&A
13.78100	Pressure compensation vessel (diaphragm accumulator), G 1/2" connection
13.78200	Pressure gauge 0-40 bar, G 1/4" (filled), housing-Ø 63 mm, with bracket mounting, suitable for P&A dispensers
3.47000	Pressure gauge 0-40 bar, ¼" NPT (filled), housing-Ø 63 mm, axial, suitable for P&A dispensers (GBA)
13.78300	Pressure gauge 0-40 bar, G 1/4" (filled), housing-Ø 63 mm, suitable for NP dispensers

OTHER MECHANICAL COMPONENTS FOR DISPENSERS:

2.10100	Safety valve, set pressure 25 bar, 1/4" NPT, make Witt, AD2000-A2, TÜV approval
2.18000	Safety valve, set pressure 25 bar, 1/4" NPT, make Rego, with TÜV approval
2.10700	Safety valve, set pressure 25 bar, 3/4" NPT, make Witt, AD2000-A2, TÜV approval
2.18200	Safety valve, set pressure 25 bar, 3/4" NPT, make Rego, with TÜV approval
7.48300	Connection piece PN 25, on one side W21,8x1/14 "left. male, on the other hand 22 spigot
8.71100	Insulating piece PN 25, both sides RVS 15
8.71300	Insulating piece PN 25, both sides RVS 22
8.78300	Ex-protected isolating spark gap, connection for 15 mm pipe diameter
8.78500	Ex-protected isolating spark gap, connection for 22 mm pipe diameter
1.00100	Filling valvewith check valve (for circle refuelling connection) 3/4" NPT x 1 3/4" ACME
13.69601	Shear/break-off protection with predetermined breaking point for foundation frames, 3/4" NPT IT on both sides

OTHER ELECTRICAL COMPONENTS FOR DISPENSERS:

13.78600	Dead man's start pushbutton for dispenser installation, with black print head, not explosion-proof Make Siemens, suitable e.g. for make NP, P&A (I- and T-shape)
13.78700	Emergency stop button for dispenser installation, with red print head, not explosion-proof Make Siemens, suitable e.g. for make NP, P&A (I- and T-shape)
13.78800	Dead man's start button for dispenser installation, with black print head, ex-protected Make steel, suitable e.g. for make P&A (H- CS- and CB-form)
13.78900	Emergency stop button for dispenser installation, with red print head, explosion-proof Make steel, suitable e.g. for make P&A (H- CS- and CB-form)
13.79000	Magnetic switch for the tap contact - Type Seatec-MKR
13.79100	explosion-proof terminal box (completely equipped), 4 x Inlet and 3 x Outlet
13.79200	Ex-protected terminal box (completely equipped), 2 x Inlet and Outlet
13.79300	Plastic protective housing (red) with glass pane to protect against unintentional actuation of the emergency stop button, incl. hammer, surface-mounted version, dimensions 125 x 125 x 45 mm (WxLxD) suitable for ex-protected and non-ex-protected emergency stop buttons (flush-mounted version) Scope of delivery: without emergency stop button
13.79400	Plastic protective housing (red) with glass pane to protect against unintentional actuation of the Emergency stop button, incl. hammer, surface-mounted version, dimensions 125 x 125 x 70 mm (WxLxD) including one non-explosion-proof emergency stop button (non-latching)
25.00000	Filling instructions (set) for P&A - petrol pumps in the language "German", DIN A4, self-adhesive
25.00100	Filling instructions (set) for P&A - petrol pumps in the language "English", DIN A4, self-adhesive
25.00200	Filling instructions (set) for P&A - petrol pumps in the language "French", DIN A4, self-adhesive
25.00300	Filling instructions (set) for P&A - petrol pumps in the language "Russian", DIN A4, self-adhesive
25.00400	Filling instructions (set) for P&A - petrol pumps in the language "Polish", DIN A4, self-adhesive
25.00500	Filling instructions (set) for P&A - petrol pumps in the language "Italian", DIN A4, self-adhesive
25.00600	Filling instructions (set) for P&A - petrol pumps in the language "Czech", DIN A4, self-adhesive
25.00700	Filling instructions (set) for P&A - petrol pumps in the language "Dutch", DIN A4, self-adhesive
13.79500	Plastic sign "NOT-AUS-GASTANKSTELLE", yellow-black, noctilucent, 80x140 mm

Commissioning, instruction and freight according to km scale for installations with a *dispenser computer*

Item no.	1.2 to system	Item no.	2.1 to system	Item no.	2.9 to system
13.80000	up to 100 km distance	**13.81000**	up to 100 km distance	**13.82000**	up to 100 km distance
13.80100	up to 200 km distance	**13.81100**	up to 200 km distance	**13.82100**	up to 200 km distance
13.80200	up to 300 km distance	**13.81200**	up to 300 km distance	**13.82200**	up to 300 km distance
13.80300	up to 400 km distance	**13.81300**	up to 400 km distance	**13.82300**	up to 400 km distance
13.80400	up to 500 km distance	**13.81400**	up to 500 km distance	**13.82400**	up to 500 km distance
13.80500	up to 600 km distance	**13.81500**	up to 600 km distance	**13.82500**	up to 600 km distance
13.80600	up to 700 km distance	**13.81600**	up to 700 km distance	**13.82600**	up to 700 km distance

Unloading on site with a crane truck etc. is a service provided by the customer, the truck toll is charged according to distance.

Commissioning, instruction and freight according to km scale for installations with a *data acquisition system*

Item no.	1.2 to system	Item no.	2.1 to system	Item no.	2.9 to system
13.83000	up to 100 km distance	**13.84000**	up to 100 km distance	**13.85000**	up to 100 km distance
13.83100	up to 200 km distance	**13.84100**	up to 200 km distance	**13.85100**	up to 200 km distance
13.83200	up to 300 km distance	**13.84200**	up to 300 km distance	**13.85200**	up to 300 km distance
13.83300	up to 400 km distance	**13.84300**	up to 400 km distance	**13.85300**	up to 400 km distance
13.83400	up to 500 km distance	**13.84400**	up to 500 km distance	**13.85400**	up to 500 km distance
13.83500	up to 600 km distance	**13.84500**	up to 600 km distance	**13.85500**	up to 600 km distance
13.83600	up to 700 km distance	**13.84600**	up to 700 km distance	**13.85600**	up to 700 km distance

Unloading on site with a crane truck etc. is a service provided by the customer, the truck toll is charged according to distance.

Freight costs for the system incl. transport insurance (without commissioning/instruction of the operating personnel)

Item no.	1.2 to system	Item no.	2.1 to system	Item no.	2.9 to system
13.86000	up to 100 km distance	**13.87000**	up to 100 km distance	**13.88000**	up to 100 km distance
13.86100	up to 200 km distance	**13.87100**	up to 200 km distance	**13.88100**	up to 200 km distance
13.86200	up to 300 km distance	**13.87200**	up to 300 km distance	**13.88200**	up to 300 km distance
13.86300	up to 400 km distance	**13.87300**	up to 400 km distance	**13.88300**	up to 400 km distance
13.86400	up to 500 km distance	**13.87400**	up to 500 km distance	**13.88400**	up to 500 km distance
13.86500	up to 600 km distance	**13.87500**	up to 600 km distance	**13.88500**	up to 600 km distance
13.86600	up to 700 km distance	**13.87600**	up to 700 km distance	**13.88600**	up to 700 km distance

Unloading on site with a crane truck etc. is a service provided by the customer, the truck toll is charged according to distance.

