Spare parts list

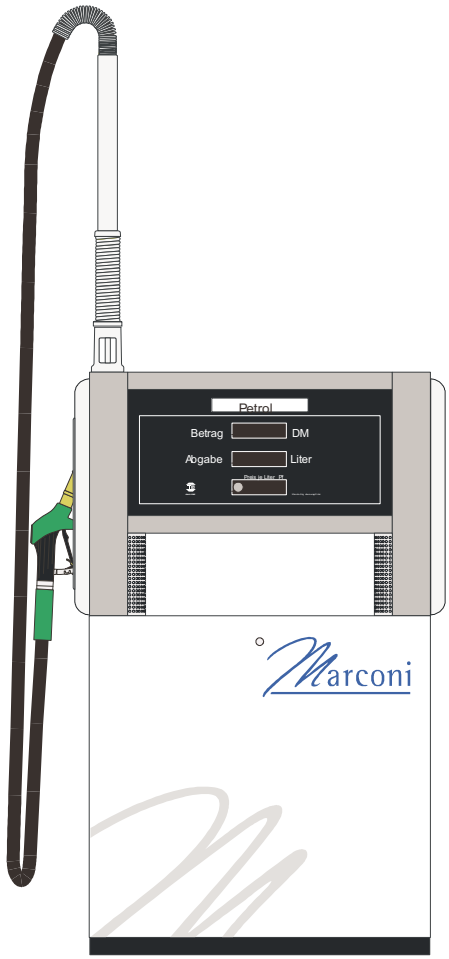


Illustration : Pump 397/1 . . .

Pump 397/1 . . /2 . . ZP . . C . . EC

Standard-Design with

ZP 2180	-	Pumping unit
C-Meter	-	Gilbarco Piston Meter with Eltomatic pulser
EC2000	-	Salzkotten Computer
DP (STP)	-	Option supmerged turbine pump

Special colours and special lettering of rear- / front panels as well as Special equipment please see order.

Technical subject to change.

Read Me First .....

If equipment is to be used to dispense Petrol, then the words 'PETROL' (or PETROLEUM SPIRIT), HIGHLY FLAMMABLE, NO SMOKING and SWITCH OFF ENGINE should be positioned so that the warnings and instructions are brought to the attention of customers immediately on their arrival at the dispensing equipment.

At attended self-service and attendant operated filling stations, the following devices should be installed :

1. At a location readily accessible for quick operation by an attendant at the control point - an Emergency Stop push button switch (or switches) for switching off all fuel dispensers and other electrical equipment within the hazardous zone, with a prominent adjacent notice: (e.g. PETROL PUMPS - EMERGENCY STOP)
2. On the forecourt readily accessible to firefighters but out of reach of the general public - an Emergency Switch which will isolate all fuel dispensers and other electrical equipment within the hazardous zone, with a prominant adjacent notice: (e.g. PETROL PUMPS - SWITCH OFF HERE).

Note: These switches should NOT turn off the forecourt lighting.

It is also recommended that for self-service filling stations a public address system for communicating with customers is installed. Please refer to any national or local regulations for more details on the specific requirements with respect to petrol dispensing.

At unattended filling stations special safety provisions will be necessary. Please refer to any relevant national or local regulations that may be in force.

Any dispensing areas of the forecourt should be adequately lit for safety purposes at all times of use. The illuminance at ground level and the read-out level of displays should not be less than 100 lux.

Any 'Third Party' self-service equipment used with this dispenser should comply with the requirements of the EC Machinery Directive in respect of user friendly software between the operator and the control system.

DANGER FROM MOVING PARTS : The electrical power to this equipment must be removed prior to any installation or maintenance work being carried out. All installation and maintenance work on Gilbarco equipment must be carried out by competent technicians who have received the required training.

In addition, for Gilbarco dispensers whose assembly is completed on site (e.g. Euroline), the installation technicians should have received Gilbarco approved training and be employed by a company who operate an ISO9000 approved quality system.

After any installation, maintenance work or switch-off by the air seperator in the pumping unit, check for leaks on the hydraulic circuits !

Only genuine Gilbarco parts should be used on this equipment.

Attention: Sharp edged parts at dispensers can cause injuries.

Allgemeine Pflegehinweise

Beschichtete Flächen lassen sich am besten mit schwach konzentriertem Seifenwasser oder einem Spezialreiniger reinigen. Die behandelten Flächen sollten danach mit klarem Wasser abgewaschen und mit einem feuchten Tuch abgerieben werden.

Auf Lackoberflächen nach der feuchten Reinigung möglichst sofort mit einem feuchten, weichen Tuch nachwischen, um Ränder zu vermeiden.
Bei hartnäckiger Verschmutzung sollten Sie das Reinigungsmittel an den gegebenen Stellen pur verwenden, und anschließend wie oben beschrieben mit klarem Wasser nachwaschen und abtrocknen.
(Testen Sie das Reinigungsmittel bitte vorher an einer unauffälligen Stelle !)

Verwenden Sie bitte niemals Benzin, Dieselkraftstoffe, Nitro- oder Kunstharzverdünnungen oder Scheuermittel, da sie zur Reinigung der Oberflächen nicht geeignet sind und sie beschädigen.

General care-hints

Coated surfaces should be cleaned with weakly concentrated soapy-water or a special-cleaner. The surfaces should then be rinsed immediately with clear water and wiped with a soft, moist cloth. Please wipe the painted surfaces soon as possible with a soft, moist cloth to avoid stain. With stubborn contamination, use concentrated detergent at the given places. Clean and dry as described.
(Please test the detergent previously at an inconspicuous place !)

Use never Petrol, Diesel, Nitro- or Epoxy resin thinning or abrasives, because they are not suitable to clean the surfaces and damage them.

Общие указания по уходу

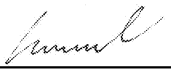
Имеющие покрытия поверхности лучше всего чистить слабоконцентрированной мыльной водой или специальным очистителем. Обработанные поверхности затем промыть чистой водой и вытереть влажной тряпкой.

Лакированные поверхности после влажной чистки необходимо, по возможности, сразу же еще раз протереть влажной, мягкой тряпкой, чтобы избежать появления разводов.
В случае трудно удаляемых загрязнений следует нанести средство для чистки в неразбавлен-ном виде на нужное место и, в заключение, как описано выше, промыть его чистой водой и вытереть.
(Предварительно, пожалуйста, проверьте действие средства для чистки на незаметном месте!).

Пожалуйста, никогда не пользуйтесь бензином, дизельными топливами, нитроразбавите-лями или разбавителями на основе синтетической смолы, а также абразивными чистя-щими средствами, так как они не пригодны для чистки пластмассовых поверхностей и повреждают их.

Revision history - Part No. 140 723 484

Date	In-dex	Description	Name
20.11.01	a	Air separator is only offered as complete module page 3.1 - 3.2	Papenkort
24.01.02	b	Option DP (STP) supmerged turbine pump addition page 11.1 - 11.2	Papenkort
28.08.02	c	Frontpage new	Papenkort

	Date	Department	Name	Signature
Prepared by	08.11.2000	ED	Wiechers	
Checked by	08.11.2000	ED	Nuwel	
	08.11.2000	VS	Swarat	
	08.11.2000	EM	Schneider	
	08.11.2000	EE	Brechmann	
	08.11.2000	LV-A	Trinkaus	
Released by	08.11.2000	EZ	Kersting	

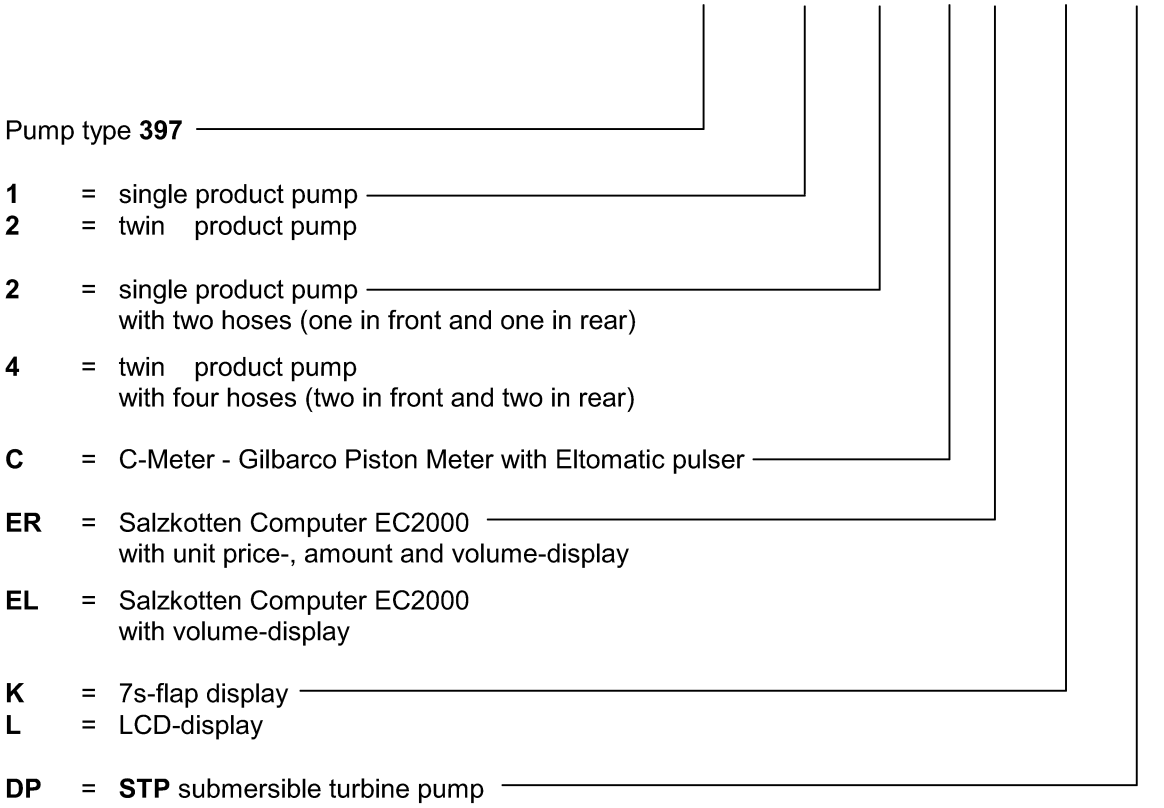
Computer prepared document – Valid also without signature.

Database (M) : \ E_list \ 397_1_ZP_C_EC_E_GB . doc

Type key

Examples :

397/	**1**			**C**	**ER**	**K**		
397/	**2**			**C**	**ER**	**L**		
397/	**1**	**-**	**2**	**C**	**ER**	**K**	**DP**	
397/	**2**	**-**	**4**	**C**	**EL**	**L**		



Pump type **397**

1 = single product pump
2 = twin product pump

2 = single product pump
with two hoses (one in front and one in rear)

4 = twin product pump
with four hoses (two in front and two in rear)

C = C-Meter - Gilbarco Piston Meter with Eltomatic pulser

ER = Salzkotten Computer EC2000
with unit price-, amount and volume-display

EL = Salzkotten Computer EC2000
with volume-display

K = 7s-flap display
L = LCD-display

DP = **STP** submersible turbine pump

Marconi	**Petrol pumps type 397/ . . . 40 und 70 L/min** with pumping unit ZP 2180, C-Meter, eltomatic pulser und computer EC2000	SPARE PARTS LIST 12.10.2000 / ED / Wiechers

Instructions for ordering spare parts

1. First of all find out the page-no. of the spare part drawing/illustration and the spare part list in the table of contents.
2. Now find the Item-No. of the spare part in the spare part drawing/illustration.
3. In the spare part lists you find the description, article-no. and number of pieces under the Item number (if necessary with sub-item).

   The number of pieces for bolts, screws, linking elements and other accessories refer to one piece of the preceding sub-assembly.

   Pay attention to the corresponding notes.
4. Spare part order should contain the following information:

   Part No.

   Description (if necessary, colour and panels etc.)

   Number of quantity (Qty.)

   Type and year of construction of the petrol pump

Contents:

Marconi Commerce Systems GmbH & Co. KG

D-33154 Salzkotten • Ferdinand-Henze-Str. 9
Telefon +49 5258 13-0 • Fax +49 5258 13-207

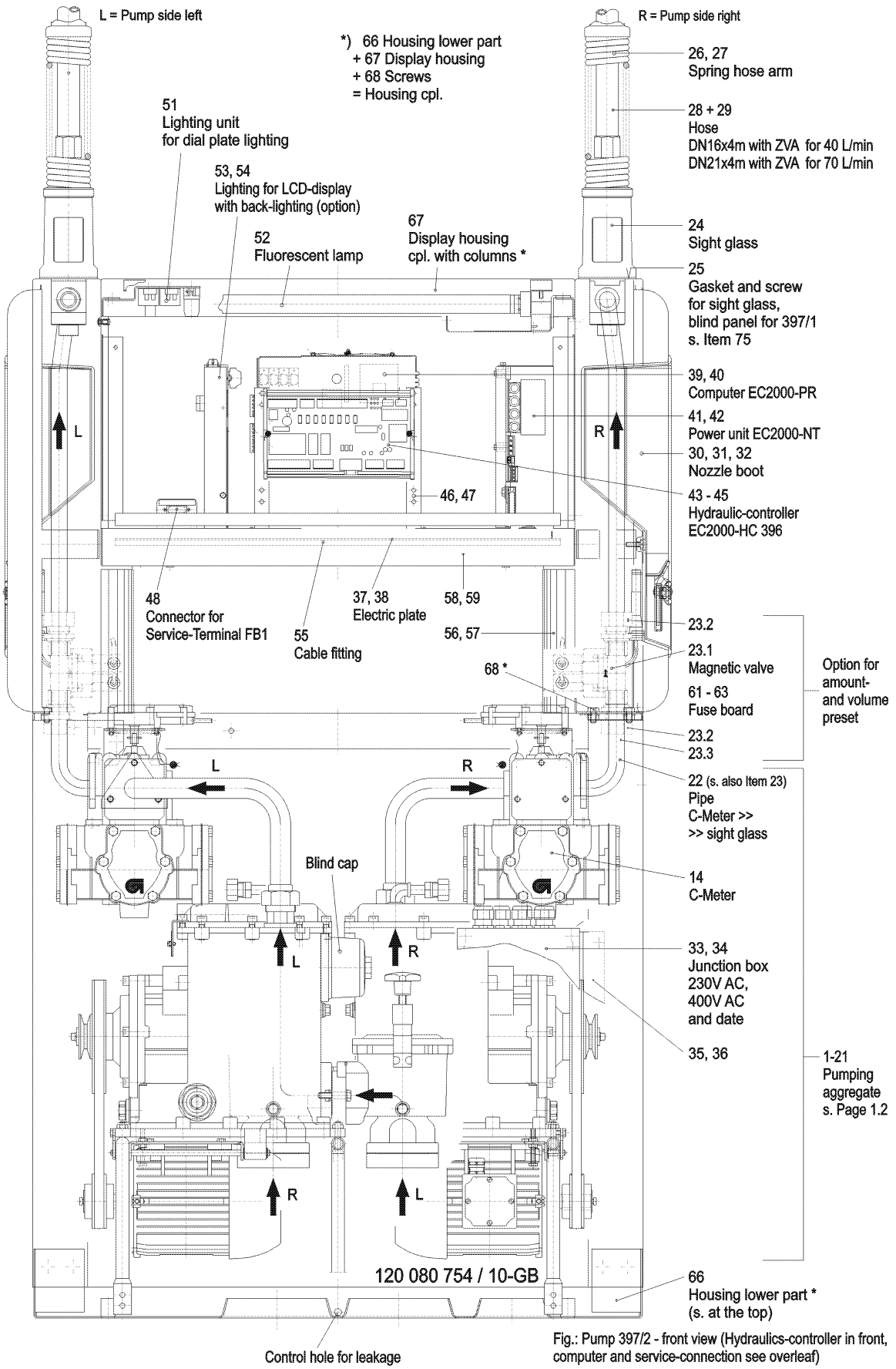
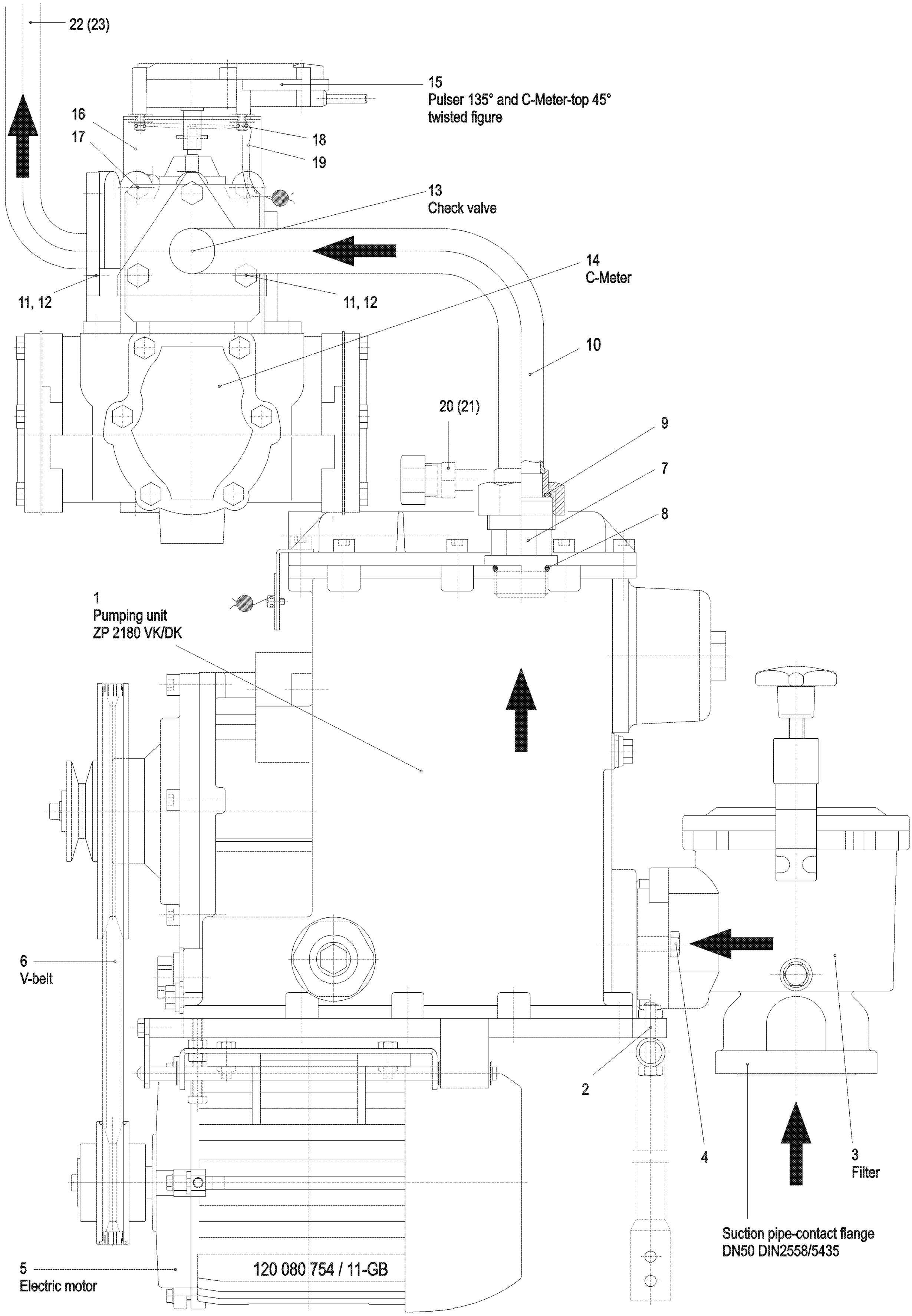
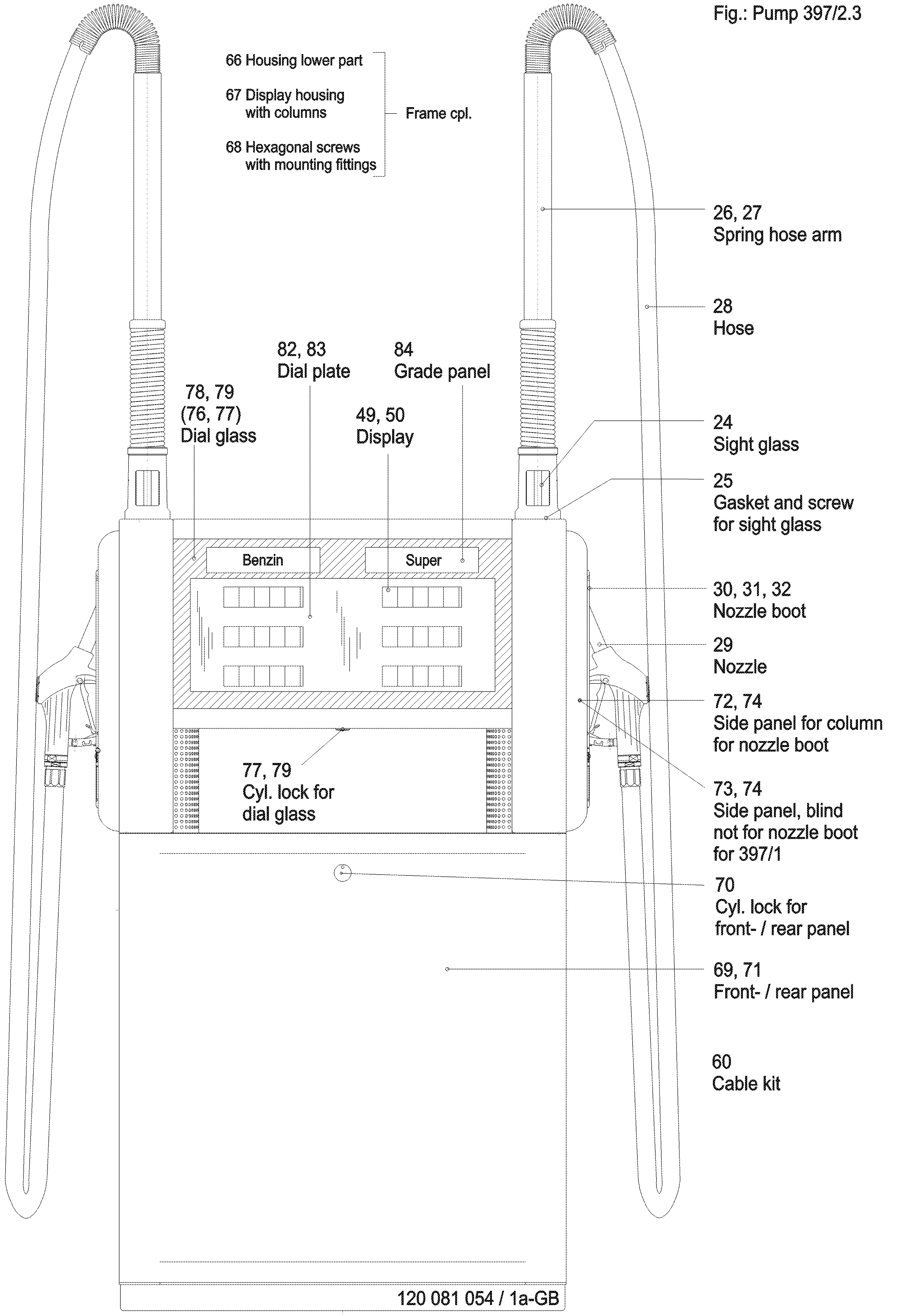


Fig.: Pump 397/2 - front view (Hydraulics-controller in front, computer and service-connection see overleaf)


22 (23)
15
Pulser 135° and C-Meter-top 45° twisted figure
16
17
18
19
13
Check valve
14
C-Meter
11, 12
11, 12
10
20 (21)
9
7
8
1
Pumping unit
ZP 2180 VK/DK
6
V-belt
2
4
3
Filter
Suction pipe-contact flange
DN50 DIN2558/5435
5
Electric motor
120 080 754 / 11-GB

Marconi	**Petrol pumps type 397/ . . . 40 und 70 L/min** with pumping unit ZP 2180, C-Meter, eltomatic pulser und computer EC2000 **Petrol pump closed**	SPARE PARTS LIST Drawing 120 081 054 / 1a-GB **Page 1.3** 12.10.2000 / ED / Wiechers

Fig.: Pump 397/2.3



Item	Qty.	Part No..	Description
1	**1**	140 680 340	**Pumping unit ZP 2180** VK/DK for petrol and diesel, for 40 and 70 L/min
			for underground and aboveground storage tanks, without venting - option, s. page 3.4, without float breather vent - option, s. page 3.4, bypass valve with safety valve., outlet connector = 1" int., connector for venting = ¼" int., with blind cap (instead of filter element 1½")
			Piece parts s. page 3
			Mounting for pumping unit:
2.1	4	140 029 580	Hex. hd. screw M8 x 40
2.2	4	140 374 566	Locknut M8
3.1	**1**	**140 601 111**	**Filter DN50-AL,** with 1 non return valve, horizontal, valve cone with safety valve cpl., but without filter element; *s. Item 3.2, piece parts for filters s. Page 4*
3.2	1		**Filter element** ø100/50 x 90 long
	-	140 418 056	12 µ for petrol
	-	140 418 066	25 µ for diesel
			Connection pumping unit with filter:
4.1	2	140 374 566	Hex. hd. locknut M8
4.2	2	140 039 830	Washer A 8,4
5	**1**	140 611 593	**Electrical motor 0,75 kW** with fittings, cpl. with single-belt pulley ∅ 76mm and mounting plate.
			Piece parts s. page 5
6	**1**	**140 066 440**	**V-belt** 13 x 813
7	1	140 639 003	Double nipple 1" ext. x 1 ¼" ext.
8	1	140 536 836	O-ring 30 x 3
9	1	140 060 980	O-ring 35 x 3
10	1	140 677 544	Pipe 28x2, *from ZP 2180 to C-Meter with O-rings; s. Item 9 and 11*
11	1	140 620 176	O-ring 40 x 3
12.1	3	140 642 696	Hex. hd. screw 5/16" x 25 x SW½"
12.2	3	140 041 120	Spring lock washer A8
13	**1**	**140 620 186**	**Check valve ,** with bypass valve
14	**1**	**140 705 075**	**C-Meter PA 024 TC-24**, calibrated, with sealing
15	**1**	**140 661 916**	**Pulser,** Eltomatic 01-08E
16	1	140 661 924	Holder II
17.1	2	140 642 696	Hex. hd. screw 5/16" x 25 x SW½"
17.2	2	140 039 830	Washer 8,4
18.1	4	140 477 284	Distance tube ∅ 4/6 x 3
18.2	8	140 040 500	Washer 5,3
18.3	4	140 037 950	Capstan screw M4 x 10

Item	Qty.	Part No..	Description
19.1	1	140 068 880	Safety wire 0,5m long
19.2	1	140 068 890	Seal ∅ 10 x 5 thick
20	1	140 675 334	Venting ¼" , s. Page 3.4,
		option for aboveground storage tanks:	
21	a) 1	140 492 803	Float breather vent ¼", s. Page. 3.4
21	b) 1	-	Pipe to the storage tanks, s. Page 3.4
22	1	140 677 563	Pipe 22 x 1,5 *from C-Meter to sight glass*
		option for amount and volume preset *s. Item 23.1 - 23.4:*	
23.1	**1**	**140 680 526***	**Magnetic valve ¾"**
			Piece parts s. Page 7
23.2	2	140 327 106	Connection fitting GE 22 PLR – ¾"
23.3	1	140 677 893	Pipe 22 x 1,5 x 160 long (below) *from C-Meter to magnetic valve*
23.4	1	140 575 573	Pipe 22 x 1,5 x 455 long (above) *from magnetic valve to sight glass*
24		**Sight glasses DN20**	
		140 612 503	- for 45 L/min (with baffle sheet)
		140 568 403	- for 80 L/min
			Piece parts s. page 8
			Mounting for sight glass:
25.1	1	140 574 264	Gasket 57,5 x 79 x 1
25.2	3	140 031 450	Hex. hd. screw M6 x 16
25.3	3	140 039 900	Washer A6,4
26		**Spring hose arm**	
		140 572 443	- for 45 L/min
		140 572 393	- for 80 L/min
			Piece parts s. page 9
27	1	140 550 194	Foot ring SW65 for spring hose arm
			Figure s. Page 9
28		**Hoses, option:**	
		140 288 266	**Slimline-hose 16** x 4 m long, with anti kniking sleeve grey
		140 572 075	**Slimline-hose 21** x 4 m long, with anti kniking sleeve black and spring for spring hose arm
		140 573 315	**Slimline-hose 21** x 5 m long, with anti kniking sleeve black and spring for spring hose arm

Item	Qty.	Part No..	Description
29			**Slimline-nozzles ZVA**
		140 628 726	**ZVA 3.0 R** for unleaded petrol, plastic cover EK144 black
		140 635 166	**ZVA 3.0 R** for unleaded petrol, plastic cover EK144 green
		140 598 866	**ZVA 3.0 T - FS,** for diesel, plastic cover EK144 black with drip catcher
		140 627 926	**ZVA 25.3 – FS,** for diesel, plastic cover EK144 black
30	**1**	140 620 601	**Nozzle boot** for 45 L/min and 80 L/min
			Piece parts s. page 10
31	1	140 035 250	Cylinder hd. screw A M6 x 20
32	1	140 603 174	Magnet switch MKR 13XOAR with cable 1,5m
33	**1**	**140 525 383**	**Junction box** 230V AC / 400V AC and date
34	2	140 344 406	Cylinder hd. screw M6 x 25
35	1	140 565 984	Holder for Junction box
36.1	2	140 031 440	Hex. hd. screw M6 x 12
36.2	2	140 039 900	Washer 6,4
37	**1**	**140 568 671**	**Electric plate**
38.1	4	140 039 900	Washer 6,4
38.2	4	140 039 280	Hex. hd. nut M6
39			**Computer (Salzkotten) EC2000-PR:**
			option (s. also order):
		140 528 695	Kienzle - calibrated, with sealing
		140 560 775	TS-K100 - calibrated, with sealing
		140 617 375	EPSI - calibrated, with sealing
		140 617 455	LON - calibrated, with sealing
		140 618 855	TWO-WIRE - calibrated, with sealing

Item	Qty.	Part No..	Description
41	**1**	**140 524 802**	**Power unit EC2000-NT**
40.1	2	140 039 900	Washer 6,4
40.2	2	140 039 280	Hex. hd. nut M6
42.1	2	140 031 390	Hex. hd. screw M5 x 10
42.2	2	140 039 820	Washer 5,3
43	**1**		**Hydraulic-controller**
		140 611 823	EC2000-HC 396/1M for 397/1 - calibrated, with sealing
		140 611 783	EC2000-HC 396/2M for 397/2 /1-2 /2-4: - calibrated, with sealing
44	1	140 371 606	Profil-holder 35 x 27 x 7,3
45.1	2	140 035 300	Cylinder hd. screw M6 x 10
45.2	2	140 039 900	Washer 6,4
45.3	2	140 039 280	Hex. hd. nut M6
46	2	140 341 144	Holder
47.1	1	140 039 820	Washer 5,3
47.2	1	140 039 270	Hex. hd. nut M5
48	**1**	**140 507 983**	**Connector for Service-Terminal FB1**
49			**7s-flap display**
		140 536 445	5-digit (5 / 5 / 4), for **ERK** - calibrated, with sealing
		140 507 092	6-digit (6 / 6 / 5), for **ERK** - calibrated, with sealing
		140 560 175	6-digit (- / 6 / -), for **ELK** - calibrated, with sealing
			LCD display,
		140 560 252	6-digit (6 / 6 / 5), for **ERL** - calibrated, with sealing
50	2	140 038 030	Slotted pan head tapping screw 4,2 x 9,5
51	**1**	**140 419 133**	**Lighting unit for dial plate lighting**, *Spare parts s. Item 51.1 - 51.3*
51.1	2	140 392 536	Ballast 230V
51.2	2	140 298 356	Starter socket
51.3	2	140 167 540	Starter 13 - 65W
52.1	1	140 331 786	Fluorescent lamp
52.2	2	140 344 946	Socket for fluorescent lamp

Item	Qty.	Part No..	Description
53	**1**	**140 533 522**	**Lighting only for LCD display,** with back-lighting
			Spare parts s. Item 53.1 - 53.3
53.1	4	140 500 636	Ballast
53.2	4	140 298 356	Starter socket
53.3	4	140 248 850	Starter 4 - 65W
54.1	2	140 031 390	Hex. hd. screw M5 x 10
54.2	2	140 039 820	Washer 5,3
55.1	12	140 570 316	Cable fitting DG 11
55.2	2	140 570 336	Cable fitting DG 16
55.3	6	140 571 466	Cable fitting DG 21
56	2	140 561 902	Panel for cable fitting
57.1	2	140 039 820	Washer 5,3
57.2	2	140 039 270	Hex. hd. nut M5
58	1	140 566 533	Panel for cable channel
59	2	140 383 146	Cylinder hd. screw M6 x 12
60	1	140 598 474	Cable kit 397/1
	1	140 598 484	Cable kit 397/2
			***For amount and volume preset** s. Item 61 - 63:*
61	1	140 606 275	Fuse board 4-fach
62	2	140 403 316	Holder
63.1	1	140 371 606	Profil-holder 35 x 27 x 7,3
63.2	2	140 034 780	Cylinder hd. screw M5 x 10
63.3	2	140 039 820	Washer 5,3
64, 65	-	-	-
66	**1**	**140 564 460**	**Housing lower part,** cpl. with pump socket
67	**1**	**140 576 651**	**Display housing,** cpl. with columns
			Connection Item 66 with 67:
68.1	8	140 031 510	Hex. hd. screw M8 x 16
68.2	8	140 040 730	Spring washer 8,4
68.3	8	140 039 830	Washer 8,4
68.4	8	140 039 290	Hex. hd. nut M8
69	**2**	**140 560 361**	**Front- / rear panel**
			Fittings for front- / rear panel:
70.1	1	140 324 346	Cyl. Lock for front- / rear panel
70.2	1	140 161 180	Distance ring 22,2 x 25 x 3
70.3	1	140 040 540	Ring 22,5 x 32 x 3,5
70.4	1	140 568 904	Lever 58 x 20
71	4	140 430 376	Clip 12/2,5 *for front- / rear panel*
72		**140 561 012**	**Side panel for column** for nozzle boot
73		**140 569 132**	**Side panel for column,** blind, not for nozzle boot, for 397/1
			Mounting for one side panel:
74	2	140 403 826	Clip 4,76 high, for one side panel 2 piece
75		140 576 114	Blind panel ø 80, for 397/1, to close the opening for the spring hose arm on the columns
76.1		**140 587 043**	**Dial glass 397/1** (with one dial glass window) 656 x 310 x 5, with holder
			Fittings for one dial glass:
76.2	1	140 586 086	profile gasket, 1,9m long
77.1	1	140 324 346	Cyl. Lock for dial glass
77.2	1	140 161 180	Distance ring 22,2 x 25 x 3
77.3	1	140 040 540	Ring 22,5 x 32 x 3,5
77.4	1	140 341 554	Lock plate 60 x 70 x 1,5
77.5	1	140 586 864	Lever, U 12 x 35 x 28,5mm
78.1		**140 587 033**	**Dial glass 397/2** (with two dial glass windows) 656 x 310 x 5, with holder
			Fittings for one dial glass:
78.2	1	140 586 086	profile gasket, 1,9m long
79.1	1	140 324 346	Cyl. Lock for dial glass
79.2	1	140 161 180	Distance ring 22,2 x 25 x 3
79.3	1	140 040 540	Ring 22,5 x 32 x 3,5
79.4	1	140 341 554	Lock plate 60 x 70 x 1,5
79.5	1	140 586 864	Lever, U 12 x 35 x 28,5mm
80, 81	-	-	-
82			**Dial plate,**
		140 568 591	5- digit (5 / 5 / 4), for **ERK and ERL, for 397/1**
		140 568 551	5- digit (5 / 5 / 4), for **ERK and ERL, for 397/2**
		140 577 492	**Dial plate, blind**, black
			Mounting for one dial plate:
83.1	2	140 572 186	Nylatch-Clip 4,75 / 1,8 - 4,3
83.2	2	140 572 196	Nylatch-Sleeve 4,75 / 1,7
84			**Grade panel** 280 x 48mm
		140 566 903	"SUPER" black/white
		140 576 513	"SUPER" red/white
		140 575 403	"PREMIUM" black/white
		140 575 413	"UNLEADED" black/white
		140 575 423	"SOLAR" black/white
		140 566 913	"DIESEL" black/white
		140 563 143	glass plate 280 x 48 x 4, white
			Special dial plate and grade panel s. order and Salzkotten Art.-Katalog DK 7317396 abbr. 7316396
85, 86	-	-	-

Marconi

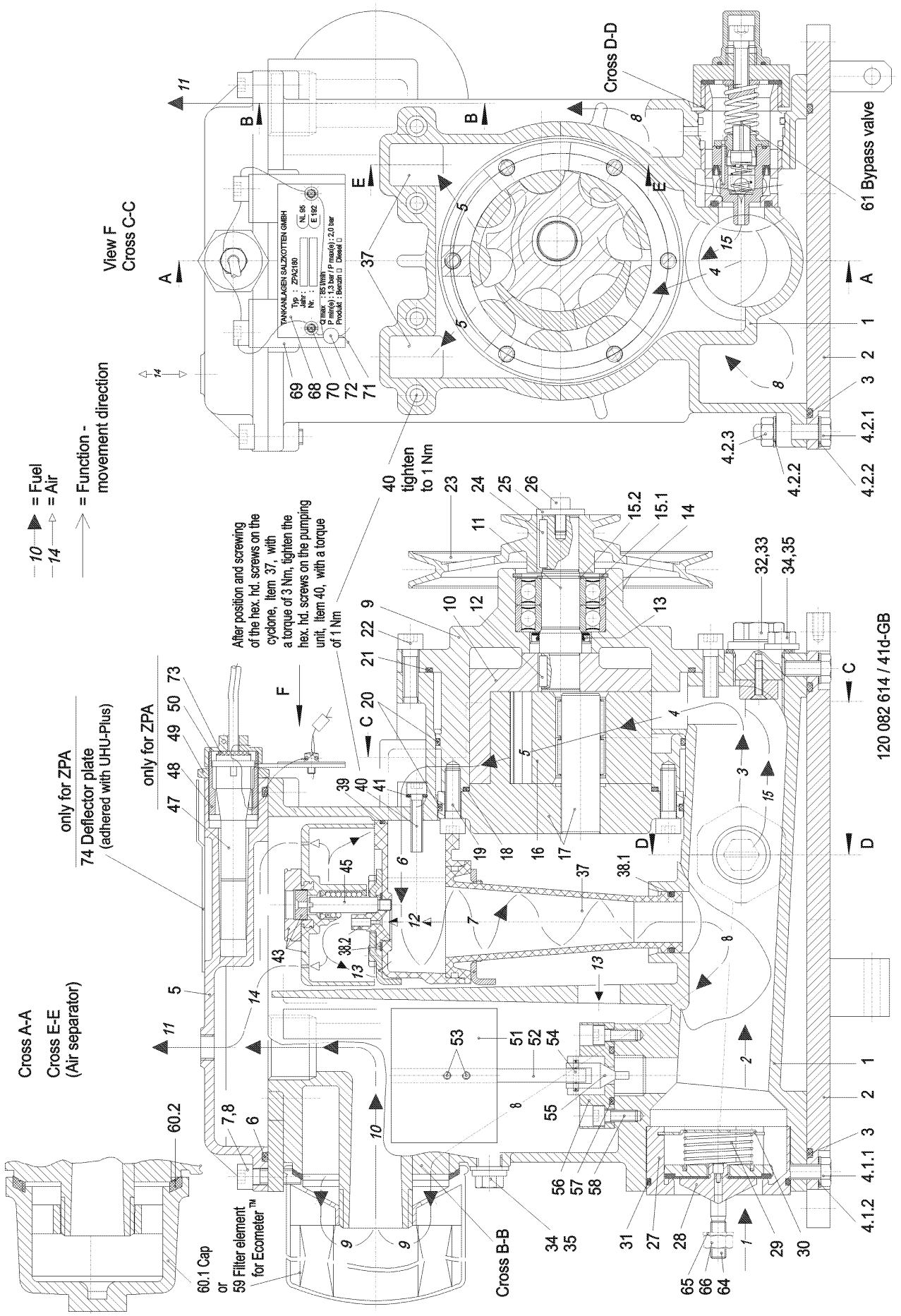
Pumping unit ZP(A) 2180

Petrol / Diesel

SPARE PARTS LIST
Drawing 120 082 614 / 41d-GB

Page 3.1

29.01.2001 / ED / Sivka



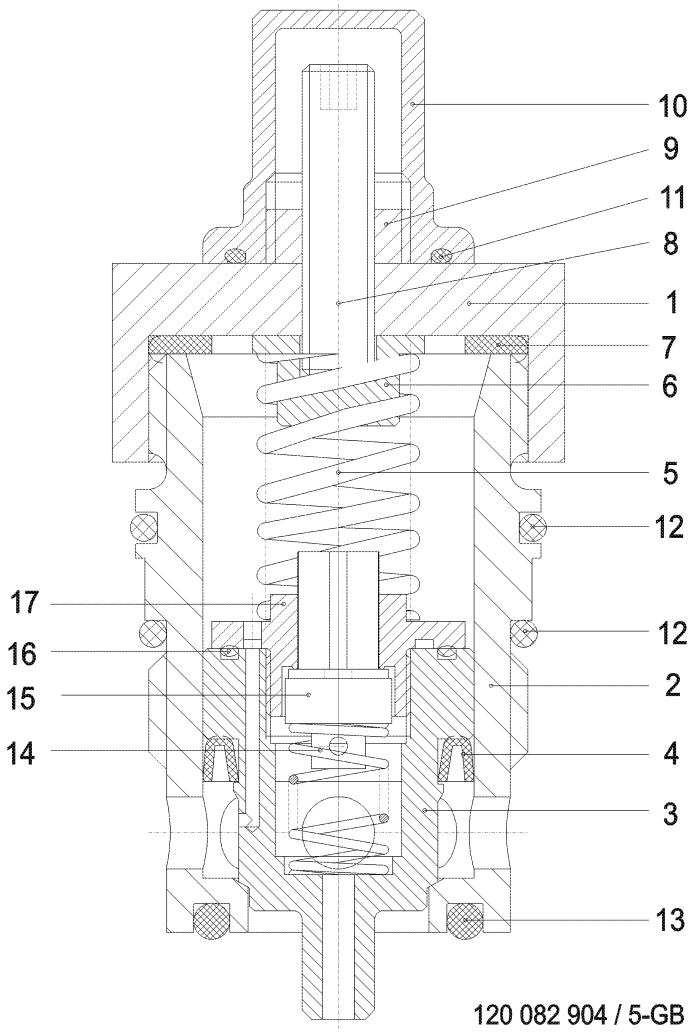
Item	Qty.	Part No.	Description
1	**1**	**140 603 230**	**Pumping unit housing**
2	**1**	**140 721 511**	**Bottom - AL**
3	**1**	**140 603 423**	**Bottom gasket**
4.1.1	5	140 615 066	Hex. hd. screw M8 x 20
4.1.2	5	140 673 076	Disc spring 16/8,2 x 0,9
4.2.1	9	140 468 346	Hex. hd. screw M8 x 35 — for bottom
4.2.2	18	140 673 076	Disc spring 16/8,2 x 0,9
4.2.3	9	140 374 566	Lock nut M8
5	**1**	**140 603 331**	**Cover**
6	**1**	**140 603 432**	**Cover gasket**
7	8	140 036 200	Cyl. hd. screw M8 x 25
8	**2**	**140 319 806**	**Cyl. hd. screw M8 x 16** with hole for sealing — for cover
9 - 19			**Pumping unit insert cpl.:**
		140 602 782	Standard design
		140 725 513	for Australia
9	1	140 602 651	Housing
10	1	140 602 743	Impeller
11	1	140 602 683	Shaft cpl.
12	1	140 041 590	Feather A 6 x 6 x 16
13	1	140 602 806	Gasket 22/32 x 7
14	2	140 602 796	Bearing (20/47 x 14)
15.1	1	140 041 250	Snap ring 47 x 1,75
15.2	1	140 041 210	Snap ring 20 x 1,2
16	1		Impeller incl. needle bearing:
a)		140 494 353	Standard design
b)		140 725 535	for Australia (with O-Ring 140 725 526)
17	1	140 602 774	Cover with bolt
18	1	140 061 040	O-ring 92 x 3
19	6	140 036 200	Cyl. hd. screw M8 x 25
20	2	140 607 046	O-ring 122 x 3
21	1	140 607 056	O-ring 134 x 3
22	5	140 036 200	Cyl. hd. screw M8 x 25
23	**1**	**140 129 080**	**Pulley** ø 158/62 x 19
24	1	140 635 146	Feather A6 x 6 x 25
25	1	140 046 974	Washer 6,5/25 x 2.99
26	1	140 643 606	Hex. hd. seal screw M6 x 12
27-31	**1**	**140 642 554**	**Suction check valve**
			Piece parts for check valve :
27	1	140 608 063	Check valve housing
28	1	140 551 404	Valve cone cpl. with pressure relief valve
29	1	140 551 424	Compression spring 36/1,25 x 35 x 3,5
30	1	140 608 054	Lock plate
31	1	140 608 086	O-ring 68 x 3
32	1	140 607 084	Plug screw G¾“ with magnet plate
33	1	140 617 966	Gasket 27 x 34 x 2
34	1+1	140 037 740	Plug screw G¼“
35	1+1	140 054 780	Gasket 13 x 20 x 2
36	-	-	-
37	**1**	**140 672 443**	**Air separator, cpl.**
			Fittings for Item 37 und 38 s. Item 38-45:
38.1	1	140 607 066	O-ring 27 x 3
38.2	1+1	140 462 274	Gasket 21 x 30 x 1
			Tighten the Hex. hd. screws of the Air separator with a torque of 3 Nm
39	2	140 607 984	O-ring 33 x 26 x 2,5
40	2+2	140 617 976	Cyl. hd. screw M6 x 22 — 2 piece for every air separator
41	2+2	140 061 570	O-ring 6 x 2,5
			Tighten the Hex. hd. screws of the pumping unit with a torque of 1 Nm