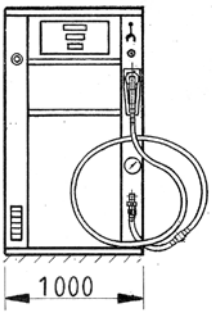
Commissioning and instruction of the operating personnel for systems with a *dispenser computer*

Item no.	
13.89000	up to 100 km distance
13.89100	up to 200 km distance
13.89200	up to 300 km distance
13.89300	up to 400 km distance
13.89400	up to 500 km distance
13.89500	up to 600 km distance
13.89600	up to 700 km distance

Commissioning and instruction of the operating personnel for systems with a *data acquisition system*

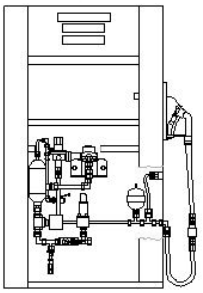
Item no.	
13.90000	up to 100 km distance
13.90100	up to 200 km distance
13.90200	up to 300 km distance
13.90300	up to 400 km distance
13.90400	up to 500 km distance
13.90500	up to 600 km distance
13.90600	up to 700 km distance

PA liquid gas dispenser with *electronic computer* (German make)



- **Electronic liquid gas dispenser, type PA-4-HEC(H-shape)**
  Stainless steel housing, calibratable version, with PTB approval for legal metrology, complete with a one-sided electronic EURO/litre display and an electronic Hectronic calculator, pulse generator, dead man's button, fine filter, gas bubble separator,
  Special piston meter for LPG Q = 5-50 l/min, check valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (filled), LPG high-pressure hose DN 16, L = 4.5 m, breakaway coupling with component test (can be coupled under pressure).LPG high-pressure hose DN 16, L = 4.5 m, breakaway coupling with component test (can be coupled under pressure), filling pistol with safety filling coupling, hose retraction,
  Dimension: 1000 x 1800 x 500 mm (W X H X D), **drawing/Figure see also p. 111/112**

  Order no. 13.92000

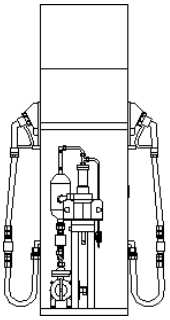


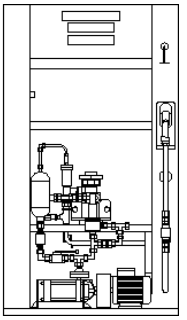
- **Electronic liquid gas dispenser, type PA-4-HEC-INSEL(H-shape)**
  as described above - but with the following difference:
  Petrol pump as **ISLAND VERSION** (refuelling on both sides) Special features:
  Dispensing hose on the side, electronic display on both sides and a second start/deadman button

  Order no. 13.92100

- **Electronic liquid gas dispenser, type PA-4-HEC-2S(H-shape)**
  as described above - but with the following difference:
  Petrol pump as **2-HOSE VERSION** (refuelling on both sides) Special features: 2 pieces of dispensing hoses, **1 piece of measuring equipment**, electronic display on both sides, second start/deadman button, incl. the required electrical interlocking of the two dispensing points.

  Order no. 13.92200





- **Electronic liquid gas dispenser, type PA-4-HEC-D(H-shape)**
  as described above - but with the following difference:
  Dispenser as **DOUBLE TAP COLUMN** (refuelling possibility on both sides)
  Special features: 2 pieces of tap hoses, **2 pieces of measuring equipment**,
  Electronic display on both sides, second start/deadman button

  Order no. 13.92300

OPTIONS

- **System control/MSR control cabinet**, completely installed in the electronics area of the fuel dispenser incl. the complete electrical wiring, for the dispenser, dry-running protection, external/internal EMERGENCY STOP button, dead man's button, lighting etc. (mounted on an Ex terminal box)
  as well as a cold check in the manufacturer's factory - including the electronic dry-running protection for the ALTERNATIV pump: Control cabinet - installed in a protective housing

  Order no. 13.93000

- **SIHI side channel pump unit**, completely installed in the dispenser, with base plate, coupling protection and 2.5 KW ex-motor, 230/400 V, 3000 rpm
  Advantages: high differential pressure, good price/performance ratio, very robust ⇒ long service life, very good NPSH values = low inlet height, proven technology, relatively noiseless and low-vibration, including the necessary piping for the pressure boosting system and fittings consisting of: P&A overflow valve with bypass line (self-degassing), Safety valves, Ex-protected solenoid valve, shut-off valves etc.

  Order no. 13.93100

- **Official verification of** the above-mentioned liquid gas dispensers
  (Attention: 2 pieces of acceptance for the DOUBLE DISPENSING COLUMN)

  Order no. 13.93200

All dispensers are available with various dispenser computers or a data acquisition system!
The dispensers can be supplied in H-shape (standard Version); C-shape; CS-shape; T-shape and I-shape!

PA liquid gas dispenser included *Data acquisition system* (German make)

- **Electronic LPG dispenser with an integrated data acquisition system Type PA-5-AS-, H-shape**

Stainless steel housing**,** calibratable version, with PTB approval for custody transfer, complete with a data acquisition system integrated in the dispenser with a single-sided electronic display, pulse generator, dead man's button, fine filter, gas bubble separator,
Special piston meter for LPG Q = 5-50 l/min, check valve, differential pressure valve with integrated pipe rupture valve, pressure gauge 0-25 bar (filled). LPG high-pressure hose DN 16 L = 4.5 m, breakaway coupling (can be coupled under pressure), hose retraction, filling pistol with safety filling coupling Dimensions: 1000 x 1800 x 500 mm (W X H X D), **drawing/Figure see also p. 111/112**

INCLUDING:

- **Electronic data acquisition system (installed in the fuel dispenser), calibratable**

for operation with **customer/chip cards** consisting of:

- Display with 4x20 characters, dimensions 120 x 40 mm (W x H) with backlighting, fault indication, fill level (option), tank data Pulse generator
- Circuit board with 24 V power supply unit and keyboard for operating the data acquisition system
- Card reader at the fuel terminal for the chip cards
- Card reader with USB connection (for the on-site PC)
- Calibratable Epson printer with 24 V power supply (optionally without or 1 or 2 receipts)
- Data processing software for Windows 2000, XP based on MS Access 2003
  required on site:
  PC with Windows 2000, XP and software package MS Access 2003
- Basic map set consisting of: 1 address card, 1 time/price card, 1 journal card, 1 blocking card
- 20 pieces (chip) customer cards as basic equipment
- With data line: Data transport via the Internet, fault or operating messages, sending by e-mail or notification to mobile phone number (on-site: DSL or ISDN connection via router)
- Analogue measuring Inlet for tank level monitoring 4-20mA, indication only in the display of the automatic fuel dispenser
- Non-resettable totaliser

The fuel dispenser stores the last refuelling operations (approx. 12000)
Order no. 13.94000

OPTIONS:

Petrol pump as described above - but additionally with a PREPAID system
PREPAID card rechargeable, billing through fuel terminal, recharge through existing PC,
PC tool for charging, Mind. Credit 3 €
Order no. 13.94200

Petrol pump as described above - but additionally with an EC system. (incl. PREPAID system),
EC cash without or with operator card, keyboard for operating the EC cash system, required on site:
Telephone connection, modem, network (router),
EC cash contract
INCLUDING: Tool fuel dispenser manager with the following features:
Tank data query, automatic EC till closing or on query, PREPAID management, maintenance & test errors, status recall (electrical errors), time synchronisation, price change, customer card blocking.
Order no. 13.94400