Item	Qty.	Part No.	Description
42	-	-	-
43	**1**	**-**	**Switch cap**, cpl. with linear bearing and magnet plate distance-/weight ring as well as for VK with gasket and seal ring
a)		140 603 054	- for **ZPA VK**
b)		140 635 034	- for **ZPA DK + ZP VK/DK**
44	-	-	-
45	1	140 603 994	Shaft for switch cap
46	-	-	-
47			**Magnet switch** only for ZP**A** !
a)	**1**	**140 603 174**	for Salzkotten-Electronic EC2000, cable 1,5m, without plug, with Item 48 - 50
b)	**1**	**140 642 705**	for Gilbarco Epsilon-Computer, cable 1,5m, with plug, 4-phase, till Mai`00 3-phase, since Juni`00 4-phase, with Item 48 - 50
c)	**1**	**140 730 685**	for Gilbarco Epsilon-Computer, cable 1,5m, with plug, 3-phase, included Item 48 - 50
d)	**1**	**140 730 695**	for Gilbarco Epsilon-Computer, cable 1,5m, with plug, 4-phase, included Item 48 – 50
e)	**1**	**140 595 786**	for Logitron Puma-Computer, cable 6m, without plug, with Item 48 - 50
Fittings:			
48	1	140 604 204	Thread nipple M26 x 1,5 x 33 long
49	1	140 604 214	Hex. nut M26 x 1,5
50	1	140 604 224	Thread cap M26 x 1,5
51	1	140 602 884	PUR float 70 x 75 x 55 — Float-unit cpl.: Part.-No.: 140 602-833
52	1	140 602 874	Holder for float
53	2	140 035 000	Cyl. hd. screw M4 x 16
54	2	140 045 100	Spring pin 2,5 x 16
55	1	140 602 864	Valve cone
56	1	140 602 843	Valve seat
57	1	140 276 790	O-ring 24 x 3
58	2	140 383 146	Cyl. hd. screw M6 x 12
59 / 60 alternatively:			
a) for Ecometer			
59	**1**	**140 593 564**	**Filter DN50 AL** 1½“-16 UNF - 10µm x 140 long - **for VK**
		140 632 746	**Filter DN50 AL** 1½“-16 UNF - 30µm x 140 long - **for DK**
b) for C-Meter			
60.1	**1**	**140 618 126**	**Cap** 1½“ - 16 UNF
60.2	1	140 618 436	Gasket for cap
61	**1**	**140 650 614**	**Bypass valve DBV-E 80** 1¼“, 2 bar, with pressure relief valve
62, 63	-	-	-
64	2	140 618 626	Stud M8 x 35
65	2	140 039 830	Washer 8,4
66	2	140 039 290	Hex. nut M8
68			**Identification plate:**
a)	1	140 610 264	- for **ZP**
b)	1	140 603 124	- for **ZPA**
69	1	140 604 304	Holder for identification plate
70	2	140 037 900	Sealing screw M4 x 6
71	2	140 068 880	Safety wire 0,5-0,3 x 200mm long
72	2	140 068 890	Seal ∅ 10 x 5
73	1	140 436 456	Gasket 6,5 x 16
74	1	140 645 204	Screen plate, only for ZPA

Attention!

On exchange, new bypass valves must be set before resuming operation:

1. Totally release spring (Item 5) using the adjusting screw (Item 8).
2. Operate pump or MPD respectively.
3. Set the pump pressure at 2 bar rotation pressure when the nozzle is closed using the adjusting screw (Item 8).



120 082 904 / 5-GB

Item	Qty.	Part No..	Description
1	1	140 608 154	Housing - top
2	1	140 640 163	Housing - base
3	1	140 650 424	Valve cone vee-leather
4	1	140 507 226	Vee-leather Ø 22/30 x 5
5	1	140 650 444	Compression spring Ø 17,6/1,6 x 50 long
6	1	140 507 204	Compression bolt
7	1	140 059 430	Gasket 28 x 42 x 2
8	1	140 608 146	Hexagonal socked set screw M8 x 35
9	1	140 508 304	Lock nut M8/M16x1,5
10	1	140 635 274	Cap M16x1,5
11	1	140 491 186	O-ring 20 x 1,5
12	2	140 061 090	O-ring 36 x 3
13	1	140 061 250	O-ring 22 x 4
14	1	140 650 434	Compression spring 9,8/0,8 x 21 long
15	1	140 650 384	Guide bolt cpl.
16	1	140 410 556	O-ring 22 x 1,5
17	1	140 650 414	Spring body

Marconi

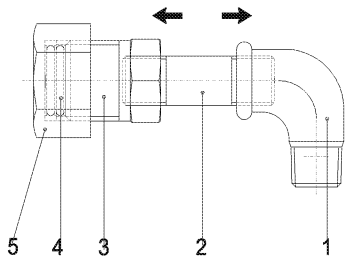
Venting ¼”

Part No. 140 675 334

SPARE PARTS LIST
Drawing 120 082 614 / 34-GB

Page 3.4 - 1

23.10.2000 / ED / Wiechers



SPARE PARTS LIST

Item	Qty.	Part-No.	Description
1	1	140 047 460	Angle ¼"
2	1	140 015 230	Double nipple ¼" x 40
3	1	140 048 180	Reduction nipple ½ x ¼"
4	1	140 013 020	Triple strainer Ø 18,5
5	1	140 052 060	Sleeve nut 1/8"

Marconi

Float breather vent ¼”

Part No. 140 492 803

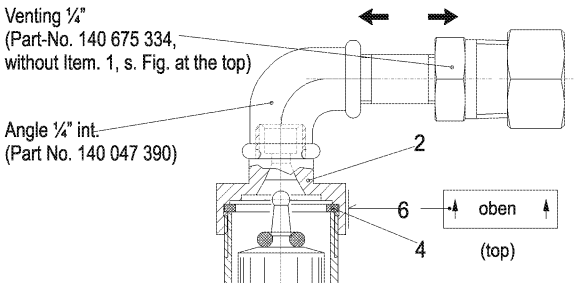
SPARE PARTS LIST
Drawing 120 082 614 / 34-GB

Page 3.4 - 2

23.10.2000 / ED / Wiechers

SPARE PARTS LIST for Float breather vent ¼"

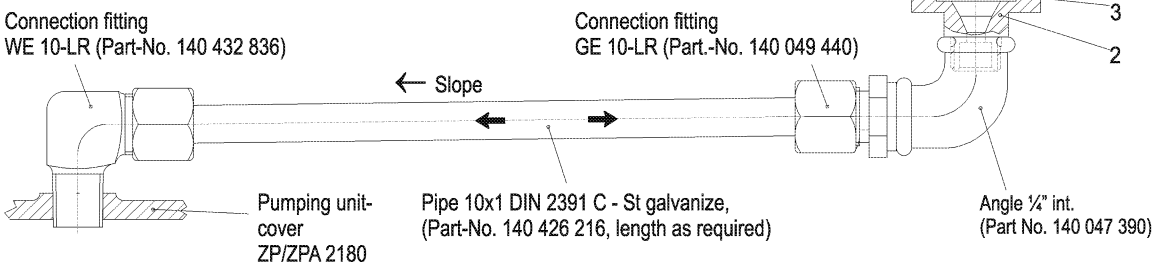
Item	Qty.	Part-No.	Description
1	1	140 492 604	Housing
2	1	140 492 543	Cap
3	1	140 492 714	Baffle plate
4	1	140 492 946	Gasket 24 x 30 x 2
5	1	140 492 886	Float, cpl. with O-ring 4 x 4
6	1	140 497 264	Sign “oben” (top) - adhesive oil



Mounting example for float breather vent

at pumping unit ZP/ZPA 2180

Mounting the float breather vent direct at the pumping unit cover or with a pipe and a holder for the float breather vent.



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Installation of the return pipe

to the fuel tank

only with pumping unit ZP 2180

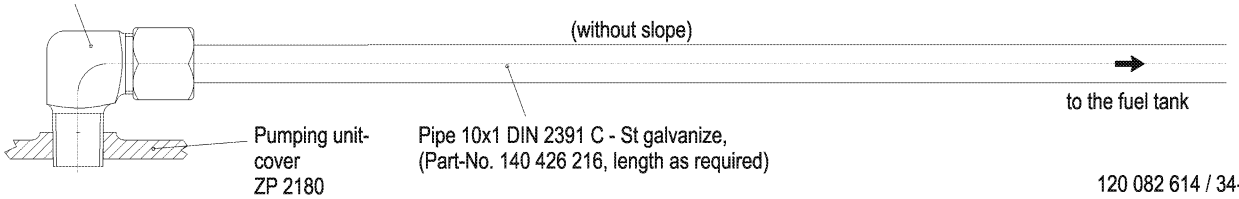
SPARE PARTS LIST
Drawing 120 082 614 / 34-GB

Page 3.4 - 3

23.10.2000 / ED / Wiechers

Connection fitting
WE 10-LR (Part-No. 140 432 836)

Mounting the connection fitting direct at the pumping unit cover and conduce the pipe to the fuel tank.



120 082 614 / 34-GB

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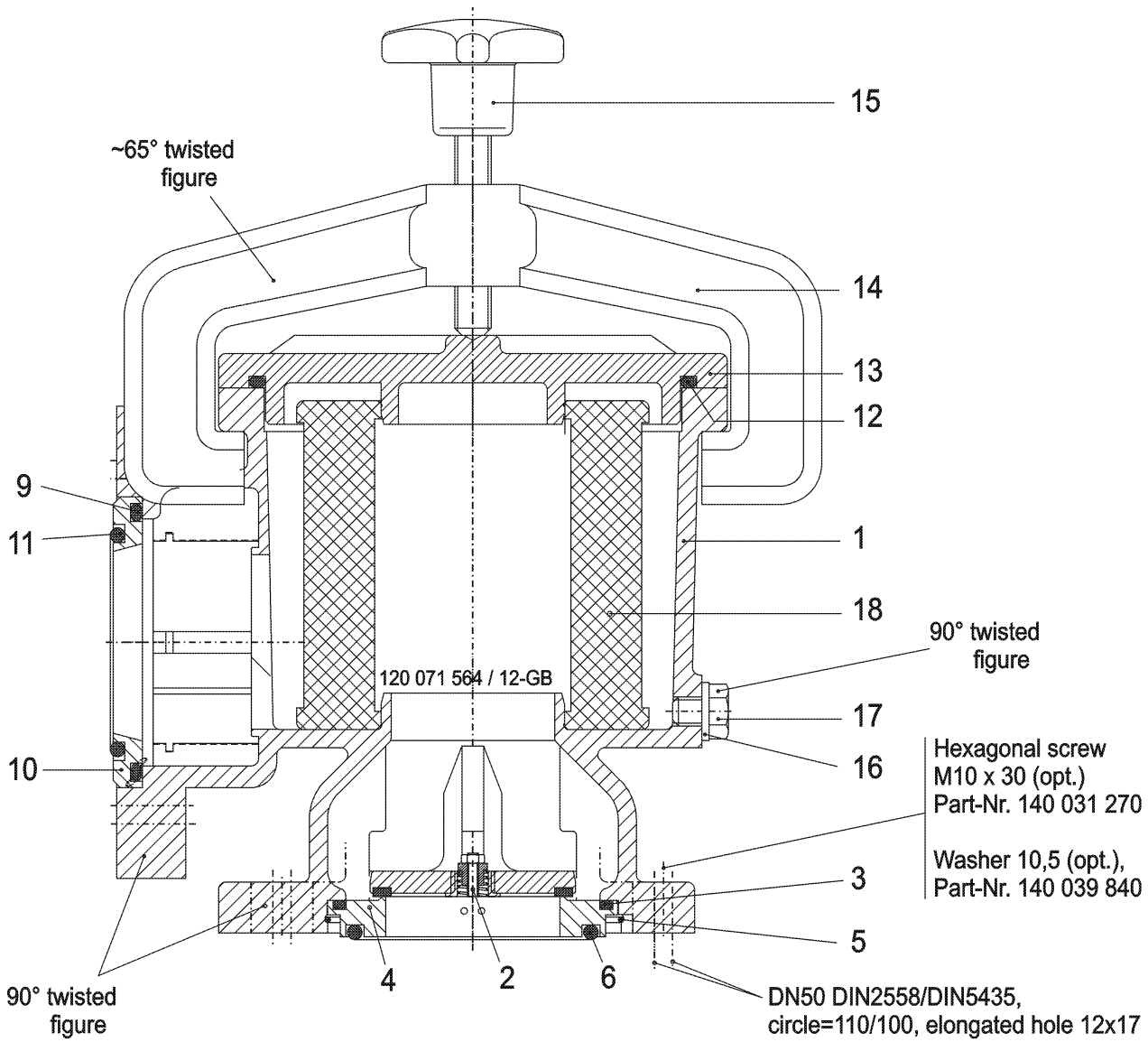

Item	Qty.	Part No..	Description
1	1	140 551 300	Filter housing DN50-AL
2	1	140 432 904	Valve cone with safety valve
3	1	140 551 476	O-ring 71 x 3
4	1	140 551 354	Compression ring 80/48 x 11
5	1	140 551 414	Seal ring 82 ext. x 1,5
6	1	140 551 456	O-ring 62 x 4
7	-	-	-
8	-	-	-
9	1	140 551 466	O-ring 68 x 4
10	1	140 551 364	Compression ring DN50-AL 80/50 x 8
11	1	140 400 216	O-ring 57 x 4

Item	Qty.	Part No..	Description
12	1	140 551 486	O-ring 114 x 4
13	1	140 551 323	Filter cover DN50-AL
14	1	140 551 343	Bayonet catch DN50-AL
15	1	140 571 034	Cross handle screw M10 x 55
16	1	140 056 600	Gasket 8 x 16 x 2
17	1	140 038 240	Hexagonal screw M8 x 10 with seal hole
18	1	Filter element Ø100/50 x 90 long, optional:	
		140 418 056	12 µ for VK
		140 418 066	25 µ for DK