- **Electronic LPG DOUBLE dispenser, type PA-5-D-H-AS(H-shape)**

as described above - but with the following difference:
Special features: 2 pieces of tap hoses, **2 pieces of measuring equipment**, electronic display on both sides, Refuelling facility on both sides. two start/deadman buttons
Order no. 13.94600 - Version with a customer card system
Order no. 13.94700 - Version with one customer card and PREPAID system
Order no. 13.94800 - Version with one customer card, PREPAID and EC system

OPTIONS

- **Plant control/MSR control cabinet**, installed in the electronic head of the dispenser (description see p. 107)
  Order no. 13.93000
- **SIHI side channel pump unit**, completely installed in the dispenser (description see page 107)
  Order no. 13.93100
- **Official verification of** the above-mentioned liquid gas dispensers(Attention: 2 pieces of acceptance for the DOUBLE DISPENSING COLUMN)
  Order no. 13.93200

Options / additional prices for liquid gas dispensers - make P&A

Order no.	
13.93200	Official calibration of the dispenser (per measuring system)
13.60200	Liquid gas dispenser as STAND-ALONE MODEL (hose on the side)
13.60300	Liquid gas dispenser as STAND-ALONE MODEL (hose on the side) in connection with a 3. Display e.g. of a separate EURO/litre remote display (see order no. 13.66500 + 13.66600)
13.60400	Dispenser with a 2nd hose, ARK, filling pistol, electrical locking (1measuring system)
13.60500	Double dispenser (2 measuring systems, 2 dispensing hoses, display on both sides, 2 x calibration)
13.60600	Dispenser Version as C-shape (standard H-shape) - 1000 x 1800 x 500 mm (W x H x D)
13.60700	Dispenser Version as CS-shape (standard H form) - 860 x 1800 x 500 mm (W x H x D)
13.60800	Dispenser Version as I-shape (standard H-shape) - 500 x 1710 x 500 mm (W x H X D)
13.60900	Dispenser Version as T-shape (standard H-shape) - 500 (700) x 1710 x 500 (W x H x D)
13.66000	TOKHEIM WWC - Calculator for a TOKHEIM cash register system
13.66100	Scheidt & Bachmann computer TMS 20 for an S+B cash register system
13.66200	GILBARCO - Computer EC2000 "two wire" for Gilbarco - POS system
13.66300	Dresser Wayne Calculator IGEM for a Dresser Wayne POS System
13.66400	HECTRONIC-ER5 computer with DART interface
13.66500	EPSI interface incl. Gilbarco computer for EPSI-capable POS systems
13.66600	EURO/litre remote display (standard version)
13.66700	EURO/litre remote display with additional remote control of the fuel pump from the cashier's office (exclusive version)
13.66800	2-stage, explosion-proof solenoid valve for a cash dispenser
13.97000	Ex-protected shut-off solenoid valve in the inlet of the fuel dispenser
13.69400	Ex-protected bypass solenoid valve in the inlet of the dispenser
13.93000	System control/switch cabinet incl. dry-running protection -installed in the LPG dispenser **Description see page 107**
13.93100	3-stage SIHI pump unit type SC-2003/5 incl. the necessary fittings such as Solenoid valve, overflow valve etc- installed in the dispenser - **description see page 107**
13.97100	more powerful, 4-stage SIHI pump unit type SC-2003/5 incl. the required Fittings such as solenoid valve, etc. - installed in the fuel dispenser
13.61000	Large weather protection roof type III, colour blue (RAL 5010 - standard) with advertising print "LPG "and with two side glass panes made of safety glass
13.61100	Large weather protection roof type I, colour blue (RAL 5010 - standard) with advertising print "LPG" and with two side wire glass inserts Dispenser weather
13.61200	protection roof type II made of ALU
13.61300	Lighting with twilight switch for the weather protection roof type I; II and III
13.63200	Sticker on the petrol pump in the colours of the mineral oil companies
13.69500	Insulating pieces with isolating spark gaps (set) for installation in an underground tank
13.69600	Foundation frame for a P&A dispenser, primed and painted incl. **2 pcs. shear-off/ Breakage protection with predetermined breaking point** according to DIN EN 14678-1 / VdTÜV MB 513 (draft)
13.69650	Foundation frame for the PA liquid gas dispenser, primed and painted Attention: Prior to delivery, it must be clarified whether the foundation frame is suitable for a CS form, H form I-shape or for screwing on or for setting in concrete is required and from which side the pipe entry is to be made.

Options/additional prices for dispensers with a data acquisition system

13.67000	Chip/customer card for a data acquisition system
13.67100	PREPAID card for a data acquisition system
13.67200	Creation of a print template (3-colour) for the chip/customer cards
13.67300	EURO/litre remote display for the data acquisition system with switchover from daytime to Night operation
13.67400	Additional price for a PREPAID card system (rechargeable cards)
13.67500	Surcharge for an EC or PREPAID card system
13.67600	Cash dispenser incl. a 2-stage solenoid valve for "cent-precise cut-off".
13.67700	Level monitoring and transmission of tank data via internet 4-20 mA

N O V E L T Y

PA liquid gas dispenser with an electronic mass flow measuring system

In future, the company P&A-Salzgitter will supply liquefied petroleum gas dispensers with an electronic mass flow measuring system based on the Coriolis principle.
The first fuel dispenser version with a mass flow metering system and the Hectronic ER5 computer with the required MID approval is expected to be available from the beginning of December 2008.

Advantages of the new mass flow measuring system compared to the previously used piston meter:

- Very robust, space-saving and compact Version
- Maintenance-free measuring operation
- there are no moving parts or seals in the meter
- Very high accuracy, thus no need to replace the measuring device due to excessive tolerances during recalibration
- Omission of the previously required gas separator
- Low installation effort, due to the flange connection on both sides DN 15, PN 25
- Significantly low pressure loss in the meter

Description of the mass flow measurement system:

The measuring device of the LPGmass type is a Coriolis mass flow measuring system.
The Coriolis measuring principle works independently of the physical properties of the media and allows several process variables (mass/density/temperature) to be measured simultaneously for a wide range of process conditions during measurement operation.
The compact arrangement of the transducer and the transmitter makes the measuring device insensitive and easy to mount.
An additional pulse generator is not required (transmitter is connected directly to the dispenser computer).

Technical data:

Auxiliary energy:	10 - 20 V DC / 20 - 28 V AC
Ambient temperature:	-40 to +60° C
Protection class:	IP 67
Communication:	MODBUS RS485
Ex approvals:	ATEX, FM, CSA
Connection:	Flange DN 15, PN 25
max. flow rate:	50 l/min
Mass deviation	+/- 0.2 % for liquids
Operation:	via the configuration and service programme

Summary:

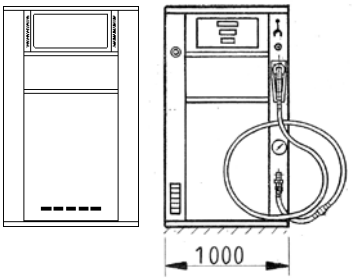
Due to the advantages of the measuring system and the measuring device described above, **a liquid gas dispenser is of the new generation** emerged. The measuring system can be used in all dispenser designs

Special advantages are the maintenance-free operation and the very high accuracy.