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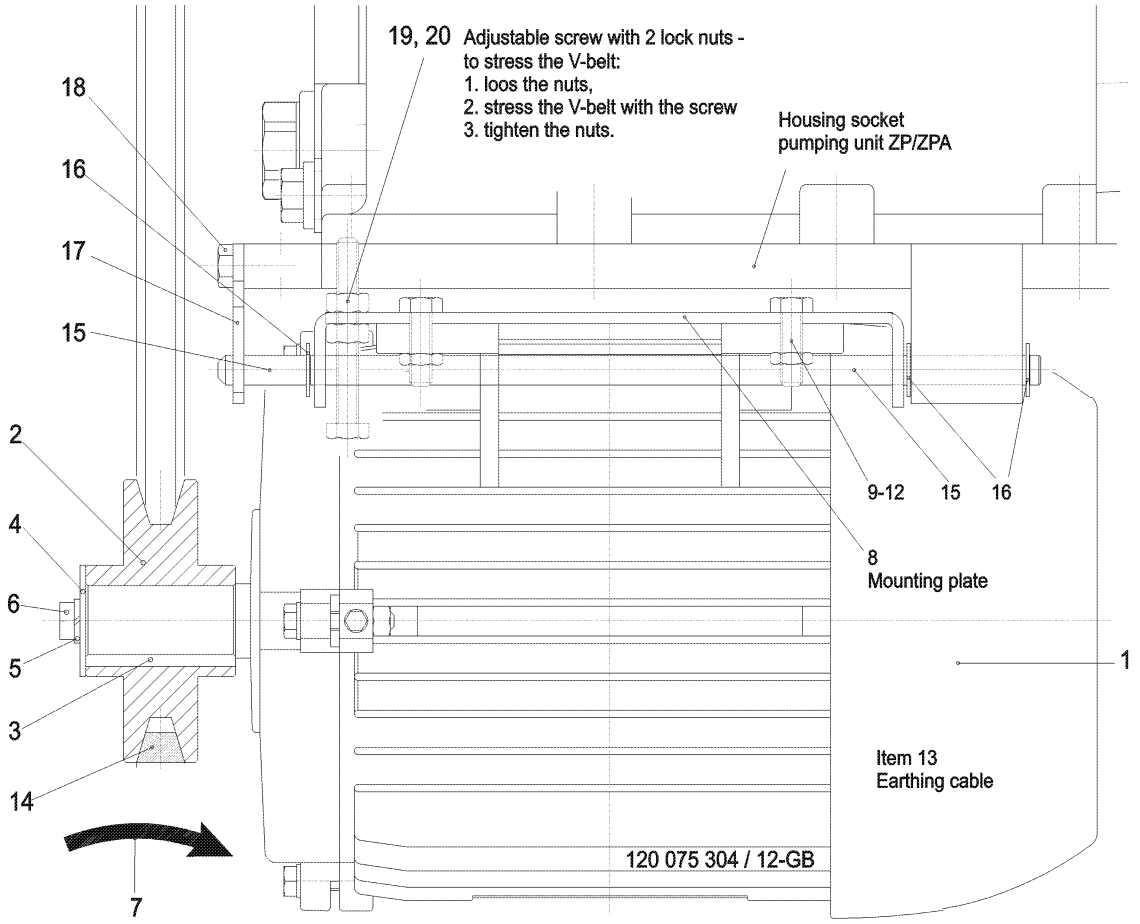
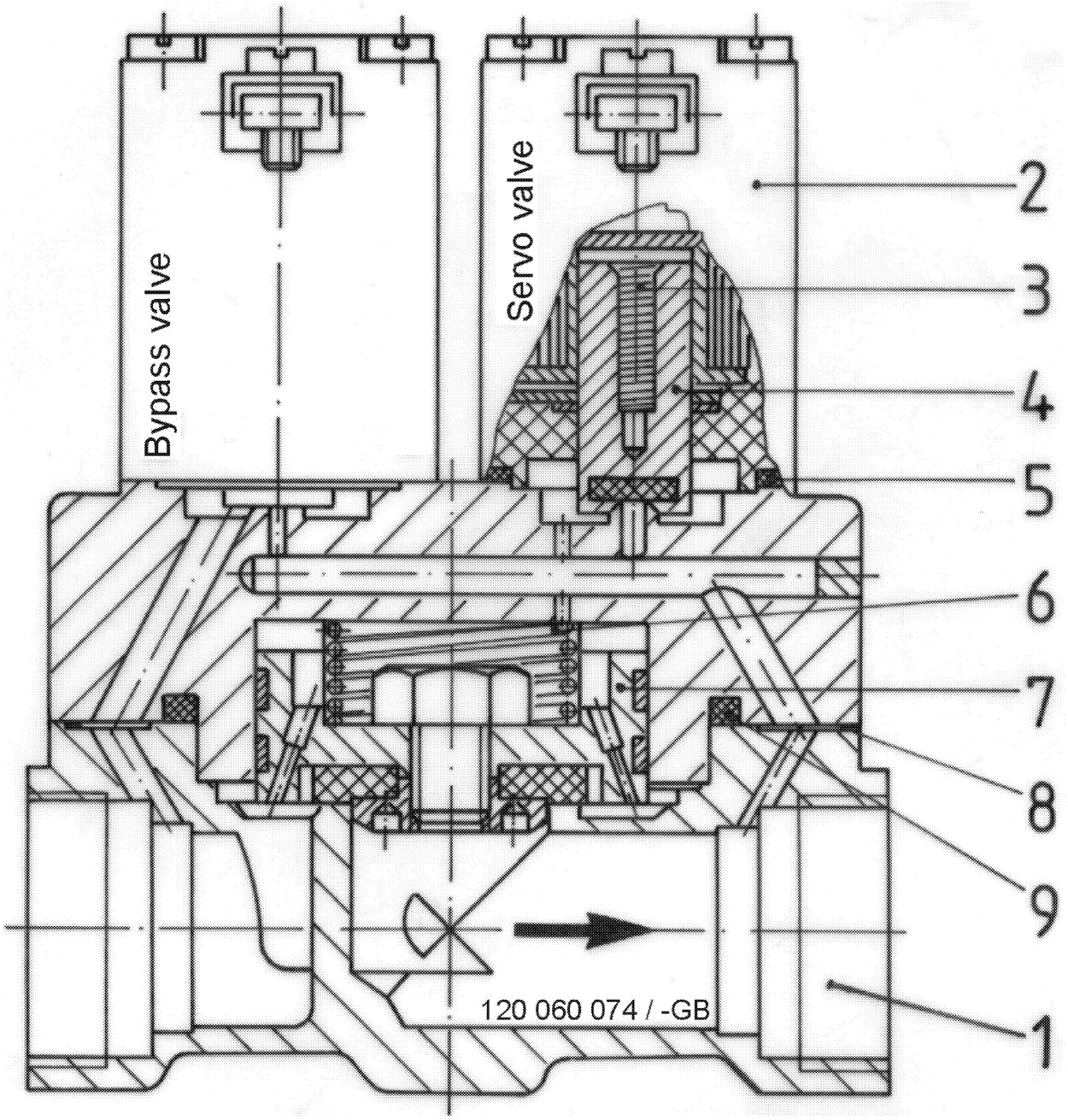
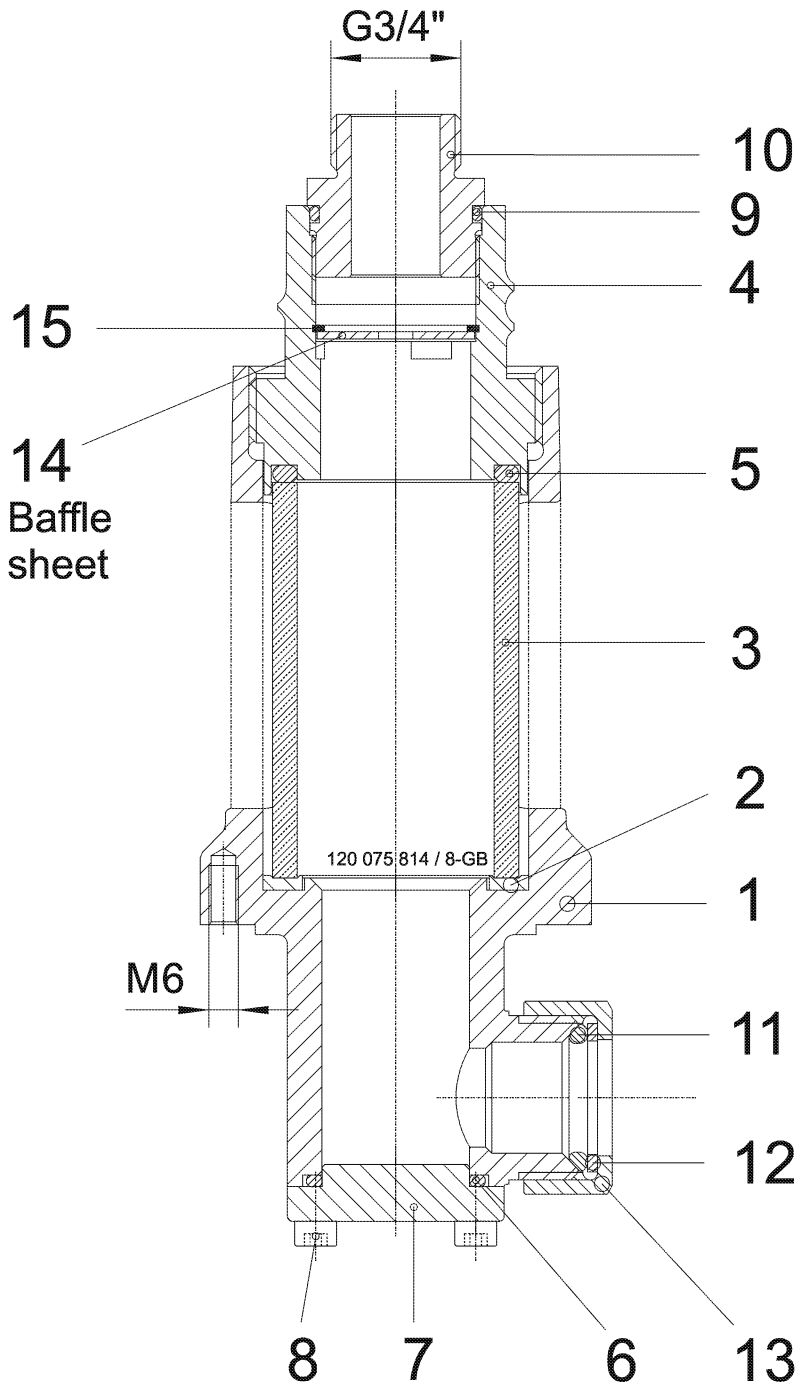


Item	Qty.	Part No..	Description	
1	1	140 525 106	**3-phase motor** 0,75kW, 400V AC, 50Hz, cable 7x1.5	
2	1	140 464 954	**Single-belt pulley** 76 x 19	
(3)	1	-	Feather 6 x 6 x 32 (included in Item Item 1)	
4	1	140 531 206	Washer 6,4 x 30 x 1,5	
5	1	140 041 110	Spring lock washer A6	
6	1	140 035 180	Cylinder screw M6 x 12	
7	1	140 452 144	**Arrow** for direction to rotation, right	
8	1	140 611 583	**Mounting plate**	
9	4	140 031 460	Hexagonal. head screw M6 x 20	
10	4	140 039 900	Washer 6,4	
11	1	140 041 110	Spring lock washer A6	
12	4	140 039 410	Flat hexagonal nut M6	
13	1	140 470 306	Earthing cable 4mm^2 x 0,55 m long	
14	1	140 066 440	V-belt 13 x 813	Not included in the motor Part No. 140 611 593
15	1	140 606 584	Axes ∅ 8 x 222 long	
16	3	140 041 470	Lock washer 7	
17	1	140 606 594	Fishplate	
18	2	140 031 440	Hexagonal screw M6 x 12	
19	1	140 475 096	Hexagonal screw M6 x 50	
20	2	140 039 280	Hexagonal nut M6	



Item	Qty.	Part No..	Description
1	1	-	Frame magnetic valve
2	2	140 471 986	Coil, cpl. (include Item 3 - 5)
3	2	140 449 676	Core spring
4	2	140 449 666	Core, cpl.
5	2	140 449 686	O-ring 25 x 1,5
6	1	140 478 226	Plunger spring
7	1	140 478 216	Plunger cpl. ø 46mm
8	1	140 449 696	O-ring 6 x 1,5
9	1	140 449 706	O-ring 53 x 3

Marconi	**Sight glass DN20, 22,5mm - ¾”** Part No.: 140 612 503 - for 40L/min - with baffle sheet Item 14 + 15 140 568 403 - for 70L/min - without Item 14 + 15	SPARE PARTS LIST Drawing 120 075 814 / 8-GB **Page 8** 18.10.2000 / ED / Wiechers



Item	Qty.	Part No..	Description
1	1	140 566 732	Housing
2	1	140 568 434	Gasket 38 x 54 x 3
3	1	140 437 616	Glass cylinder ∅ 50/40 x 80 long
4	1	140 567 333	Sight glass screwing G2”
5	1	140 542 396	O-ring 40 x 5
6	1	140 536 836	O-ring 30 x 3
7	1	140 566 834	Cover ∅ 44/29,9 x 12
8	4	140 425 826	Cyl.-screw M5 x 16

Item	Qty.	Part No..	Description
9	1	140 474 076	O-ring 31 x 2,5
10	1	140 474 134	Double nipple G¾” x M34 x 1,5
11	1	140 061 250	O-ring 22 x 4
12	1	140 129 790	Pressure plate 23 x 30 x 2
13	1	140 372 084	Sleeve nut G1” x 23,5
14	1	140 577 504	Baffle sheet 7/32
15	1	140 041 340	Circlip 32 x 1,2

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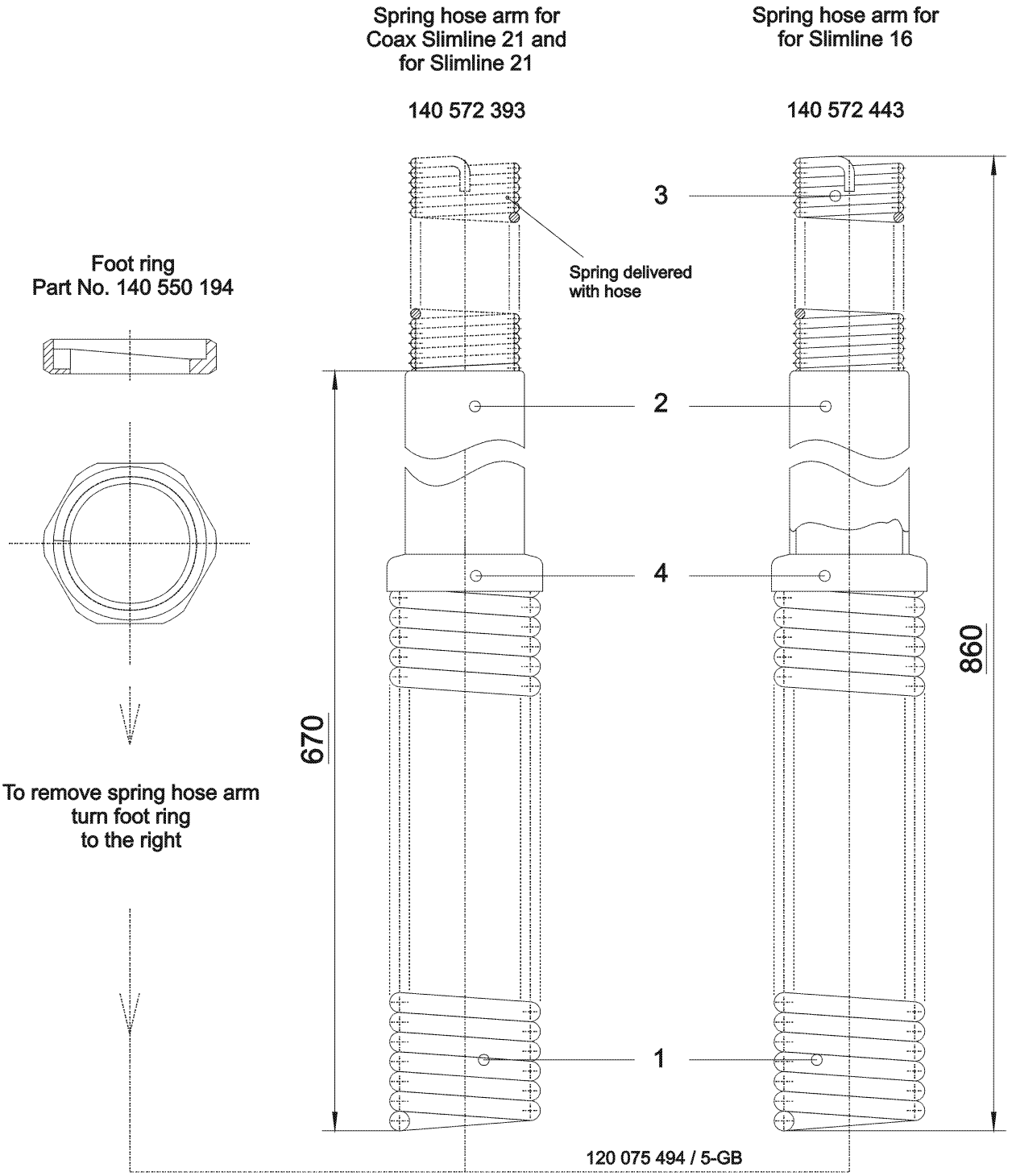
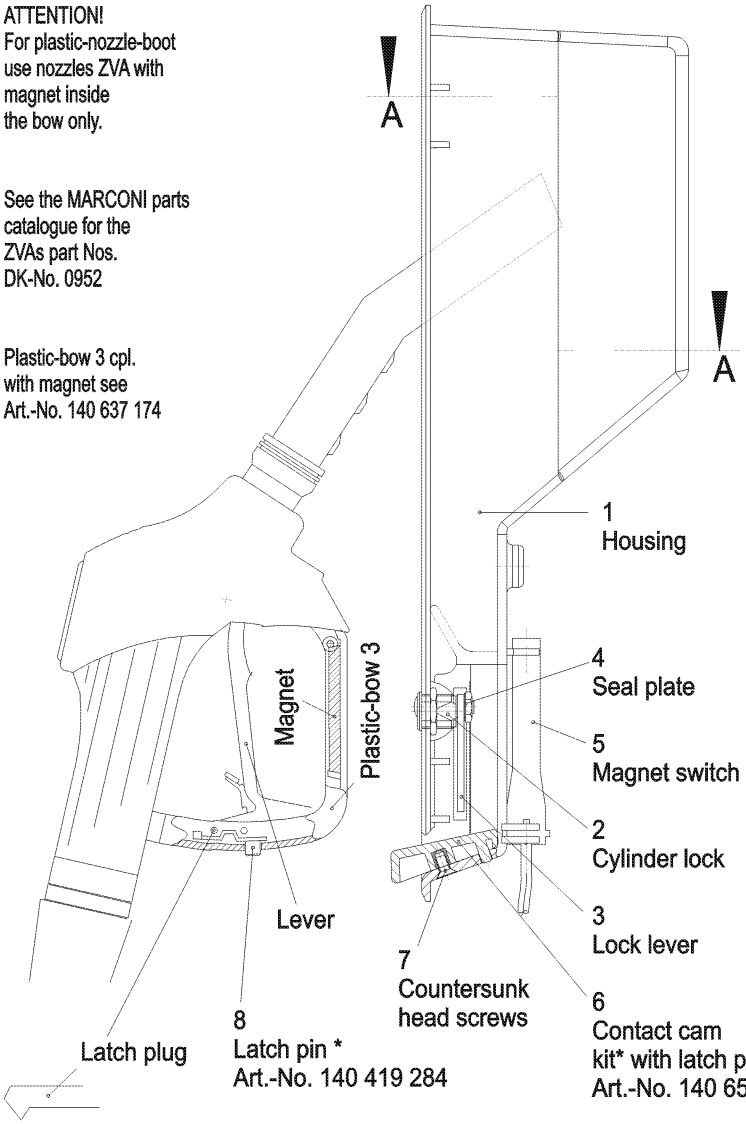


Item	Qty.	Part No..	Description
1		140 572 384	Helical spring, inside- ∅ 45 x 8 x 230mm
2		140 396 153	Stand pipe, ∅ 48,3 x 2,6 x 480mm
3		140 292 764	Helical spring, outside- ∅ 44 x 4 x 220mm
4		140 397 504	Foot ring, inside- ∅ 61,5 x 0,8 x 15

ATTENTION!
For plastic-nozzle-boot
use nozzles ZVA with
magnet inside
the bow only.

See the MARCONI parts
catalogue for the
ZVAs part Nos.
DK-No. 0952

Plastic-bow 3 cpl.
with magnet see
Art.-No. 140 637 174

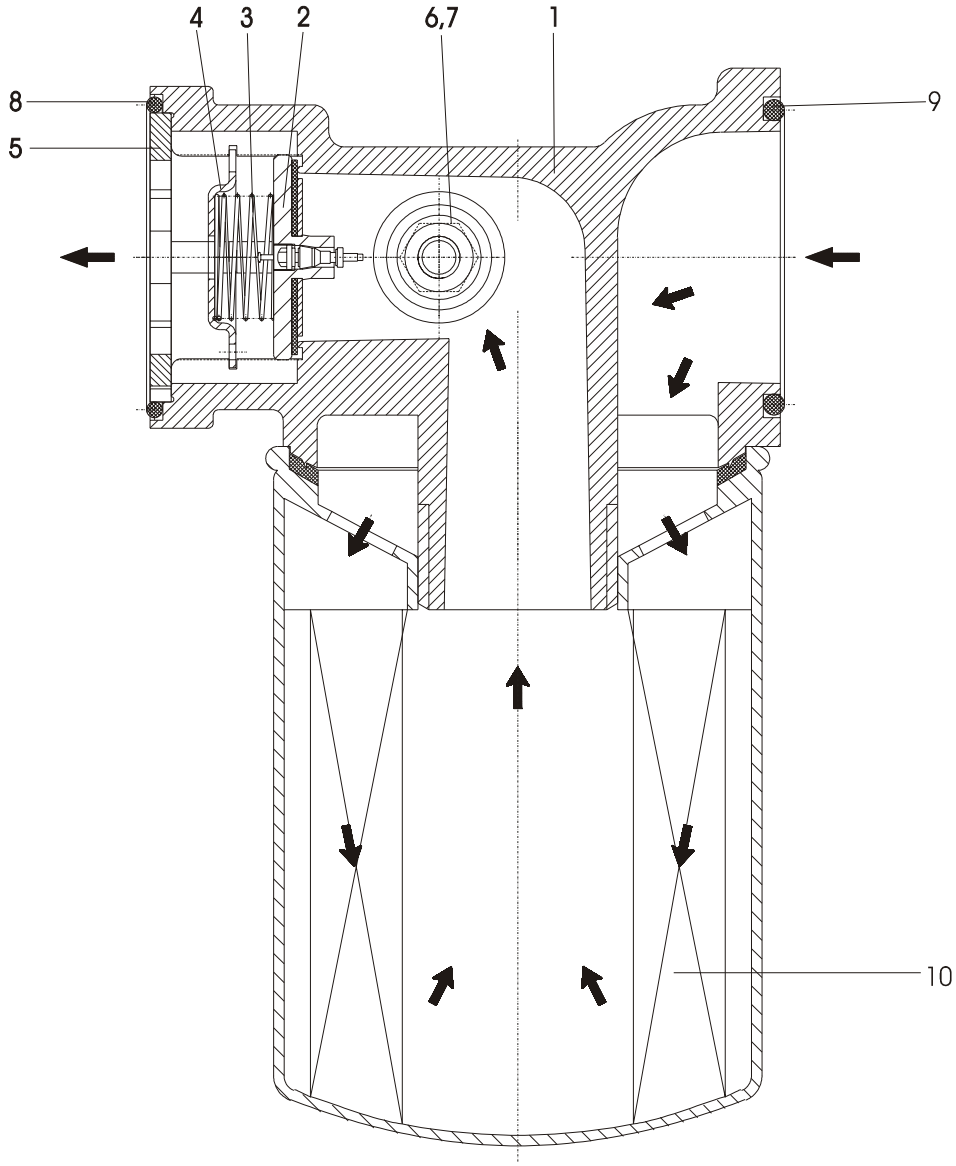


*) Option - only by volume
and amount preset with
automatic nozzle (ZVA)

120 084 144 / 5-GB

Item	Qty.	Description		**) Nozzle boot cpl. but without items 5, 6, 7 and 8 with lock 140 620 601**	Without lock 140 619 500**
1	1	Housing for nozzle boot		140 619 510	140 619 500
2	1	Cylinder lock with hexagonal nuts		140 446 686	-
3	1	Lock lever 20 x 55 x 3		140 620 624	-
4	1	Seal plate 8,1/6,1 x 13 x 0,5		140 446 696	-
5	1	Magnet switch, cable 6,00m long alternatively: cable 1,50m long		140 595 786 140 603 174	140 595 786 140 603 174
6	1	Contact cam	Kit cpl.* Part-No. 140 653 144	140 653 133	140 653 133
7	1	Countersunk head screws M5 x 10		140 033 210	140 033 210
8	1	Latch pin		140 419 284	140 419 284

Pump-Type	Pipes & Doings	Spare parts list			Drawing
		Item.	Part-No.	Description	
397 DP with C-Meter		1	140 568 033	Flange-stub R 1 1/2" x 40 with flange DN32 DIN2558	
		2	140 608 016	Ball valve 1"	
	Pipe 22x1,5 cpl., pressure filter>>C-Meter **140 709 853**	3	140 705 423	Holder for pressure filter	
		4	140 665 544	Flange-stub 1" x 40 with flange DN32 DIN2558	
		5	140 056 570	Oval-sealing 40x118/75x3 LK90	
		6	140 030 860	Hex. hd. screw M10 x 45	
		7	140 039 310	Hex. nut M10	
		8	140 705 434	Flange stub G 1" x 35 x 85	
		9	140 593 552	Pressure filter G1 1/2"	
		10	140 344 406	Cyl. screw M6 x 25	
397 DP with Eco-Meter	Pipe **140 705 443**	11	140 665 564	Square flange 1" x 65/65 x 20	
	Pipe nut G1" **140 372 084**	12	140 167 860	T-piece 1"	
		13	140 049 230	Double nipple R 1"	
	O-Ring 22 x 4 **140 061 250**	14	140 581 736	Membrane-storage (Option)	
		15	140 235 850	Reduce nipple 1" x 1/2"	
		16	140 048 510	Reduce nipple 3/4" x 1"	
	Washer 23/30 x 2 **140 129 790**	17	140 680 536	Magnet valve 3/4" x 1" 24V, without proportioning (Option)	
		18	140 327 106	Screw joint GE 22 – 3/4"	



Database (M) : \ Eerslist \ F593_552_1 . doc

Pos.	Qty.	Part No.	Description
1	1	140 591 362	Adapter casing G 1½" - 16 UNF
2	1	140 495 994	Valve plate Ø38, with relief valve
3	1	140 495 154	Compressing spring Ø24/0,8 x 32 x 3,5
4	1	140 496 003	Spring plate Ø42/82
5	1	140 591 373	Washer Ø55 x 4
6	1	140 031 200	Hex. hd. screw M8 x 12
7	1	140 056 600	Joint ring 8 x 16 x 2
8	1	140 061 520	O-ring 55 x 3
9	1	140 499 226	O-ring 52 x 4
10		Filter element G 1½" x 140 long:	
	1	140 593 564	for VK, 10
	1	140 632 746	for DK, 30

EUROPEAN SERVICE CENTRE

Marconi

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FAX.: 0049 (0)5258-13 262

Pos.	Artikel/Article No.	Beschreibung/Description	Anzahl/Quantity	Seriennr./Serial No.