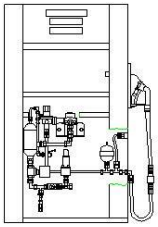
Additional price compared to the previously used piston meter see order no. 13.63300

Illustration of different forms of P&A dispensers

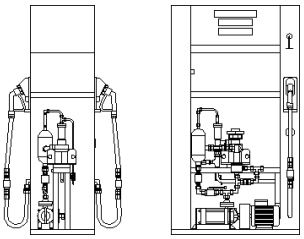
1. H-shape



Simple illustration



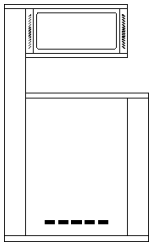
Island version



2-hose version

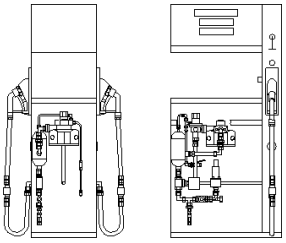
Figure

2. C-shape



Simple illustration

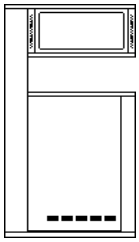
Island version



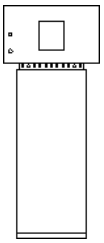
2-hose version

Figure

3. Special designs

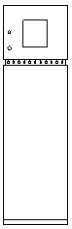


C-shape narrow



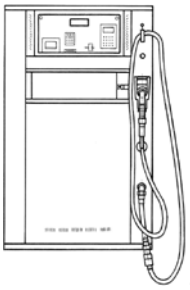
T-shape

T-shape



I-shape

4. Dispensers with data acquisition system



H-pillar with data acquisition system
(EC system)

Data acquisition system
(loyalty cards)

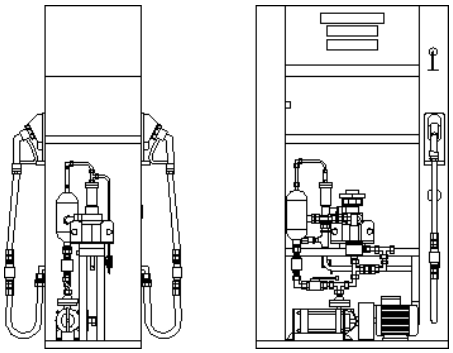
Data acquisition system
(EC version)

5. Dispensers with integrated LPG pump

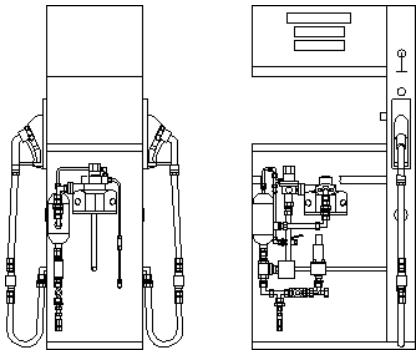
H-pillar with integrated LPG pump

C-pillar without LPG pump

6. Dispenser measuring systems



Double dispenser
(Two-hose version with 2 measuring systems)



Two-hose version with 1 measuring system

7. Additional equipment for liquid gas dispensers or for tank installations

Remote display
ER 4/5 computer

Remote display "Exclusive"
for ER 4/5 computer

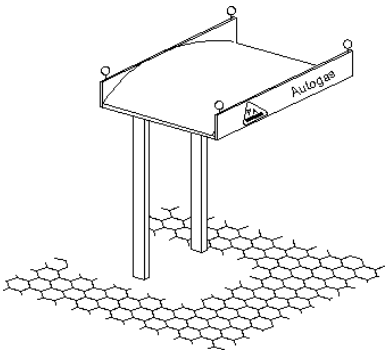
Remote display
for data acquisition system

Wall version

Stand-alone unit for
Emergency telephone

8. Weather protection roofs

Type I
(Special Version - only available on request)



Type II

Type III

Propane and oxygen hand-held meter, explosion-proof, with optical and acoustic alarm, **Version according to ATEX**

This robust, reliable and user-friendly hand-held meter can also be equipped with other sensors, e.g. for measuring CO, H2, NO2, etc,
Display: 0-100 % LEL (propane) and 0-30 % (oxygen), alarm threshold 20 % LEL
Included in the basic unit are a retaining clip, NiCd battery pack, 230 VAC charging station, tool kit, calibration cap and the sensor blocks for propane and oxygen.

SPECIFICATIONS:

Illuminated LCD display, alarm and fault display, two adjustable alarm thresholds for oxygen, one adjustable alarm threshold for propane, 8 hours mean value measurement (MAK), 5-30 minutes short time measurement (KZE), operating time approx. 14 hours, weight approx. 450 g, dimensions 80 x 150 x 40 mm

Order. No.	Designation
14.00000	Propane and oxygen hand-held meter as described
14.00100	Leather case with clear cover
14.00200	Surcharge for hand pump with telescopic probe 1.25 m for measurement in inaccessible places
14.00300	Charger 12 V DC
14.00400	Aluminium-Carrying case
14.00500	Maintenance flat rate for annual maintenance
14.00600	Replacement sensor block for propane
14.00700	Replacement sensor block for oxygen

Electronic gas detector **(without ex-protection)** with

integrated sensor and alarm horn (85 dBA), suitable for cellars, boats etc., 230 V or 12 V, alarm threshold 0.5 to 1.25 volume %,
with two LED indicators for alarm and operation
Order No. 14.02000

Gas warning system, for max. 4 explosion-proof measuring heads, **Version according to ATEX,**

2 alarm thresholds (20/40 % LEL), mains failure, short-circuit, computer, etc. and wire breakage monitoring, digital concentration display, internal acoustic alarm and alarm reset, measuring principle heat tinting, 230 VAC resp. 24 V DC, measuring head suitable for wall and ceiling mounting, wall-mounted housing, connection for external flashing light, horn and remote acknowledgement, Outlet measuring signal 4-20 mA (proportional 0 - 100 % LEL), RS 485 Modbus interface **LED display** for gas concentration separate for all sensors, operation and alarm **version A: no further measuring heads/sensors can be retrofitted**
Version B. Further measuring heads/sensors can be retrofitted

Order. No.	Version	Designation
14.03000	**A**	Gas warning system as described **(with 1 piece Ex sensor)**
14.03100	**B**	Gas warning system as described **(with 1 piece Ex sensor)**
14.03200	**B**	Gas warning system as described **(with 2 ex-sensors**)
14.03300	**B**	Gas warning system as described **(with 3 piece Ex sensor)**
14.03400	**A**	Gas warning system as described **(with 4 piece Ex sensor)**
14.04000		Weatherproof housing for the Ex sensor
14.04100		Emergency power supply
14.04200		Special sensor cable
14.04300		Ex-sensor type Signalpont, IP54

***** On request, we also supply gas warning systems for max. 64 measuring points *****

Optical and acoustic alarm devices, not explosion-proof

Order No.	Designation
14.07000	Warning light for indoor installation with the inscription "Gas alarm"
14.07100	Warning light for outdoor installation with the inscription "Gas alarm"
14.07200	Horn for indoor and outdoor installation 100 dbA
14.07300	Small siren for indoor use 100 dbA
14.07400	Flashing beacon for indoor use
14.07500	Flashing light and horn as combination unit

Signal horn, for acoustic signalling of danger,

for damp rooms and outdoor installation, voltage 230 V, 50 Hz, with powerful electromagnet system