Firma/Company: Herr/Frau/Mr./Mrs.:

Tel.: Email: Fax.:

Marconi

MARCONI EUROPEAN SERVICE CENTRE

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33154 Salzkotten
GERMANY

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Operation + Maintenance Manual

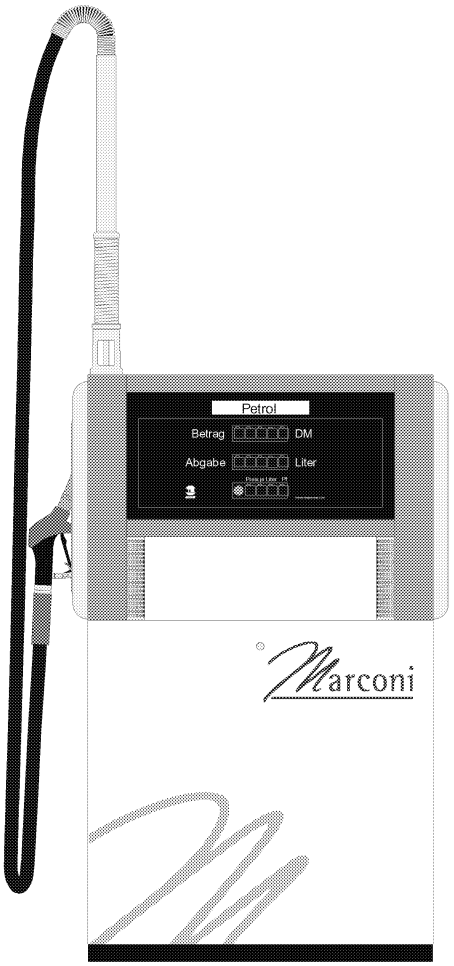

Illustration : Pump 397/1 . . .

Pump 397/1 . . /2 . . ZP . . C . . EC

Standard-Design with

ZP 2180 - Pumping aggregate
C-Meter - Gilbarco Piston Meter with Eltomatic pulser
EC2000 - Salzkotten Computer

Special colours and special lettering of rear- / front panels as well as Special equipment please see order.

Technical subject to change.

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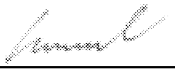
intentionally blank

Revision history - Part No. 140 721 714

Date	In-dex	Description	Name	Checked

	Date	Department	Name	Signature
Prepared by	20.09.2000	ED	Wiechers	
Checked by	20.09.2000	ED	Nuwel	
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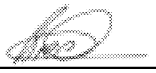
	20.09.2000	EE	Brechmann	
	20.09.2000	LV-A	Trinkaus	
Released by	20.09.2000	EZ	Kersting	

Computer prepared document - Valid also without signature.

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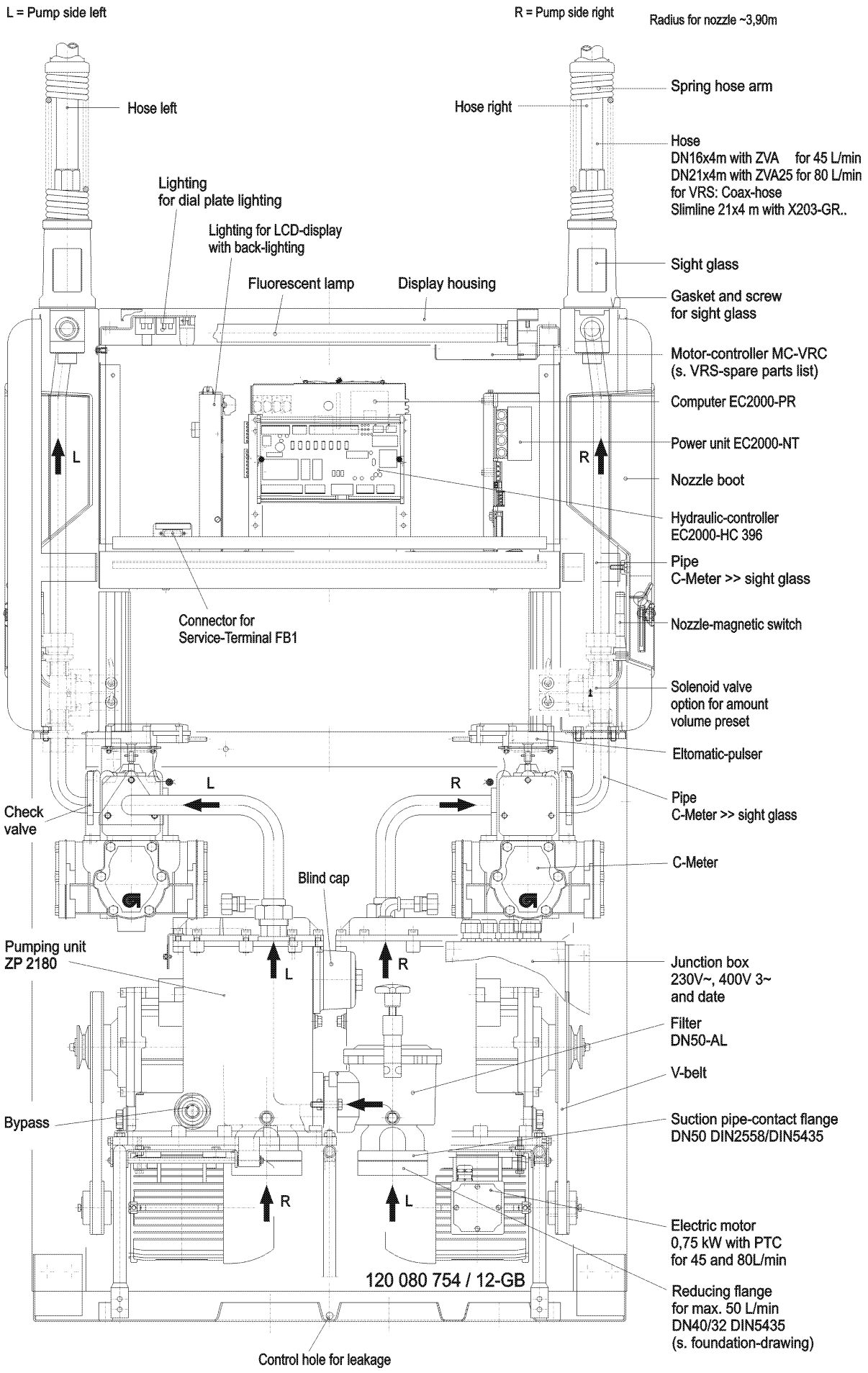
CONTENTS

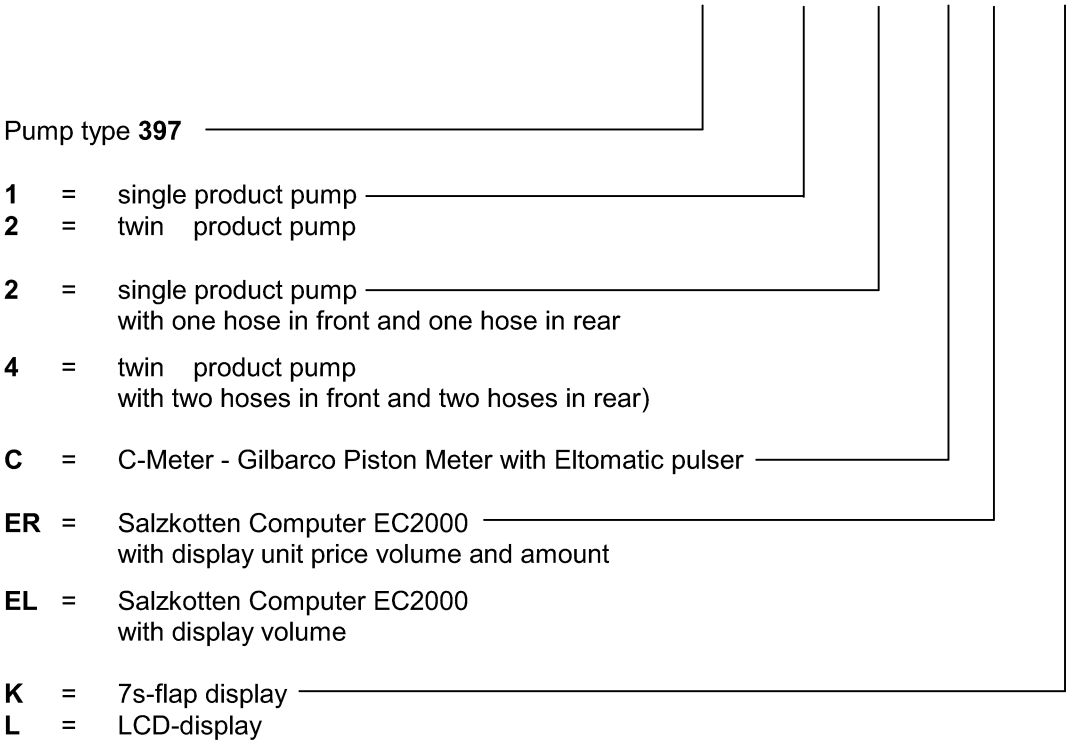
1.1 Pump elements



1.2 Type key

Examples :

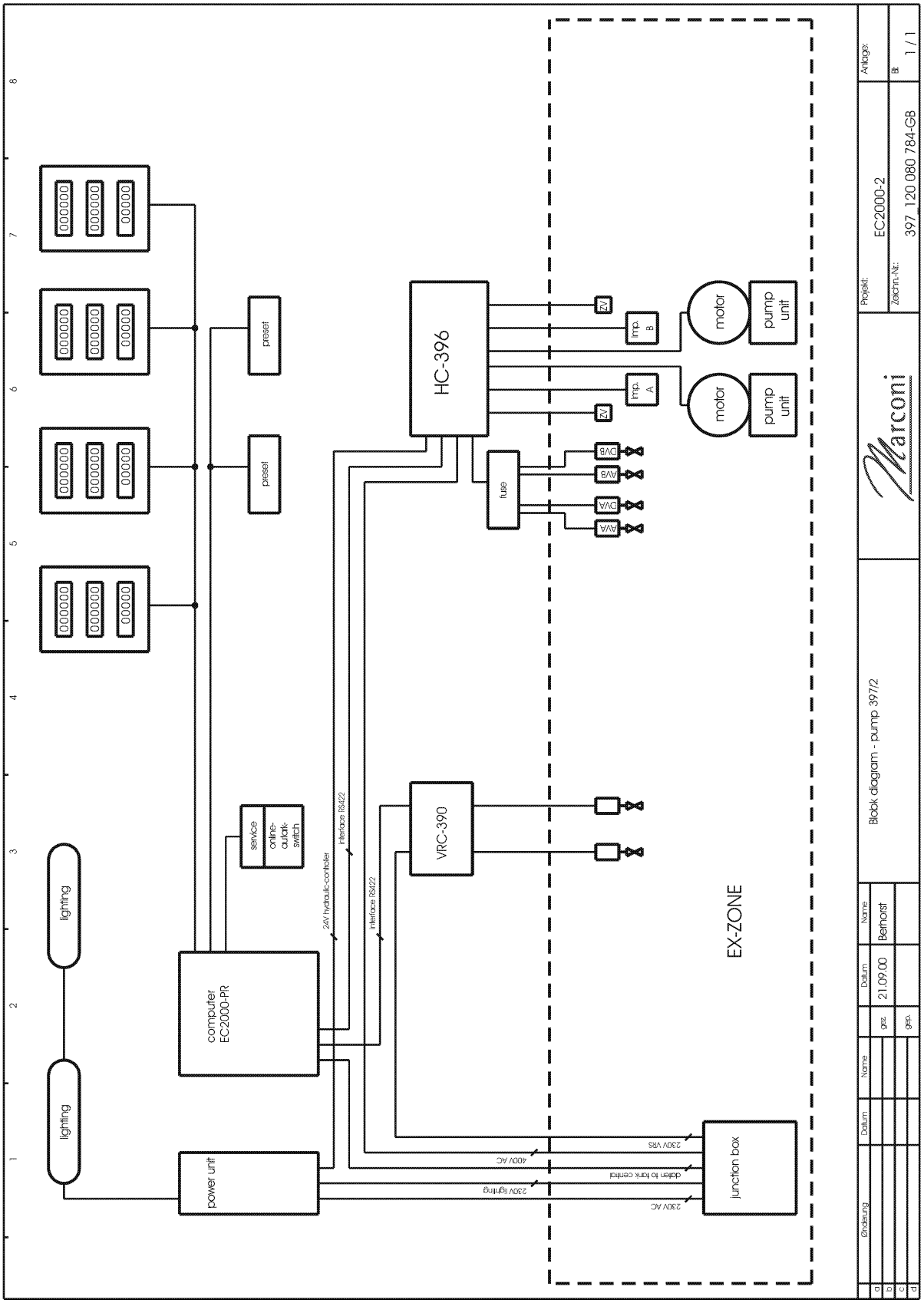
397/ 1 C ER K
397/ 2 - 4 C EL L



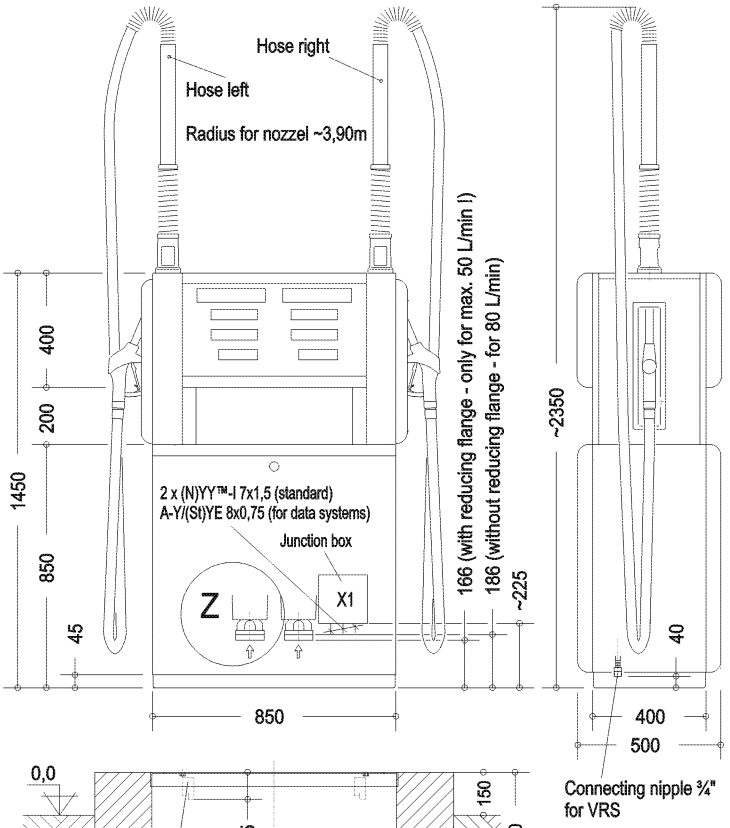
1.3 Approval data

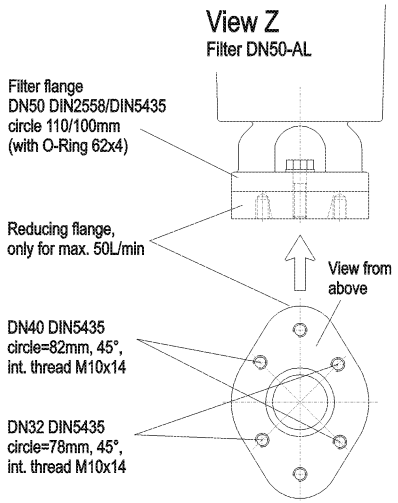
Products	:	Mineral oils of low viscosity such as motor gasoline and diesel fuels.
Q max. pumping unit	:	50 L/min VK 80 L/min DK
Q max.	:	50 L/min, 40 L/min for vapour recovery system (VRS)
	:	90 L/min for Middle Speed (MS)
Q min. (Delivery system)	:	2 L/min
Smallest vol. (Delivery system)	:	2 litre
C-Meter capacity Vc	:	0,474 litre

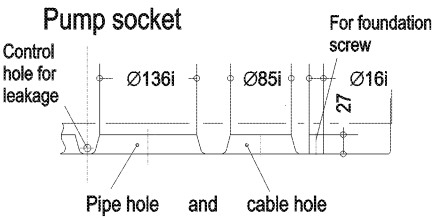
2. EC2000 Price Computer - Block diagram

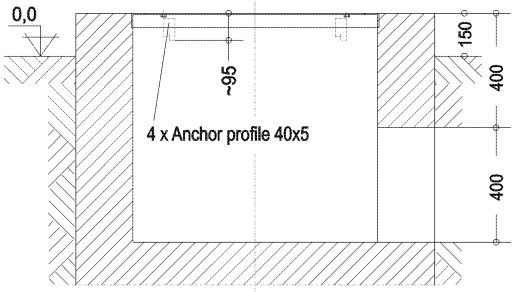


3. Dimensions and Foundation



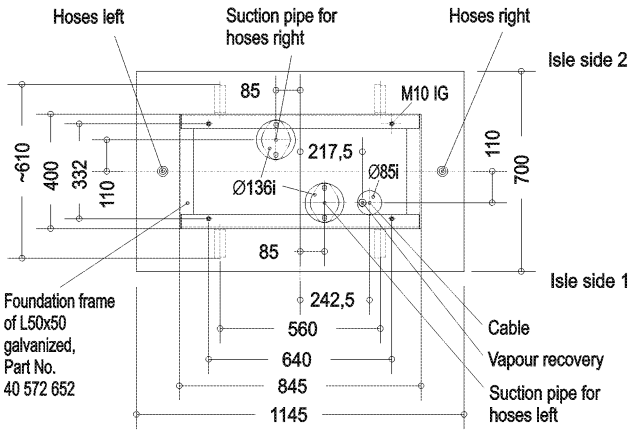


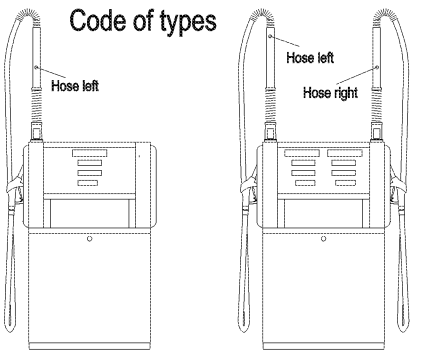




Dimensions in mm

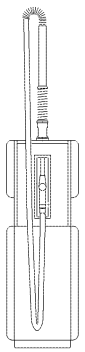
Tolerance
DIN-ISO 2768 v



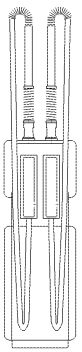


397/1, 397/1-2
Front view of isle side 1

397/2, 397/2-4
Front view of isle side 1



397/1, 397/2
Side view



397/1-2, 397/2-4
Side view

This foundation drawing only contains general dimensional data, no responsibility being taken for the strength of the masonry or structural suitability.

4. Putting into operation

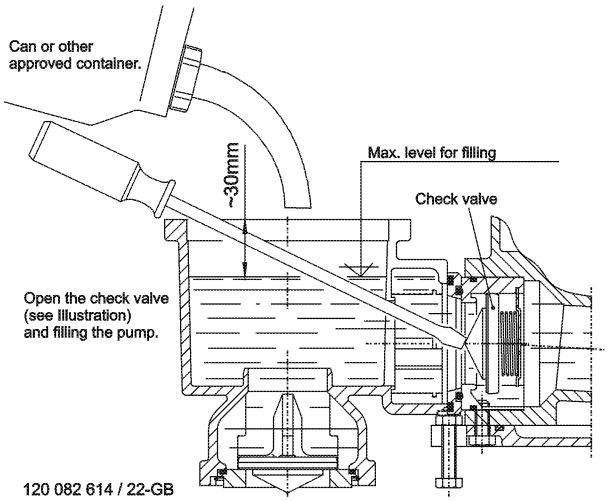
The fuel dispenser is supplied from our plant having undergone a function check, a trial run and an official calibration procedure or a works inspection. Consequently, the process of starting up the fuel dispenser can commence once the pump has been installed on site and has been inspected by an expert.