Order No.	Designation
14.08000	Standard version without ex-protection
14.08100	Version with ex-protection and ATEX approval

Rotating beacon with flashing light, for visual indication of danger,

for damp rooms and outdoor installation, voltage 230 V, 50 Hz

Order No.	Designation
14.08500	Standard version without ex-protection
14.08600	Version with ex-protection and ATEX approval

Double push-button, 230 V, 50 Hz

Order No.	Designation
14.09000	Version without control lamp, without ex-protection
14.09100	Version with control lamp, without ex-protection
14.09200	Version without pilot light, with ex-protection and ATEX approval
14.09300	Version with control lamp, with ex-protection and ATEX approval

EMERGENCY STOP push-button, 230 V, 50 Hz

Order No.	Designation
14.09500	Standard version without explosion protection (Figure 1)
14.09600	Version with explosion protection and ATEX approval (Fig. 2)
14.09700	Version with ex-protection, ATEX approval and key switch

Figure 1

Figure 2

Switch for lighting system, 230 V, 50 Hz,

explosion-proof, with ATEX approval

Order No. **14.09800**

Ex-protected terminal box with ATEX approval

Order No.	**14.10000**	Version size 1 (with 4 clamps)
Order No.	**14.10100**	Version size 2 (with 8 clamps)

Isolating switch amplifier for switch cabinet installation

for transmitting signals from the hazardous area with intrinsically safe control circuit, with ATEX approval

Version A: 1 channel and 1 changeover contact
Version B: 2 channel and 2 changeover contact

Order No. Version A:	Order. No. Version B:	Voltage	Type	
14.11000	**14.11500**	230V/50Hz	KFA-SR2-...	for isolating switch amplifier
14.11100	**14.11600**	24VDC	KFD-SR2-...	for isolating switch amplifier
14.11200		24VDC	KFD2-SH-...	Safety pressure limiter
14.11300		230V/50Hz	KHA6-SH-...	Safety pressure limiter

The Order No. 14.11200 and 1411300 is an isolating switch amplifier in safety technology with TÜV approval, which is mainly used in connection with the FEMA maximum pressure limiter type FD 16-326 (order no. 14.11200 and 1411300). No. 3.43000) is used, such as in the pressure monitoring of liquid gas containers in accordance with TRB 801, No. 25

Electronic level limit switch, PN 25,

for liquid propane/butane, with PTB approval, suitable for use in hazardous areas, operating temperature -40 +120°C, sensor length 128 mm

Order No.	Designation
14.12001	Level limit switch with connection 1" NPT male, version Namur
14.12101	Level limit switch with connection flange DN 32, Namur version
14.11000	Isolating switch amplifier for the level limit switch with intrinsically safe Inlet circuit and relay contact, 230 V, 50 Hz, for control cabinet installation
14.11100	Isolating switch amplifier for the level limit switch with intrinsically safe Inlet-circuit and relay contact, 24 V, for control cabinet installation

Electronic dry-running protection For installation in the control cabinet

The dry-running protection monitors the systems electronically according to the principle of "phase angle measurement". The electronic component is connected directly into the supply line of the motor and housed in the control cabinet.

Please state the existing voltage and motor capacity when ordering!

Order No. 3.29700	**for motors up to 5 KW**	**(Fig. 1)**
Order. No. 3.29800	**for motors over 5 KW (with current transformer)**	**(Fig. 2)**

Temperature monitoring of solenoid pumps

Order No.	**14.14000**	Resistance thermometer PT 100 with stainless steel probe, G 1/2".
Order No.	**14.14100**	Extension sleeve (only required for Sihi pumps)
Order No.	**14.14200**	Limit switch for control cabinet installation, set to 55° C Intrinsically safe Inlet with relay Outlet, 230 V, 50 Hz

Ex-protected three-phase motor

Type of protection increased safety EEx e ll T3, protection class IP 54, Version B3, voltage: 230/400 V, 50 Hz, from 5 KW 400/690 V, 50 Hz, 1500 min^{-1}, **with ATEX test certificate**

Order No.	Power (KW)	Size	Weight	
14.20000	0.75	80	10.0	
14.20100	1.00	90 S	12.5	
14.20200	1.35	90 L	16.0	
14.20300	2.00	100 L	21.6	
14.20400	3.60	112 M	28.5	
14.20500	5.00	132 S	38.0	
14.20600	6.80	132 M	52.0	
14.20700	10.00	160 M	89.0	
14.20800	13.50	160 L	110.0	
14.20900	15.00	180 M	163.0	
14.21000	17.50	180 L	180.0	
14.21100	24.00	200 L	238.0	
14.21300	2.50	100 L	24.0	(3000 rpm - for SIHI pump type CDHL 1403/ SC-2003/5)
14.21400	3.30	112 M	26.0	(3000 rpm - for SIHI pump type SC-2004/5)

Motor protection switch, explosion-proof (Ex) d3n G5, version according to **ATEX**

Housing made of plastic, IP 65, suitable as on/off switch and for protection of ex-motors

Attention: When ordering, always state the rated current of the motor.

Order No. **14.22000**

Accessories for earthing systems and equipotential bonding:

Cross earth electrode made of steel, galvanised

T-profile 50x50x3, connection plate with 3 holes Ø 10.5 mm, length 1.5 m

Order. No. **14.23000**

Earth cable, 16 mm^2, wire identification green/yellow

Order no	**14.24000**	Type NYM-J (above-ground installation)
Order no	**14.24100**	Type NYY-J (above-ground and underground installation)

Earthing pipe clamp made of zinc die-cast with connection up to 25 mm^2

Order no	**14.25000**	1“
Order no	**14.25100**	1 1/4“
Order no	**14.25200**	1 1/2“
Order no	**14.25300**	2“

Earthing strap clamp made of spring bronze, nickel-plated with connection 1x2.5 mm^2 -2x16mm^2

Order no	**14.26000**	3/8“ - 1 1/2“
Order no	**14.26100**	3/8“ - 4“
Order no	**14.26200**	3/8“ - 6“

Equipotential bonding rail

Order no	**14.27000**	Connection 1 x flat 30 x 3.5 mm
Order no	**14.27100**	Connection 1 x round 8 x 10 mm
Order no	**14.27200**	Connection 7 x 2.5 - 25 mm

Electric cable

Version A: Electric cable for above-ground and underground installation, with copper conductor
Version B: Data and telecommunication cables
Version C: Electronic cable for medium mechanical stress, with/without copper screen
Version D: Electronic cable (blue) for intrinsically safe circuit, with copper shielding

Order No. Version: A	Order. No. Version: B	Order. No. Version: C	Order. No. Version: D	Type	Cross-section		Intended use (example)
----------	----------	**14.32000**	----------	YSLY-JZ	7 x	1.0 mm2	Control line
----------	----------	**14.32100**	----------	YSLY-JZ	12 x	1.0 mm2	Control line
----------	----------	**14.32200**	----------	YSLY-JZ	25 x	1.0 mm2	Control line
14.30000	----------	----------	----------	NYY-J	3 x	1,5 mm²	Solenoid valve, signal transmitter
14.30100	----------	----------	----------	NYY-J	5 x	1,5 mm²	Motors, controls
14.30200	----------	----------	----------	NYY-J	7 x	1,5 mm²	Controls
14.30300	----------	----------	----------	NYY-J	4 x	2,5 mm²	Motors
14.30400	----------	----------	----------	NYY-J	5 x	2,5 mm²	Motors
14.30500	----------	----------	----------	NYY-J	4 x	10,0 mm²	Motors
----------	**14.31000**	----------	----------	A-Y(St)YÖ	7 x	0.75 mm²	Data line fuel pump/checkout
----------	**14.31100**	----------	----------	A-2Y(L)2Y	2x2x	0.60 mm²	Telecommunication cable - Emergency telephone
----------	**14.31200**	----------	----------	Cat.6/7			Cable tank data transmission
14.24100	----------	----------	----------	NYY-J	1 x	16.0 mm²	Potential equalisation
----------	----------	**14.32500**	----------	LiYCY	3 x	0,75 mm²	Gas warning system
----------	----------	**14.32600**	----------	LiYCY	5 x	0,75 mm²	Gas warning system/emergency stop emergency telephone
----------	----------	**14.32700**	----------	LiYCY	7 x	0,75 mm²	Operation Exclusive Remote Display
----------	----------	**14.32800**	----------	LiYCY	12 x	0,75 mm²	Remote fuel dispenser display
----------	----------	----------	**14.33000**	LiYCY-EB	3 x	0,75 mm²	Overfill protection/pressure switch/signal transmitter
----------	----------	----------	**14.33100**	LiYCY-EB	5 x	0,75 mm²	Overfill protection/pressure switch/signal transmitter
----------	----------	----------	**14.33200**	LiYCY-EB	5 x	1,5 mm²	Remote container content display over 50 m

Depending on the version, at least 1 cable - in special cases - 2 cables must be laid for each field device !
When using electric cables on the premises of mineral oil filling stations, always check, whether the cable must be "petrol resistant".

Hand lamp with incandescent lamp, explosion-proof, with ATEX approval **with ATEX approval,**

Order No. **14.34000** Hand lamp (with bulb)

Wall and ceiling luminaire, explosion-proof, **with ATEX approval**, 230 V, Ex e G2/3,

Order No. **14.35000** Wall and ceiling lamp (with incandescent lamp 100 W)

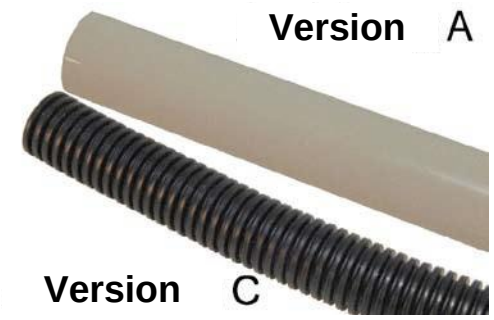
Ceiling light for fluorescent lamps, explosion-proof, **with ATEX approval,** 230 V, Ex eG2/3

Order. No. **14.36000** Ceiling lamp (with fluorescent tube) 1 x 58 W
Order No. **14.36100** Ceiling lamp (with fluorescent tube) 2 x 58 W

Protective tube for electric cable

Version A: Plastic armoured conduit for medium loads
Version B: Steel armoured tube for heavy-duty use
Version C: Plastic corrugated hose for laying in the ground

Order No. Version: A	Order. No. Version: B	Ausf.: C	Size
14.37000	**14.38000**	**14.39000**	M16
14.37100	**14.38100**	**14.39100**	M20
14.37200	**14.38200**	**14.39200**	M25
14.37300	**14.38300**	**14.39300**	M32
14.37400	**14.38400**	**14.39400**	M40
14.37500	**14.38500**	**14.39500**	M50



MSR control cabinet for propellant gas, LPG, filling systems etc., make P&A,

Completely wired, with circuit diagram and terminal plan

Order No. 14.40000 Control cabinet for a **propellant gas system with submersible pump**, for controlling the pump system, the solenoid valve with time delay and the differential pressure monitor, incl. emergency stop button on the control cabinet, motor protection relay, residual current circuit breaker, main switch and signal lamps.

Order No. 14.40100 Control cabinet for a **propellant gas system with external pump**, for controlling the Pump system, solenoid valve with time delay and electronic dry-running protection (included in the scope of delivery), incl. emergency stop button on the control cabinet, motor protection relay, RCD switch, main switch and indicator lights.

Order No. 14.40200 Control cabinet for an **LPG system with submersible pump**, for controlling the Pump system, the liquid gas dispenser with lighting, the solenoid valve with time delay and the differential pressure monitor, incl. emergency stop button on the control cabinet, motor protection relay, Ground fault circuit interrupter, main switch and signal lamps

Order No. 14.40300 Control cabinet for an **LPG system with external pump**, for controlling the pump system, the liquid gas dispenser with lighting, the solenoid valve with time delay and the electronic dry-running protection (included in the scope of delivery), incl. emergency stop and emergency power supply. Push-buttons on the control cabinet, motor protection relay, RCD switch, main switch and signal lamps

Order No. 14.40400 Control cabinet for a **small filling station with submersible pump**, for controlling the pump system, the solenoid valve with time delay, the differential pressure monitor, the container lighting, emergency stop button, on/off button etc., incl. emergency stop button on the control cabinet, Motor protection relay, RCD switch, main switch and signal lamps

Order No. 14.40500 Control cabinet for a **small filling station with external pump**, for controlling the pump system, the solenoid valve with time delay, the electronic dry-running protection(included in the scope of delivery), the lighting, emergency stop button, on/off button etc.., incl. emergency stop button on the control cabinet, motor protection relay, FI switch, main switch and signal lamps

MSR control cabinet for LPG systems of **GROUP A,** standard version ,manufactured by P&A, for controlling the overfill protection, solenoid valve in the filling line, rotating beacon and Horn for the pre-alarm, incl. emergency stop button on the control cabinet and signal lamps, Outlet for the PPS system, completely wired, with switching and terminal diagram.

Order No. 14.41000

M&C control cabinet for LPG systems of **GROUP B,** standard version, manufactured by P&A, for controlling the overfill protection, solenoid valve in the filling line, horn for the pre-fill and overfill protection, Main alarm, rotating beacon, quick-action shut-off fittings, compressed air supply, emergency stop button, safety contactor combination, signal lamps and evaporator system, with Outlet for the KKS system, completely wired, with switching and terminal diagram. Other versions, e.g. control cabinet with gas warning system, pressure monitoring, pump system, dry-running protection, remote content display etc. on request.

Order No. 14.42000

Emergency power supply 12 or 36 h, make P&A,

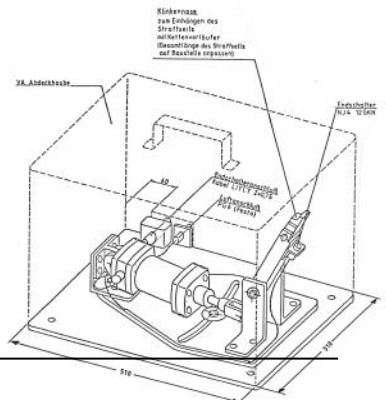
for the command and signalling devices such as horn, rotating beacon, pressure monitoring, remote contents display, gas warning system, etc.

Order No. 14.43000

Other control cabinets with additional electrical components as well as control cabinets for pressure boosting systems and for GROUP C systems are available on request!

Pneumatic release device, Make P&A,

for safety quick-closing bottom valves with tightening rope actuation



With the pneumatic release device, the quick-closing bottom valves of road tankers or tank wagons are included in the emergency stop system of the loading facility.

Scope of delivery:

Base plate with top plate, pneumatic cylinder and swivel lever, contactless limit switch, plastic-coated steel cable with snap hook and short link chain leader, weather protection bonnet, weight approx. 29 kg.