1. Switch off the master switch and the thermal switch in the office before opening the fuel dispenser. Take steps to prevent them being switched back on.

12. Open the fuel dispenser (see **7.1** Maintenance).

12. Fill the pumping unit with fuel via the filter in order to prevent it from running dry and to reduce the time needed to deaerate the system.

13. Complying with all safety regulations, switch on the master switch and the thermal switch. Switch off from time to time as required, e.g. for point **8**.



5. Switch on the power supply.

12. Switch the fuel dispenser to "Autark" for startup. Changeover is only possible when the console and/or automatic fuel dispenser are switched off (see **6.2**).

13. Check the direction of rotation of the pump motor: First remove the V-belt and then unhook the nozzle; the motor V-belt sheave must rotate in the direction indicated by the arrow = to the right (clockwise as seen looking onto the belt sheave).

14. Swap over the phases L1 / L3 in the fuel dispenser terminal box to change the direction of rotation if it is not correct. De-energize the system before doing this (see point **4**).

9. Venting the fuel dispenser hydraulic system:

IMPORTANT! Have suitable containers ready to collect the fuel.

Fuel pumped during the deaeration process may contain residues from the calibration procedure and anti-corrosion agents. These render it unsuitable for use in motor vehicles.

a) Unhook the nozzle and pump fuel.

12. Continue pumping to deaerate the system until no more air bubbles are visible in the sight glass.

Deaerate the system rapidly and without interruption. Uneven operation could lead to malfunction pulses and cause the fuel dispenser to switch off. In this case, put the nozzle back and wait a few seconds before unhooking it again to restart the fuel dispenser.

13. Pump about 5 liters of fuel in order to flush out the residues from the calibration procedure and anti-corrosion agents. (This fuel is not suitable for sale, see the note above.)

10. Check the hydraulic system for leaks.

11. Check the automatic switch-off in the nozzles.

12. Calibrate the vapor recovery system if the fuel dispenser has one (see calibration instructions in the VRS documentation).

13. Set the fuel dispenser to 'Online' (self-service operation) if appropriate (see **6.1** Operation).

13. For self-service fuel dispensers with a console or other peripherals, official calibration by comparison measurement is required

14. After a brief period of operation, particularly with new equipment, replace the filter elements (see **7.2**).

5. Safety - relevant information

Drive at minimal speed in the area of the service station. Observe traffic regulations.

Do not block escape routes.

Pumps marked with a car or truck symbol are intended exclusively for these vehicles.

Use of the petrol pumps only as agreed by law is permissible when filling vehicle tanks or permitted containers.

Fuels form easily combustible mixes of vapour and air which could explode.

Do not handle naked flames or heat sources in the area of the service station.

Do not smoke in the area of the service station, not even inside your car.

Switch off your engine when filling up.

The heating should be switched off on vehicles with external heating systems.

Fuels are noxious! - Avoid inhaling vapours.

Avoid contact with skin and eyes.

Parts of the body that are wet with fuel should be rinsed with plenty of water.

Splashes in the eye should be rinsed away with plenty of water.

Remove items of clothing that have been soaked in fuel immediately and rinse the relevant parts of the body with plenty of water or use the emergency shower.

Consult a doctor immediately if you feel ill having filled your tank or swallowing fuel.

Do not use fuels for purposes other than those of which they are originally intended, e.g. for cleaning.

Do not allow fuels to enter the drains or to reach the soil.

Keep fuels under lock and key and do not allow children access to them.

Do not pull the flexible hose or the flexible hose mast too tightly, in order to avoid twists in the hose and the nozzle from being pulled out of the filler neck of the petrol tank.

Do not allow the flexible hose to recoil in an uncontrolled way - the sling hose could cause injury.

Never block pathways or traffic lanes with the hose.

Fuel should only be placed in the vehicle tank or in approved containers.

The container should only be filled to 95% capacity - danger of rupture if heated.

Avoid overfilling and shaking - can cause surfaces to become slippery, endangers the environment.

Allow the remaining fuel to drip from the nozzle pipe into the tank.

Service station staff should be made aware of fuel spillage.

Pumps are to be monitored constantly by service station staff and drops and puddles of fuel are to be removed immediately.

Cleaning rags or other removal devices which have been used to absorb fuel must be disposed of properly.

Check that the service station and petrol pumps are in good working order every morning before opening the station.

The service station and the forecourts must be adequately lit.

Pumps are to be monitored constantly – drops and puddles of fuel are to be removed immediately.

Follow the instructions in the petrol pump documentation when opening the petrol pump to operate the petrol pump computer keyboard.

Petrol pump is not allowed to be operated if defects arise or water pollution is expected.

Contact the authorized customer service engineer for maintenance and repair
(follow the instructions in the petrol pump documentation).

In the case of repairs where gauge plumbs need to be released, the customer service engineer must be authorized to carry out repairs under the terms of weights and measures regulations.

Before a petrol pump is serviced or repaired, the main switch in the tank house must be switched off and secured against being switched on again (follow the instructions in the petrol pump documentation).

6. Operation of the pump

6.1 Operation 'Online'

1. Release pump via console or operate automat

2. Lift nozzle for desired fuel from support :

   a) the amount, volume and unit price displays are zeroed after a segment self-check

   b) the unit price for the fuel selected is set at the display

   c) the magnetic valve opens and the pumping unit starts running (with approx. 3 - 6 seconds delay after nozzle is lifted)

3. Filling:

   a) Insert the nozzle pipe deep into the filler neck of the tank and position the nozzle so that it cannot slip out (fig. A)

   b) Squeeze the trigger of the nozzle and leave it in place! [1]

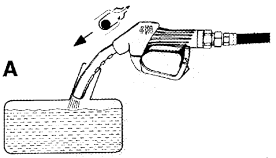
   Notes: If the nozzle is positioned horizontally, the safety ball valve mechanism may prevent the nozzle from opening (fig. B).

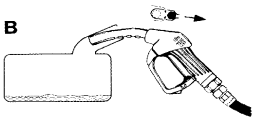
   The nozzle should be lifted up in this case (fig. C).
   Tanks with a badly positioned filler neck or poor ventilation can cause the nozzle to switch off prematurely or fuel to be spilled.

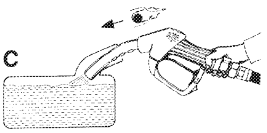
   In these cases, the filling speed should be reduced by setting the nozzle trigger to position 2 or 1.

   [1]) In the case of self-service operations using pre-selection and/or cash automats, it is not possible to set the nozzle for safety reasons; the nozzle trigger must be squeezed constantly.

   c) Terminate filling by activating the nozzle trigger
   Notes: The automatic nozzle pipe closes independently as soon as the maximum fuel level of the tank has been reached.







4. Draw the nozzle out of the filler neck of the tank and return it to the support on the petrol pump.

   a) the magnetic valve closes

   b) the conveyor system switches off

   c) next operation see above

   If the hose has an automatic recoil mechanism or an flexible hose mast do not allow the hose to recoil in an uncontrolled way - the sling hose could cause injury.

   When returning the nozzle do not place your fingers in the support on the petrol pump – they could be crushed.

6.2 'Autark' - Emergency operation in care of defect at the console and/or automat

NOTE : Switching the pump from **'Online'** to **'Autark'**, e.g. defect at the console or automat or during installation, to be done as follows:

1. Switch off operating console and where appropriate the automatic filling.
2. Switch to **'Autark'** fuelling:

   Press keys **[+] [-] [M] [C]** simultaneously for at least 3 seconds.

C a u t i o n !
In pumps that are switched from self-service fuelling **'Online'** to **'Autark'** fuelling 'Standalone', the unit price from the last 'Autark' fuelling performed is activated.

The unit price has to be checked and corrected if necessary (see 6.4).

The fuelling data captured during **'Autark'** fuelling are saved and automatically fetched by the operating console when the console is restarted (controlled standalone function).

Fuelling is the same as for self-service fuelling according to 6.1., except that the pump is ready for the next fuelling operation when the nozzle is replaced.

Reset to **'Online'**

a) automatically after re-start of the console and/or automat.

b) manually by switching the power supply on and off.

6.3 The keyboard of the EC2000-PR Price Computer

The keyboard of the EC2000-PR Price Computer provides the following functions :

Set unit price (s 6.4)

Display total amounts - amounts totalizer (s. 6.5)

Display total volumes - volume totalizer (s. 6.6)

Display error code (s. 6.8)

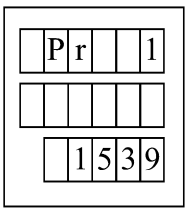
Switch pump to EMERGENCY operation (s. 6.2)

The key functions can only be used if

a) the pump is ready,
b) there is no fuelling in progress,
c) none of the nozzles has been lifted.

If no key is pressed for a period of 30 seconds, the EC2000-PR Price computer returns to its home status, and the display is zeroed.

6.4 Set unit price



Note:
Unit price setting on the keyboard of the EC2000-PR Price computer is only possible in attendant or EMERGENCY fuelling (standalone). In self-service fuelling (online), the unit prices are set on the console.

1. Press the **[+]** to call the price setting function.

   The display will now show (example)
   Pr 1 = **Pr**oduct in modul **1** and
   1 5 3,9 = Unit price of product in module 1 = **153,9**

   Press the **[+]** key to increase the unit price or the **[-]** key to decrease it.

   Press the key repeatedly to increase or decrease the unit price by one each time, or hold the key pressed down to run the unit price up or down.

Continued next page

3. Press the **[C]** to select the next module.

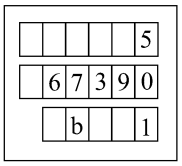
   Pressing the **[C]** key increases the module number by 1.

   As the EC2000-PR Price Computer can handle a maximum of 8 modules, the unit price switches from module 8 to module 1.

   The fuelling point number can only be increased.

4. Press the **[C]** and **[+]** keys simultaneously to leave the unit price setting function.

6.5 **Display total amount** (amount totalizer)



To display the total amount, the amount and volume lines of the display, up to 10 digits without decimal points, are used together :

Example display : **0000567390** = **5 673,90** DM
b = Amount
1 = Fuelling point 1

1. Select the **[B]** key to call the function
   The total amount for fuelling point 1 is displayed.

2. Press the **[+]** key to increase the fuelling point number (2,3,...) or the **[-]** key to decrease the fuelling point (12, 11, 10, . . .).

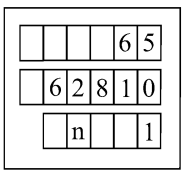
   Assignment of fuelling point numbers :
   Fuelling pt. no. 1, 2, . . .8 = fuelling pt. A, B . . .on pump side 1
   Fuelling pt. no. 9, 10, . . 16 = fuelling pt. F, G . . .on pump side 2

   If the **[+]** key when fuelling point 16 is displayed, the display switches to fuelling point 1; if the **[-]** key is pressed when fuelling point 16 is displayed, the display switches to fuelling point 15.

3. Press the **[C]** and **[+]** keys simultaneously to end display of the total amount function.

   You can change from amount display to volume display and back at any point.
   Simply press either the **[M]** or the **[B]** key.

6.6 **Display total volume** (volume totalizer)



To display the total volume, the amount and volume lines are both used together, with a total of 10 digits without decimal points.

Example display : **6562810** = **65 628,10** litres
n = Volume
1 = Fuelling point **1**

1. Select the **[M]** key to call the function.
   The total volume of fuelling point 1 is displayed.

2. Press the **[+]** key to increase the fuelling point no.(2, 3, . . .) or the **[-]** key to decrease the fuelling point no. (12, 11, 10, . . .).

   Assignment of fuelling point numbers :
   Fuelling pt. no. 1, 2, . . .8 = fuelling pt. A, B . . .on pump side 1
   Fuelling pt. no. 9, 10, . . 16 = fuelling pt. F, G . . .on pump side 2

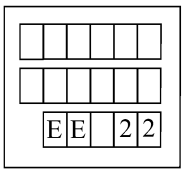
   If the **[+]** key is pressed when fuelling point 16 is displayed, the display switches to fuelling point 1, and if the **[-]** is pressed, the display switches to fuelling point 15.

3. Press the **[C]** and **[+]** keys simultaneously, leave from the total volume display function.

   You can switch from amount to volume display and back at any time.
   Simply press the **[M]** or the **[B]** key.

6.7 Error display on the pump

If an error occurs in the pump, it is output on the pump own display.



Example display : **EE** = Error, **22** = Error code as per Table 1

If **EEH** is displayed instead of **EE**, the error is in the hydraulics controller as shown in Table 2 (p. 13).

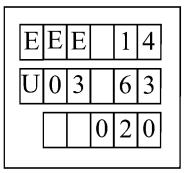
With 4-digit unit price displays, only **E** or **EH** is displayed.

Table 1 - Error in PR Price computer

Error-code	Meaning	Remedy
01	internal display error	Replace display
02	display current error	Replace display
03	RAM-ROM hardware test	Switch power supply off and on; if error occurs repeatedly, replace PR
04	EE-PROM-Error	Check parameters in the PR by FB1: send parameters if necessary; replace PR if unsuccessful
10	Display 1	Replace side 1 display
20	Display 2	Replace side 2 display
22	Preset keypad	Replace preset keypad or preset adapter
30	Display check calculation incorrect	Replace display
40	Power supply was interrupted (not an error)	Supply voltage to the calculator was interrupted. The message is output after each switch-on or reset.
50	Communication error to console or acceptor	Check console or acceptor check data line.
60	Error in PR totalizer	The PR totalizers are zeroed each time the power supply is switched off and on. The totalizer statuses in the operating console are saved.

6.8 Display errors from the keyboard of the PR Price Computer

The source of the error can be determined as follows :



Note:
Personnel with no specialist training in service engineering are restricted to displaying the errors that occur. Repairs and any other activities should be performed exclusively by authorized service engineers.
If damage is caused due to incorrectly performed repairs, liability under the guarantee becomes invalid.
The information given on the devices themselves and in the relevant manufacturers' documentation must be observed in all action that is taken.

1. Press the **[B]** and **[M]** simultaneously to select the "Error display" function
2. Press the **[+]** or **[-]** key to display other errors. The number of the error is counted up or down by 1 each time a key is pressed.
3. Press the **[C]** and **[+]** keys simultaneously to leave from error display.

Explanation of displays :

Line 1 : **EE** = Error

: **14** = Position of the error in the error history.
The last 16 errors are stored.

Line 2 : **U** = Source of the error.

: **03** = Defective component as described in Table 3 (see page 13)

: **63** = Defective component as described in Table 4 (see page 14)

Line 3 : **20** = Error code as explained in Table 2 (see page 13)

Table 2 - Error in HC hydraulics controller

Error-code	Meaning	Remedy
10	Pulse error	a) Check pulse generator, pulse lines and connections. In case of errors change pulser. When no error, check b). b) Backward pulses caused by untight check-valve or pressure-relieve-valve: check, repair or change.
11	Maximum current in pulse generator exceeded	Check pulse generator, line and connection, if necessary replace pulse generator
12	Falling below minimal current in pulse generator	a) Check the pulse generator, pulse generator line and pulse generator connection and, if necessary, change the pulse generator. b) Pulse generator defect, e.g. as a result of air in the system during putting into operation or putting into operation again following switching on/off of the NT.
13	Maximum number of backward pulses	a) Check correct sequence of pulse-line-connections. b) Check-valve or pressure-relieve-valve within check-valve untight: check, repair or change.
20	Maximum current in magnetic valves exceeded	Check magnetic valve, line and connection, if necessary, replace magnetic valve.
30	Maximum temperature in fuel pump motor exceeded	Check whether motor and fuel pump function is sluggish Check PTC connection in the EC2000-HC (300Ω ±100Ω cold) Do not restart until power supply has been switched off, the motor has cooled and any fault has been remedied.
40	Incorrect calibration factor	Check calibration factor in the HC FB1, if necessary calibrate using FB1, if error reoccurs, replace HC
50	Parameter error	Check parameters in the HC using FB1, if necessary send parameter set by FB1, if error reoccurs, replace HC
60	Time-Out error during fuelling operation	Check time-out parameters in the HC using FB1 (300ms), if necessary send parameters, check factory parameters in the PR (if the pump has no vapour recovery feature, ensure appropriate parameters are set), if necessary send parameters.
61	Maximum fuelling period exceeded	Check parameters for fuelling period in the HC using FB1 ; the fuelling period is generally unlimited; if desired send appropriate parameters.
70	Pulses without fuelling operation	Deaerate hydraulics system, check magnetic valve for tightness, if necessary replace valve.
72	Vapour delivered in pump block (only reported with EG80 DK-E)	Check pump block for gas separation, check suction pipe for tightness, check that pressure control on the inlet pipe is functioning correctly.
73	No oil pressure	Check the oil pressure, perhaps evacuate air, adjust switch, check the pressure pump.
80	Program error	if error occurs repeatedly, replace HC

Table 3 - Error code for components

Components no.	Defective component
01	Digit display
02	E-PROM
03	Hydraulics controller
04	Hardware test
05	Status
06	Office
07	Totalizer
08	Preset acceptor
09	Power supply

Testing of the gas separator

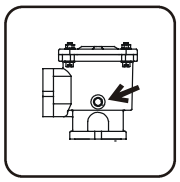
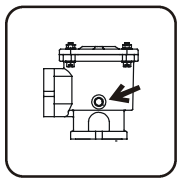
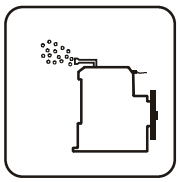
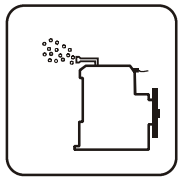
With switch-off (for example Blackmer)	Without switch-off (GPU)
 Have suitable receptacles ready to catch fuel.	 For the check of the gas separator without switching off, a prover can has to be used.
 During the fuel process, air is supplied over the ventilating screw at the filter.	 During the fuel process, air is supplied over the ventilating screw at the filter.
 The gas switch at the pumping unit switches the solenoid valves off. No further fuel is dispending and the display stops.	 Within the tolerance, no switching off of the solenoid valves is carried out. The fuel is dispending with strongly reduced performance.
 The air that has been sucked in, is evacuated visibly and audibly via the vent pipe of the pumping unit. After the screw in of the ventilating screw and the deaerating of the pumping unit, the delivery is continued with the full performance.	 The air that has been sucked in, is evacuated visibly and audibly via the vent pipe of the pumping unit. After the screw in of the ventilating screw and the deaerating of the pumping unit, the delivery is continued with the full performance.

Table 4 - Defective hydraulics controller

Address	Side 1	Side 2
Common address	50	60
Controller 1	51	61
Controller 2	52	62
Controller 3	53	63
Controller 4	54	64
Controller 5	55	65
Controller 6	56	66
Controller 7	57	67
Controller 8	58	68

6.9 Statuses of the HC hydraulics controller -
Can be displayed by means of the FB1 Service Terminal (special function)

Code	Meaning	Action
0	Home status - no fuelling in progress, nozzle replaced (no error)	-
1	Communication error between PR and HC	Check the data line and the HC address
2	Other errors have occured	see list of errors
3	Nozzle lifted, no fuelling in progress, HC waiting for release from operating console (no error)	-
4	Nozzle lifted, fuelling in progress (no error)	_

7. Maintenance and repairs

Maintenance and repair work to the pumping unit, fittings, and electrical or electronic system parts must be performed by trained personnel from approved specialist firms.

The information given on the devices themselves and in the relevant manufacturers' documentation must be observed in all action that is taken.

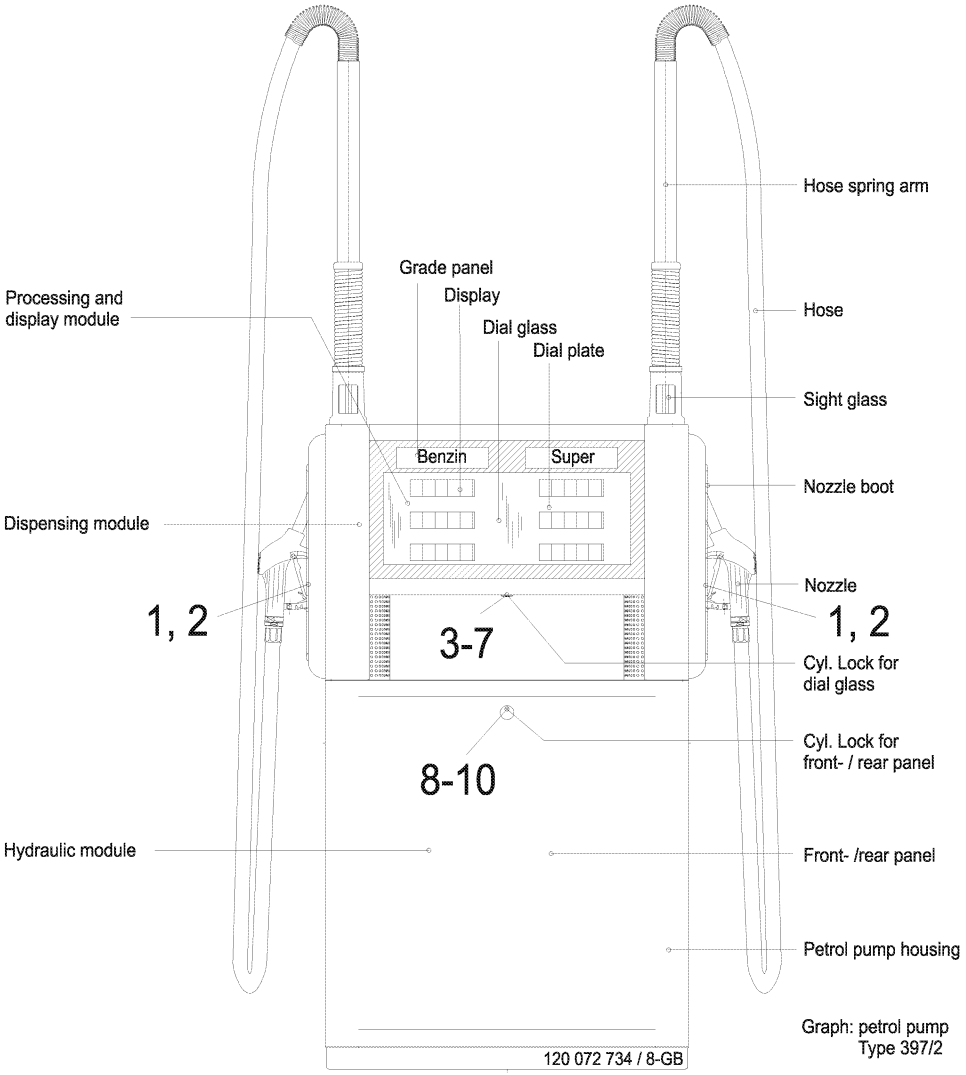
If damage is caused due to incorrectly performed repairs, liability under the guarantee ceases to be valid.