Order No. **15.00000**
Order No. **15.00500** Surcharge for ex-protected control air solenoid valve

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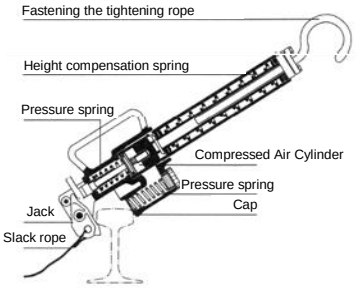
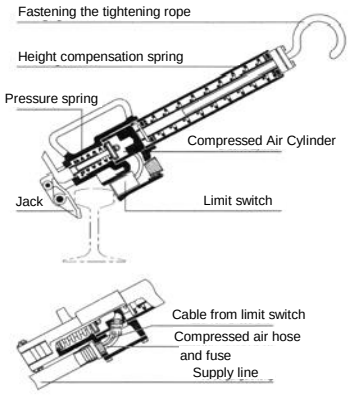
Mechanical rail hook for tank wagons



The mechanical rail hook automatically keeps the bottom valve open during the loading process on the tank wagon. If the tank wagon is moved unintentionally, the rail hook jumps off the rail and the quick-acting closure of the bottom valves is triggered. In case of fire, the rail hook triggers the closing of the bottom valves at a temperature of 150°C and above (fuse). For other hazards, pulling on the slack rope also triggers the quick release.
Weight approx. 5.3 kg

Order No. **15.01000**

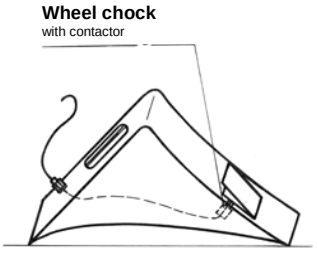
Pneumatic rail hook for tank wagons



The pneumatic rail hook automatically keeps the bottom valve open during the loading proces the tank wagon. In order to make the unloading process of the tank wagon to be included in the **"EMERGENCY STOP system"** of the loading system, the movable latch on the rail hook is pre-tensioned. The rail hook is placed on the rail in this state. Switching off the compressed air system in an emergency releases the latch. The rail hook jumps off the rail and triggers the quick closing of the bottom valves via the tightening rope. When the tank wagon is moved, the rail hook jumps off the rail and the quick-action closure of the bottom valves is triggered. In case of fire, the rail hook triggers the closing of the bottom valves at a temperature of 150°C and above (fuse).
Weight approx. 5.3 kg

Order No. **15.01500**

Wheel chock with built-in electrical contact, **make P&A,**



Contact switch explosion-proof, with ATEX approval The wheel chock developed by P&A is installed before the filling and emptying process is placed in front of the wheel of the road tanker. This triggers the electrical contact, which releases the defuelling process. When the road tanker rolls away, the contact is interrupted and the filling is terminated via the quick-acting valve or the emergency stop system.

Order No. **15.02000**

Sprinkler system for road tankers and tank wagons, **make P&A**

According to TRB 801, No. 25 Para. 6.7.2.5, equipment must be provided for Group D installations or for transhipment and distribution warehouses to protect the pressure vessels against impermissible heating.
e.g. water cannon, sprinkler systems

Order no	**15.04000**	Sprinkler system for a 9 t road tanker
Order no	**15.04100**	Sprinkling system for a 20 t road tanker
Order no	**15.04200**	Sprinkler system for a tank wagon
Order no	**15.04300**	Water cannon with nozzle and floor stand

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Suspension device for LPG hoses, swivelling, **Make P&A**

The P&A suspension device is particularly suitable as a low-cost alternative to the expensive loading arm stations for filling lorries and trucks.
This allows the loading hoses to be easily flanged to the road tankers or tank wagons.

Order No.	**15.04500**	Suspension device for LPG high-pressure hose DN 50
Order No.	**15.04600**	Suspension device for LPG high-pressure hose DN 80
Order No.	**15.04700**	Suspension device (2-arm) for LPG high-pressure hose DN 50 and DN 80

Filling and gas displacement hoses, PN 25, type P&A,

Length 4 m, completely integrated, with water pressure test 40 bar and conductivity test according to TRG, welded parts and ball valves **with APZ 3.1 according to EN 10204**

TKW filling hose DN 50

with connection option for safety valve and relief ball valve, on one side flange DN 50, on the other side ball valve with fuelling nozzle 3 1/4" ACME union nut
Order No. **15.05000**

TKW filling hose DN 80

with connection option for safety valve and relief ball valve, on one side flange DN 80, on the other side ball valve with fuelling nozzle 3 1/4" ACME union nut
Order No. **15.05500**

TKW gas displacement hose DN 32

on one side flange DN 32, on the other side ball valve with coupling 2 1/4" ACME union nut
Order No. **15.06000**

TKW gas displacement hose DN 50

on one side flange DN 50, on the other side ball valve with coupling 2 1/4" ACME union nut
Order No. **15.06500**

EKW filling hose DN 80

with connection option for safety valve and relief ball valve, on one side flange DN 80, on the other side ball valve with loose flange DN 80
Order No. **15.07000**

EKW pendulum hose DN 50

on one side flange DN 50, on the other side ball valve with loose flange DN 50
Order No. **15.07500**

Order No.	**9.05100**	Ball valve 1/2" NPT with quick closing device, PN 25, with APZ 3.1 according to EN 10204
Order No.	**2.10500**	Safety valve 1/2" NPT, 25 bar, Material: brass, with TÜV approval and component test

Special ball valve for road tankers, PN 25, **make P&A,**

complete with locking device against unintentional opening, with centring plate, **with APZ 3.1 according to EN 10204**

Version A: **without swivel joint,** ball valve, socket and pipe bend made of steel, coupling made of brass
Version B: **without swivel joint,** ball valve, socket, pipe bend and coupling made of stainless steel
Version C: **with swivel joint,** ball valve, socket and pipe bend made of steel, coupling made of brass
Version D: **with swivel joint,** ball valve, socket, pipe bend and coupling made of stainless steel

Order No. Version A	Order. No. Version B	Order. No. Version C	Order No. Version D	Filling connection	Hose connection
15.10000	**15.10500**	**15.11000**	**15.11500**	1 3/4" ACME	1“ NPT female
15.10100	**15.10600**	**15.11100**	**15.11600**	1 3/4" ACME	1 1/4“ NPT female
15.12000	Hand lever with locking pin and centring plate for the 1" NPT ball valve				
15.12100	Hand lever with indexing pin and centring plate for 1 1/4" NPT ball valve				

Pipe rupture valve for road tanker PN 25, **make P&A,**

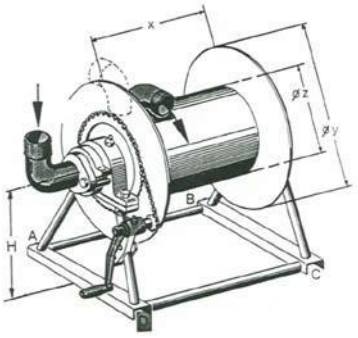
on both sides 2" NPT female thread, suitable for installation in front of the hose reel,
Material: steel or stainless steel, capacity (liquid) approx. 1200 l/min, **with APZ 3.1 according to EN 10204**