Before any maintenance or repair work is performed on the pump, the main switch in the office must be switched off and protected against being switched on again, where the necessary work allows this.

Whenever an pump is maintenanced or repaired, the safety regulations and legal requirements valid in the country concerned must be complied with.

7.1 Opening the petrol pump

The numbers in the diagram correspond to the sequence in which the activities must be carried out.



Graph: petrol pump Type 397/2

Unlocking the petrol pump

1. Open the lock with a quarter turn to the left (anti-clockwise)
2. Remove the key.

Opening the control/display module

3. Open the cylinder pressure lock of the glass panel with a quarter turn
4. Take hold of the sides of the glass panel in both hands, draw it downwards about 3 cm out of housing and remove it.
5. Undo the screws beneath on the dial (or pull them out of the clips).
6. Lift back the dial so that it is suspended from the retaining chains.
7. If it is necessary to remove the dial completely,

   first switch off the power supply to the EC2000,

   the display connectors should only then be detached; unhook the retaining chains and remove the dial.

Removing the front and back panels

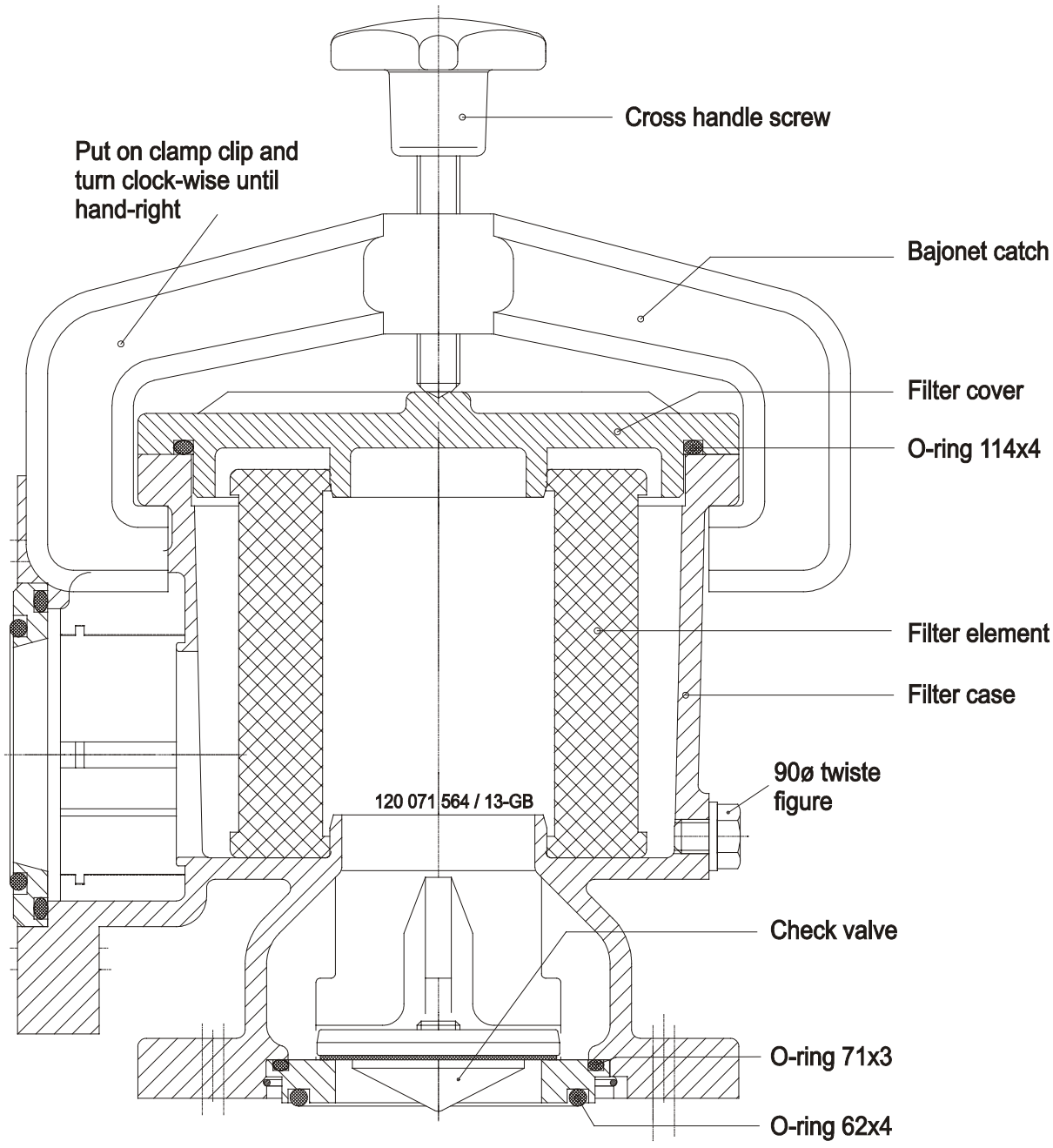
8. Open the lock with a quarter turn to the left (anti-clockwise)
9. Draw the panel upwards about 5 cm and away from the petrol pump
10. Lift out the panel.

7.2 Changing the filter elements

Dirty filter elements impair pumping performance.

The filter elements must by changed after a brief operational period after the equipment is first put into operation.

Further replacements should be performed every 3 - 6 months depending on throughput, and whenever there is a noticeable drop in pumping performance:



1. Loosen the cross-grip screw by turning to the left (counter-clockwise).
2. Turn the tension clip a quarter of a turn to the left and remove the filter cover.
3. Change the filter element.; 12 µm for VK and 25 µm for DK.
4. Mount the filter cover taking into account the correct position of the O ring.
5. Turn the tension clip to the right (clockwise) up to the stop.
6. Screw the cross-grip screw tight.
7. Check for tightness during putting into operation.
8. Dispose of the filter element in the correct manner.

The screw on pressure filters should be changed during maintenance within an absolute maximum operational life of 2 years on any dispenser.

7.3 Pumping unit

The conveyor system requires no maintenance.
The ball bearings of the rotary pump and the electric motor have permanent grease lubrication.

Relubrication should be performed by service engineers as part of a general overhaul of the pump.

If the V-belt slips, check the tension of the belt tightener and if necessary adjust.
Worn or oily V-belts can also be the cause of slipping, and should be replaced.
Worn pulleys must be replaced by service engineers.

If the V-belt is slipping due to the rotary pump functioning sluggishly, service engineers must be called to assist.

7.4 C-Meter and pulse generator

The C-Meter and the pulse generator require no maintenance.

7.5 Little or no fuel delivery

It has been established that: The pump is operating;
however, only little or no fuel flows from the nozzle vent
Please check :

1. Is the filter dirty? Change the filter element (section 7.2)
2. Is the coarse filter of the nozzle vent blocked? -
   Has the nozzle ball in the nozzle vent become stuck?

   Remedy in accordance with the directions for use of the nozzle vent (section 7.12).
3. Are there operational problems with the C-Meter? -

   Check the conveyor system pressure and volume flow at the manometer connection of the outlet block housing: with normal operating values, exchange the C-Meter complete with encoder, discharge flange and sealing.
4. Does the magnetic valve not open or not open completely? -
   Description of the magnetic valve, see 7.10.

   a) Check the operation of the magnetic coil, e.g. with a steel part (screwdriver or paper clip), which in the case of an intact and set magnet will be noticeably attracted.

   b) Check the control voltage and the fuses for the magnetic valve.
   If the fuses repeatedly burn through, change the magnetic coils.

   c) Check the working order of the magnetic valve piston.

   d) Check the guide channels of the magnetic valve for blockage and, if necessary, clean these.

7.6 Air bubbles in the sight glass

Please check:

1. Is the storage container emptied to such an extent that air is sucked in? - Refill with fuel.
2. Are flange or screw connections on the suction side of the conveyor system not tight? -

   Tighten the flange or screw connections with moderate force; if necessary, change the seals.
3. Is the triple sieve at the outlet of the pump block ventilation pipe dirty?
   Check and, if necessary, clean or change it.
4. Is the gas cut-off faulty? - Open the pump block.

   a) Are the orifices or the bores of the displacement element blocked? - clean them

   b) Can the displacement element be easily moved vertically? - check its working order and, if necessary, clean the linear ball bearing and the axle of the displacement element; if needed, change these.

   c) Does the float resuction device work correctly?
   Check its working and mechanics; if necessary, repair or change it.

   ADVICE: A non-tight measure limit valve in the valve block may result in reverse impulses and also consequently be the cause of switching off. Please check:

   a) whether the valve ball sticks - clean and make it operational.

   b) Is the seal or the seal surface damaged? - if necessary, replace this.

7.7 Escape of liquid from the pump block ventilation

Please check:

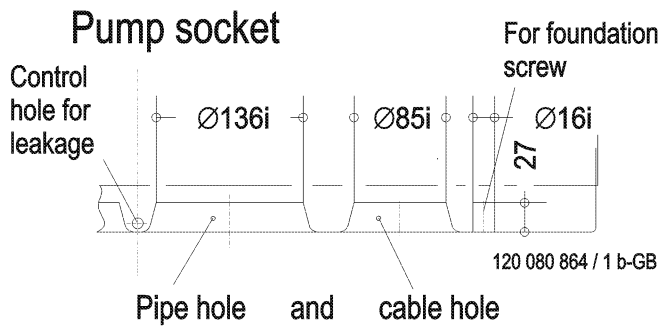
a) The float resuction device is in working order -
Open the pump block, check the float buoyancy and mechanics; if necessary, repair or change.

b) With several pumps on one suction pipeline, the gas cut-off of the non- or seldom-used pumps can be flooded. In this case, appropriate measures are to be taken immediately; such as, for example, the installation of a return pipe, a backstroke valve, a magnetic valve, amongst other measures.

7.8 Lighting

1. Exchange extinguished or blinking luminous substance tubes.
2. Check the fuses in the tank house.
3. Check the starter and the series unit.

7.9 Control bores for leakage in the base of the hydraulics module



The control bores on both lane sides of the pump in the base of the hydraulics module serve the purpose of monitoring the pump module hydraulics for leakage.

The bores must constantly be open. When dirty, these are to be cleaned.

In the event of escape of liquid, the necessary measures are to be carried out immediately.

The pump may not be operated when leakage occurs

7.10 Valve block with proportioning - Function of the magnetic valves

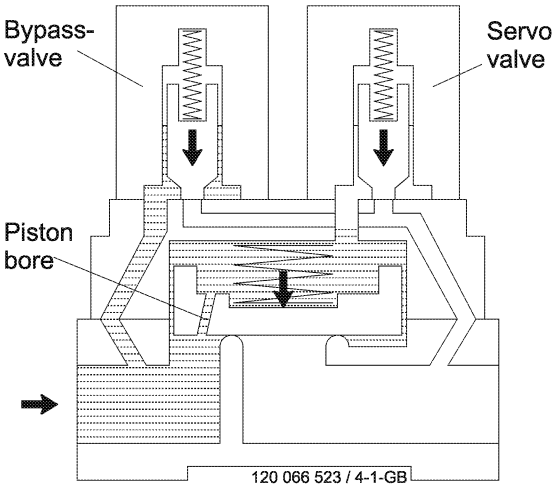


Fig. 1:
Servo valve and bypass
close = valve closed.

1. Valve closed (Fig. 1)

When the magnets are without current, the servo and bypass valves are closed.

The hole connecting of the pressure side of the valve block with the valve chamber above the piston ensures equal pressure on both sides of the piston.

Because the active surface above the piston is larger, the valve remains closed.

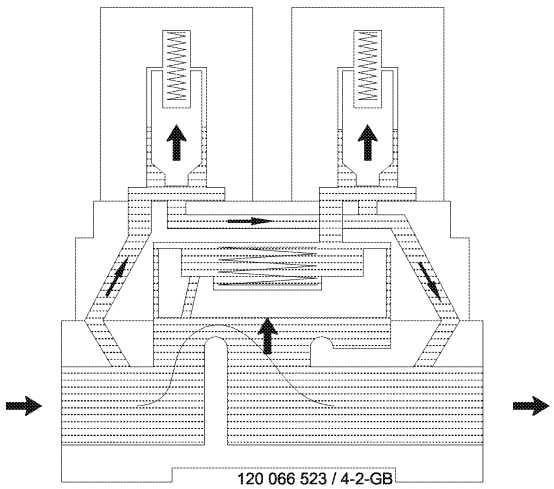


Fig. 2:
Servo valve and bypass valve
open = valve open.

2. Valve open (Fig. 2)

When the current is switched on, the servo and bypass valves are opened, relieving the pressure in the valve chamber above the piston on the delivery side of the valve block.

The greater fuel pressure on the underside lifts the piston and the valve is opened.

3. Throttling the valve (Fig. 3)

Throttled fuel flow of approx. 2 L/min allows accurate closing of the bypass valve, which means that the fuelling operation is terminated at the precise fuel volume that has been preset.

The calculator system in the MPD regulates the throttling of the valve :

Approximately 0.5 litres before the preset fuelling volume is reached, the servo valve is closed after the current has been switched off by a signal from the system.

Equal pressure then builds up on either side of the piston.

Because the active surface above the piston is larger, the valve closes.

There is now only restricted fuel flow through the bypass valve.

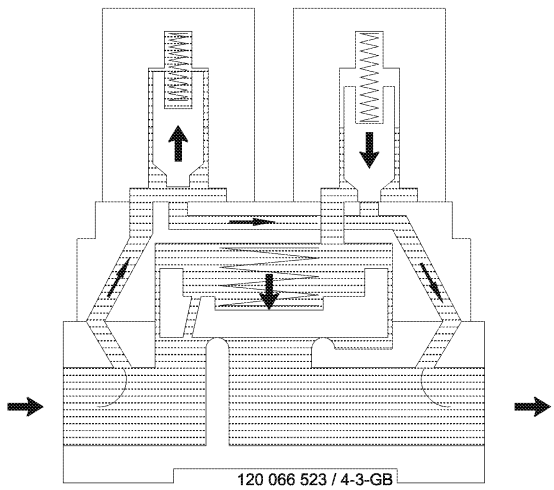


Fig. 3:
Servo valve closed and bypass
valve open = throttled flow.

4. Final closing of the valve

The calculator system also controls the final closing of the magnetic valve :

When the preset fuel volume is reached, the bypass valve closes when the system sends a signal (see Fig. 1); the fuelling operation is terminated.

7.11 Magnetic valve 45/80 L/min (right fig.)
for MS (Middle Speed) - function

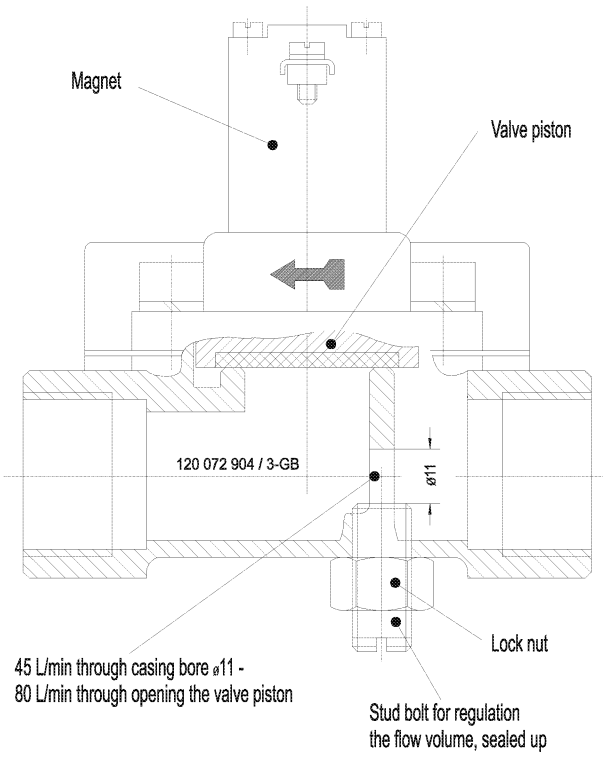
With the magnetic valve in the current-free state and consequently with the valve piston closed, the fuel flows directly through the 11 mm boring to the discharge side of the valve.

The flow is approx. 45 L/min.

When required, the flow can be readjusted with the aid of the pin screw.

With the magnetic valve provided with current and consequently with the valve ball open, the fuel additionally flows through the relatively large valve seat opening.

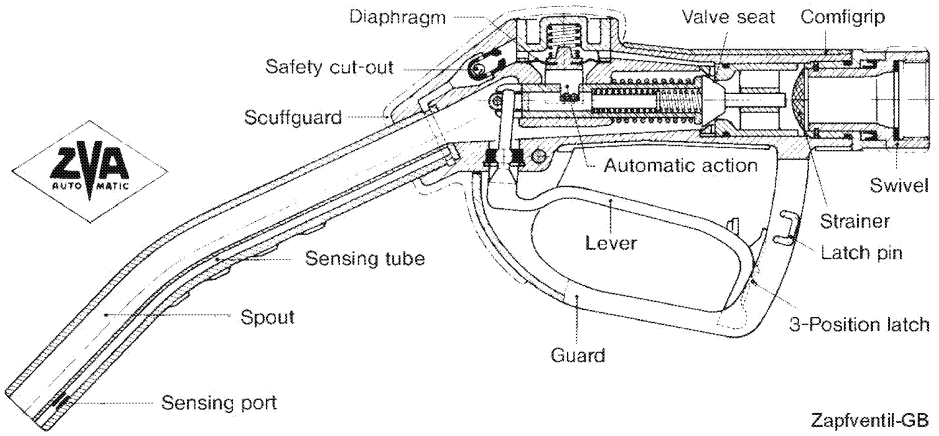
The flow then corresponds to a pump output of approx. 80 L/min.



7.12 Nozzle

Installation
The ZVA is supplied ready for connection to the hose. No adjustment is required. Switch pump ON and open nozzle slightly to vent air from hose.
Then check :

Hose connection is tight.
Automatic action works in all latch positions and when pointing up.
Nozzle fits into pump and can be padlocked.
Actuation of automatic pump switch.
Latch pin has been removed on self-service (if required by local regulation).
The operating pressure range 0.5 - 4 bar (7 - 56 psi) must not be exceeded.
The valve opens at 6 bar (85 psi).



How the ZVA Works
The flow through the nozzle creates suction at the throat of the valve seat. Air is drawn through the sensing port at the UP of the spout, through the safety cut-out, past the diaphragm, and into the fuel. The valve will remain open while the air flows freely.

When fuel reaches the sensing port, suction builds up rapidly until it lifts the diaphragm and trips the automatic action which shuts the valve.

The mechanism also trips if the ball of the safety cut-out rolls back to obstruct the free air flow. This may happen when the nozzle is jolted, or falls out of the fill pipe, or if the lever is pulled when the nozzle is pointing up (e.g. in the pump suspension).

The valve opens in the direction of flow, to give finger tip control free of judder, it closes against the flow for a "soft" closure.

Care and Maintenance
The ZVA will last the life of the pump, except for minor replacement of external parts that may become worn or accidentally damaged.

In Case of Trouble
Nozzle will not open : Pump pressure may be too low to push valve poppet open. In hot weather dirt and gum deposits can cause stickage. If pump pressure cannot be increased, disconnect ZVA from hose, pull lever to open position and push valve stem from the open inlet to free poppet.