15.12500 Pipe rupture valve type PA-12

LPG hose reel PN 25, for hoses DN 25 and DN 32

Connection flange DN 40 with setback according to DIN 2513 flange
and sprocket left, hose connection G 1 1/4" male
Dimension: X = 500 mm, ØY = 530 mm or 600 mm, ØZ = 300 mm

Order no	**15.13000**	Reel for hose DN 25 up to 44 m (ØY = 530 mm)
Order no	**15.13100**	Reel for hose DN 32 up to 38 m (ØY = 530 mm)
Order no	**15.13200**	Reel for hose DN 25 up to 60 m (ØY = 600 mm)
Order no	**15.13300**	Reel for hose DN 32 up to 50 m (ØY = 600 mm)
Order no	**15.13500**	Base frame for ØY = 530 mm
Order no	**15.13600**	Ground frame for ØY = 600 mm
Order no	**15.13700**	Hand crank with drive chain
Order no	**15.13800**	Conversion flange connection and/or sprocket right



Complete high-pressure hose suitable for hose reel, PN 25,

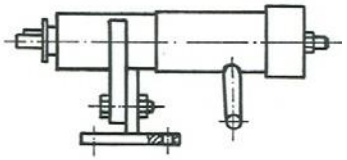
Type P&A, bound on both sides, with pressure and leak test

Order. No. Version A	Order No. Version B	Nominal width	Inlet	Outlet
15.14000	**15.1500**	25	G 1 1/4" IT flat sealing	1" NPT
15.14100	**15.1510**	32	G 1 1/4" IT flat sealing	1 1/4" NPT

Compressed air drive for hose reel, with foot

With integrated coupling that switches on automatically under pressure and drives the hose reel via the drive sprocket. When the coupling is switched off, the motor is automatically disengaged and the hose can be unwound from the hose reel without resistance.

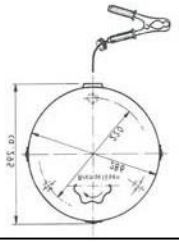
Order No. **15.16000**



Reel for earth cable,

complete with 28 m cable 2.5 mm² Cu,
Sturdy Version, spring motor winding,
Automatic locking in any position by means of a built-in brake Weight approx. 7 kg

Order No. **15.17000**



Non-sparking tool Prescribed for work in hazardous areas

Order no	**15.18000**	Open-end wrench/ring spanner size 10
Order no	**15.18100**	Open-end wrench/ring spanner size 13
Order no	**15.18200**	Open-end wrench/ring spanner size 17
Order no	**15.18300**	Open-end wrench/ring spanner size 18
Order no	**15.18400**	Open-end wrench/ring spanner size 19
Order no	**15.18500**	Open-end wrench/ring spanner size 22
Order no	**15.18600**	Open-end wrench/ring spanner size 24
Order no	**15.18700**	Open-end wrench/ring spanner size 27
Order no	**15.18800**	Double open-end spanner size 24/27
Order no	**15.18900**	Double ring spanner size 24/27
Order no	**15.19000**	Copper hammer 500 g
Order no	**15.19100**	Copper hammer 1000 g
Order no	**15.19200**	Triangular scraper 300 mm
Order no	**15.19300**	Phillips screwdriver (set) size 2 and 3
Order no	**15.19400**	Screwdriver (set) sizes 4, 7 and 10
Order no	**15.19500**	Pipe wrench 400 mm
Order no	**15.19900**	Complete tool set (Version as described above)

Transfer station for road tankers, Make P&A,

completely mounted in a concrete box with galvanised steel doors, dimensions approx. 1380x780x1250 mm (WxDxH), welded parts and ball valves **with APZ 3.1 according to EN 10204**

Version A: Transfer station **for group A systems and group B systems** (without quick-acting valves) consisting of: Concrete box, filling valve 1 1/4" NPT x 1 3/4" ACME, 1 piece ball valve DN 32 (Fire-Safe version), safety valve with TÜV approval, pressure gauge with pressure gauge shut-off valve, wall bushing, expansion valves, emergency stop button, CEE plug for the tank overfill protection (TKW shut-off) as well as pipe material and small parts.

Version B: Transfer station **for group A systems and group B systems** (without quick-acting valves) consisting of: Concrete box, filling valve 2" NPT x 2 1/4" ACME, 1 piece ball valve DN 50 (Fire-Safe Version), safety valve with TÜV approval, pressure gauge with pressure gauge shut-off valve, wall bushing, expansion valves, emergency stop button, ex-pressure button for releasing the TKW filling (SS ball valve) as well as pipe material and small parts.

Version C: Transfer station **for group C systems** (with quick-acting valves) consisting of: Concrete box, filling valve 3" NPT x 3 1/4" ACME, 1 ball valve DN 80 (Fire-Safe version), 1 pneumatic quick-closing valve, safety valve with TÜV approval, pressure gauge with pressure gauge shut-off valve, wall bushing, expansion valves, emergency stop button, Ex-Push button for release of TKW filling (SS ball valve) as well as pipe material and small parts

Order no	**15.25000**	Version A
Order no	**15.25100**	Version B
Order no	**15.25200**	Version C

P & A - RENTAL EQUIPMENT

Order No.	Designation
16.00000	**Pressure recorder** for pipeline tests 0-25 bar
16.00100	**Gas phase flare** incl. LPG high-pressure hose L = 10 m, DN 25 **16.00200** **Liquid phase flare** incl. LPG high-pressure hose L = 10 m, DN 25 16.00300 Bead breaker for pipes incl. nitrogen **pressure** reducer 0-50 bar and LPG high pressure hose
16.00400	**Isotest device** for containers and pipelines (20000 V)
16.00500	Propane hand-held **meter**
16.00600	Ex-proof **blower for extracting a gas-air mixture**
16.00700	**32 kg evaporator unit**, electrically heated, completely mounted in the cabinet, with the necessary fittings, pressure regulators and small parts
16.00800	**60 kg Evaporator unit**, electrically heated, completely mounted in the cabinet, with the necessary fittings, pressure regulators and small parts
16.00900	**100 kg Evaporator unit**, electrically heated, completely mounted in the cabinet, with the necessary fittings, pressure regulators and small parts
16.01000	**400 kg evaporator unit**, hot-water heated, completely mounted in a steel container, incl. the required heating system, mounted in a separate steel container, with the necessary fittings, pressure regulators and small parts
16.01100	**600 kg evaporator unit**, hot-water heated, completely mounted in a steel container, incl. the required heating system, mounted in a separate steel container, with the necessary fittings, pressure regulators and small parts
16.01200	**2.9 t Propellant gas COMPAKT plant**

Attention:

1. Price/week
2. Special prices for longer use
2. Freight and packaging at cost
3. Other evaporator capacities on request

P&A ---- YOUR FITTINGS SUPPLIER

- Complete range of fittings for consumption plants, liquid gas tanks, transfer stations and distribution warehouses
- Large, very well sorted stock
- "Overnight" delivery service
- In-house production of valves, plant components and assemblies
- LPG dispenser manufacturer
- Repairs of all fittings, aggregates, compressors
- New construction of propellant gas, LPG, balloon cylinder, Booster and bottling plants
- In-house production of complete measuring systems, pressure maintenance valves, gas separators, breakaway couplings, overflow valves, liquid gas dispensers, large indicator devices, etc.
- Manufacture of all welded parts according to your specifications
- Creation of circuit diagrams
- Manufacturing of MSR control cabinets
- Complete planning, delivery, assembly, welding work and electrical installation of liquid gas systems

PROPAN UND AMMONIAK ANLAGEN SALZGITTER

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