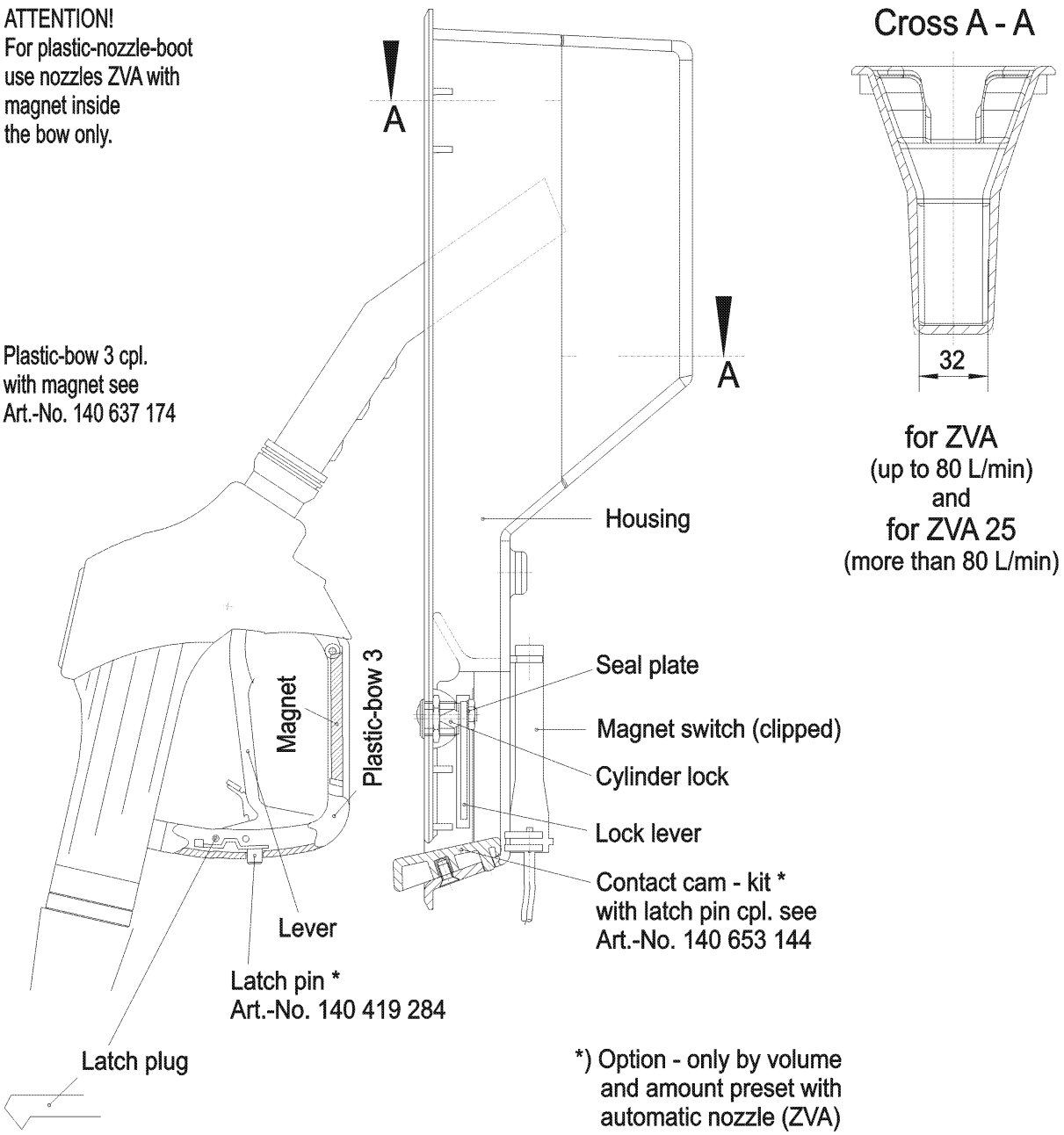
Nozzle opens but keeps tripping immediately : The air passage is blocked. First check that cut-out ball is forward (see illustration B). Then shake the nozzle. If the ball is free to move, it will rattle. The air passage can be cleared by blowing air from opening up the spout until air comes out of the sensing tube. Dirt accumulated at the sensing port can be cleared out with thin wire.

Nozzle does not close automatically : The suction required to operate the automatic action is too low. With the pump running, open nozzle wide to check that full flow can be obtained. If flow is weak, switch off, and unscrew nozzle from swivel to check that strainer is clean. Another cause of failure may be a damaged valve body allowing air leakage around the vacuum cap or the spout entry. Reported failure on new self-service pumps is usually due to the customer not inserting the spout properly. Check function before calling the service engineer.

If you are unable to obtain satisfactory working : Call your service contractor. He has the skill and any parts needed to restore working order.

If a ZVA has to be returned to the suppller for service, please attach a label showing your name and address and postage must be pre-paid in all cases.

7.13 Plastic-nozzle-support



By subsequent mounting of the latch pin and the contact cam

1) Pull the latch plug out of the ZVA - lever, set latch pin in according to the illustration and put latch plug in.

2) Mount the contact cam in the nozzle support and mount contact cam.

3) Function test:

   a) Disconnect pump
   b) Use lever and engage
   c) Place the nozzle in the nozzle support. - The nozzle must be closed.

7.14 Calibration the delivery system - fundamentals

Please observe

1. **Electronic calibration** by means of Service Terminal FB1 according to **7.15** is absolutely necessary for
   1. new systems
   2. the exchange of Hydraulics Controllers
   3. the exchange of C-Meter

   for the purpose of determining the correction factor and its listing within the Hydraulics Controller.

2. **Mechanical calibration** by means of C-Meter according **7.16** may only be applied in case of need for the purpose of additional calibration

3. **Calibration regulations**

   Adjustment repair and other work on the delivery systems and the price calculator that involves opening the lead seals may only be performed by qualified personnel who are approved 'repair engineers'.

   When the work is completed, the repair engineer must
   1. replace the seals that were removed by 'repair engineer seals' or 'marks',
   2. invalidate the main stamp and the ‘Calibrated until...’ declaration.
   3. state the date of the repair work in the bottom field of the repair engineer mark.
   4. notify the appropriate authority immediately for the purposes of 'strict recalibration’.

   Please take note:

   Repair engineers’ seals or marks may only be attached on still validly calibrated pumps!

7.15 Electronic calibration

Operating the FB1 Service Terminal

The Service Terminal FB1 has user guidance.

This means you can simply follow the information on the FB1's display screen and select the function you require according to the adjustment instructions given below by pressing the appropriate keys.

You will find an overview of the functions (menus) in the block diagram on page 27 - 33.

Key assignments on the FB1:

START	=	Switches the FB1 on and off.
SHIFT	=	Press once : Recalls previous display, e.g. to perform correction Press several times : Returns to start menu.
ENTER	=	Confirm an input. Any input can be overwritten and corrected as often as required so long as it has not been confirmed by pressing ENTER. If an incorrect input has already been confirmed by ENTER, correction can only be performed by using the SHIFT key to return to the previous menu.

Calibration instruction

1. Open display housing (s. **7.1**)
2. Connect the Service Terminal FB1 to the system connector (s. **1.1**)

   Provided the pump is ready and all nozzles have been replaced, the Price Computer passes system control to the FB1 automatically; the FB1 becomes the 'master'.
3. Start the FB1 by pressing the **START key.**

   The first version of the FB1 is shown and then the menu as follows:

** * * Service * * **			
SAL pump	***(1)***	=	Petrol pump manufacturer SALZKOTTEN
S&B pump	***(2)***	=	-
Please select		=	Press key 1 (do not press ENTER)

4. Press key 3 to select the EC2000 Price System.

** * * Service * * **			
Gas measuring	***(1)***	=	Volume measurement
SYS identif.	***(2)***	=	Detection of the connected vapour recovery system
EC 2000	***(3)***	=	EC2000-PR Price Computer

5. Press key 2 to select EC2000 hydraulics

** * * Service * * **			
EC calculator	***(1)***	=	For actions on the EC2000-PR Price Computer
EC HYD	***(2)***	=	For actions on the EC2000-HC ... Hydraulics Controller
Please select			

6. Press key 2 to calibrate

** * * EC HYD * * **			
Addressing	***(1)***		
Calibrate	***(2)***	=	Calibration of the metering unit
Test			

7. Select the pump side

** * * Select side * * **			
side 1	***(1)***	=	pump side 1
side 2	***(2)***	=	pump side 2

For pumps 397/ . . . :

397/1	:	always side 1				
397/1-2	:	isle side 1	=	side 1		always Module* 1
		isle side 2	=	side 2		
397/2	:	hose left	=	side 1		
	:	hose right	=	side 2		
397/2-4	:	hose left	=	Module* 1	for isle side 1 =	side 1
	:				for isle side 2 =	side 2
	:	hose right	=	Module* 2	for isle side 1 =	side 1
	:				for isle side 2 =	side 2

*) s. follow point **8.**

8. Select Module No.

** * * Calibration * * **		
side 1 / 2	=	display according to pump side selected (s. point **7.)**
Module : 1	=	here, in the first instance, the number 1 is displayed
Select Module	=	according to the point **7.**

9. Open the calibration bridge

** * * Calibration * * **	With the Hydraulics Controller ***EC2000 HC 396***
side 1 / 2	the slide switch (see illustration next page) is to be operated.
	With the Hydraulics Controller ***EC2000-HC*** the
Open cal. bridge	calibration bridge is to be opened (see illustration next page)

The calibration bridge are secured with a seal.
Attention should be paid that the calibration bridge of the filling point to be calibrated is always open.

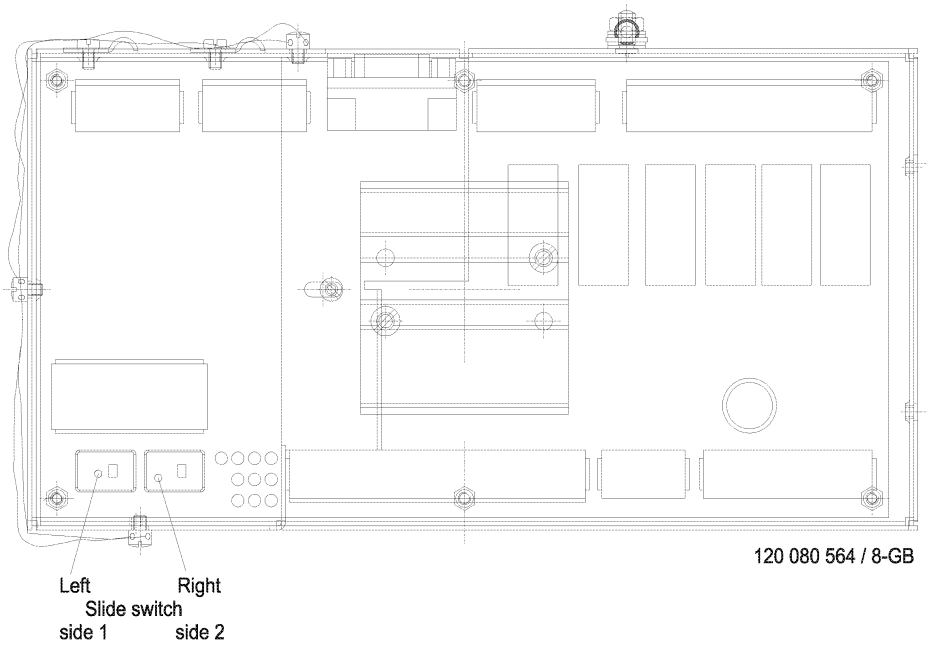


Fig.: Hydraulics Controller ***EC2000-HC 396*** for pump type 397/1, /2 and /2-1

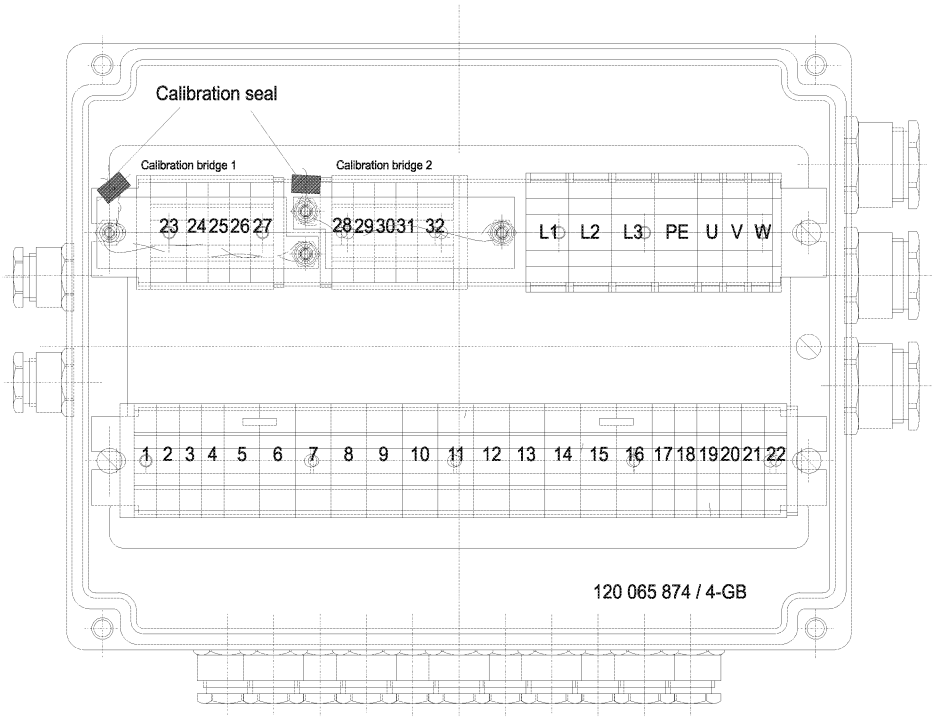


Fig.: Hydraulics Controller ***EC2000 HC*** for pump type 397/2-4

10. Confirm C-Meter number or enter a new number

**** * * Calibration * * ****
side 1 / 2 = Display depending on lane side selected
CV-No.: 123456 = C-Meter number
Change with F2 = confirm the correct number with ENTER or in the case of a new entry press [F2]. Enter number and confirm with ENTER. The new number must have 6 digits; if necessary, fill with zeros on the left side.

11. Display of the previous correction factor

**** * * Calibration * * ****
Calibr. factor
Cur : 1,0000
Change with F2

Press [F2] for new calibration; updating, see points **12.** to **16.**
Change with F2

12. Adjustment possibilities!

**** * * Calibration * * ****

a) ***Calib. Input*** ***(1)*** = new measuring works with C-Meter

Normal pump	***(1)***	=	correction factor 1.0000
Hi. speed pump	***(2)***	=	correction factor 2.0000
please select	***(3)***	=	**free entry - correction factor for C-Meter 0.7584**

According to that calibration filling, see points **13.** to **16.**

b) ***Calib. adj.*** ***(2)*** = determination of difference using display and calibra. flask

Adjustment using ”Delivery Correction”

**** * * Calib. vessel * * ****		=	Calibration flask selection
50 litre	***(1)***	=	50 litre calibration flask
20 litre	***(2)***	=	20 litre calibration flask
Free input	***(3)***	=	10 litre to 100 litre calibration flask is possible

With 200 litre calibration flasks, select the 100 litre calibration flask (free entry) and enter the half of the actual difference

Delivery correction = entry using the difference determined between pump display and the calibration flask:

Enter the difference in ml without sign (max. +/- 250 ml),
Enter a sign: plus in calibration flask = ”-”
minus in calibration flask = ”+”

**** * * Cor. Factor * * ****	=	Correction factor
cur:	=	display of the correction factor with ”delivery correction”

c) ***Calib. fill.*** ***(3)*** = determination of difference using FB1 and calibration flask, see point **13. – 16.**

13. Adjustment by ”calibration filling up” with FB1 connected

**** * * Calibration * * **** — for adjustment
Calib. fill. — Calibration filling up of the measuring equipment start with
Start with ENTER — [ENTER] and continue with point **14.**

14.

**** * * Calibration * * ****	=	Calibration
Lift nozzle	=	Lift nozzle from support
Open cal. bridge	=	Open the calibration bridge
**** * * Calibration * * ****	=	Calibration

15. ***Fuelling*** — Fill the calibration flask as far as possible to the calibration
000 L/min — mark hang up the nozzle in the nozzle holder
0000,000 L — and then press the [SHIFT] key.

16. Enter measured value

**** * * Calibration * * **** — read the measured value (amount, litres) of fuel poured into
Calibr. Vessel — the calibration flask, enter this using the FB1 keyboard with
input — 3 places after the decimal point and confirm with (ENTER].
Value : 000,000 L = (e.g. 020,005) (1 cm^3 = 1 ml = 0,001 litre)

From the content of the calibration flask (*measured value E flask*) and the amount delivered according to the display reading, the service terminal FB1 automatically calculates the correction factor and registers this in the Hydraulics Controller.

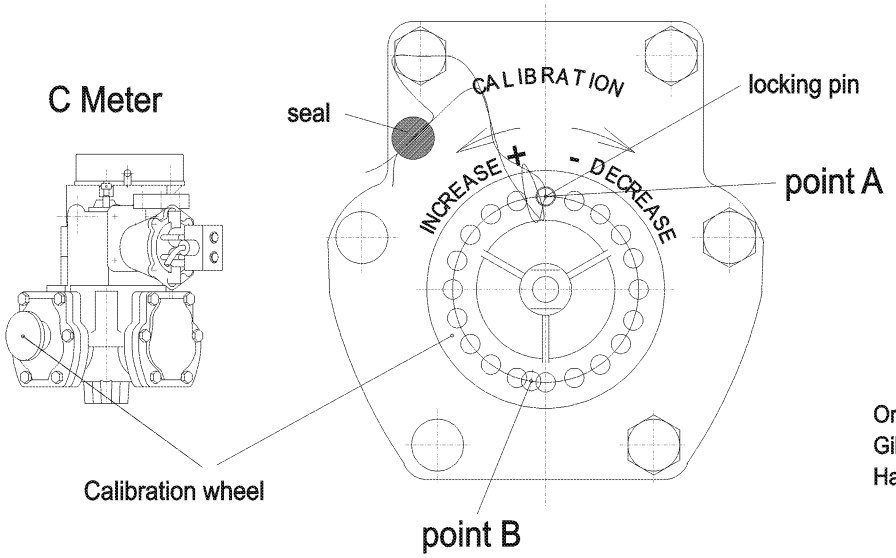
17. Lock the calibration bridge and fasten the seal in position.

18. If necessary, calibrate additional filling points.

19. Lock the Hydraulics Controller.

20. Fasten the seal in position and carry out the measures in accordance with the calibration regulations.

7.16 Mechanical calibration C-Meter



Original see
Gilbarco MDE-3019E
Handbook44-1999

120 088 654 / 12-GB

Calibration C Meter

Observe the calibration regulations !

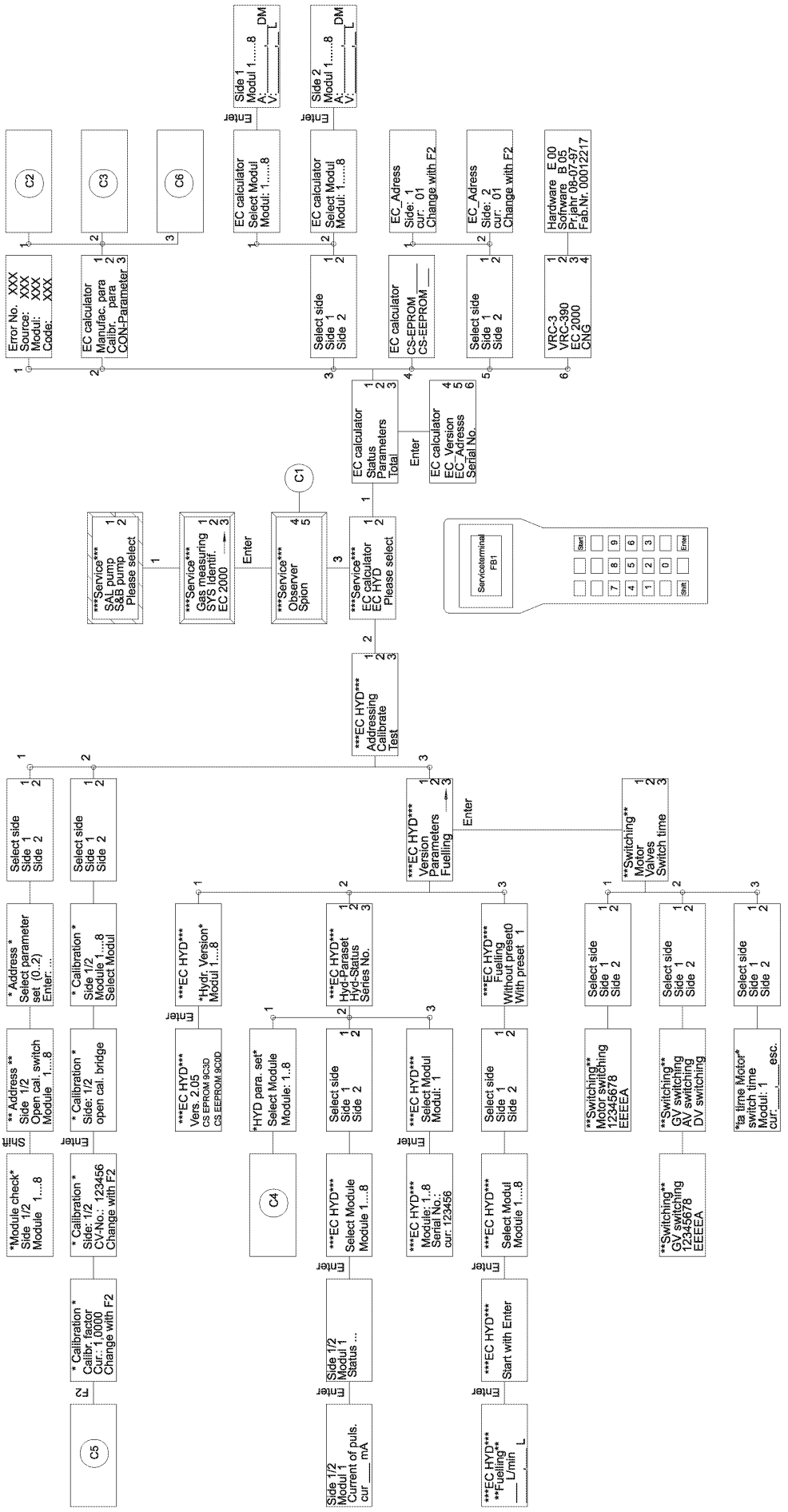
1. Fill an approved calibrated container to the calibration mark.
2. Compare the dislpayed quantity with that in the calibrated container and calculate the error in %.

   If the error is not within the allowable tolerance, then follow steps 3. till 8.
3. Break seal
4. Pull out locking pin
5. Turn calibration wheel in accordance with the table below
6. Fix the calibration wheel by means of the locking pin
7. Repeat the test above, steps 1. and 2. Where necessary repeat steps 4., 5., 6. and 7.
8. Attach seal

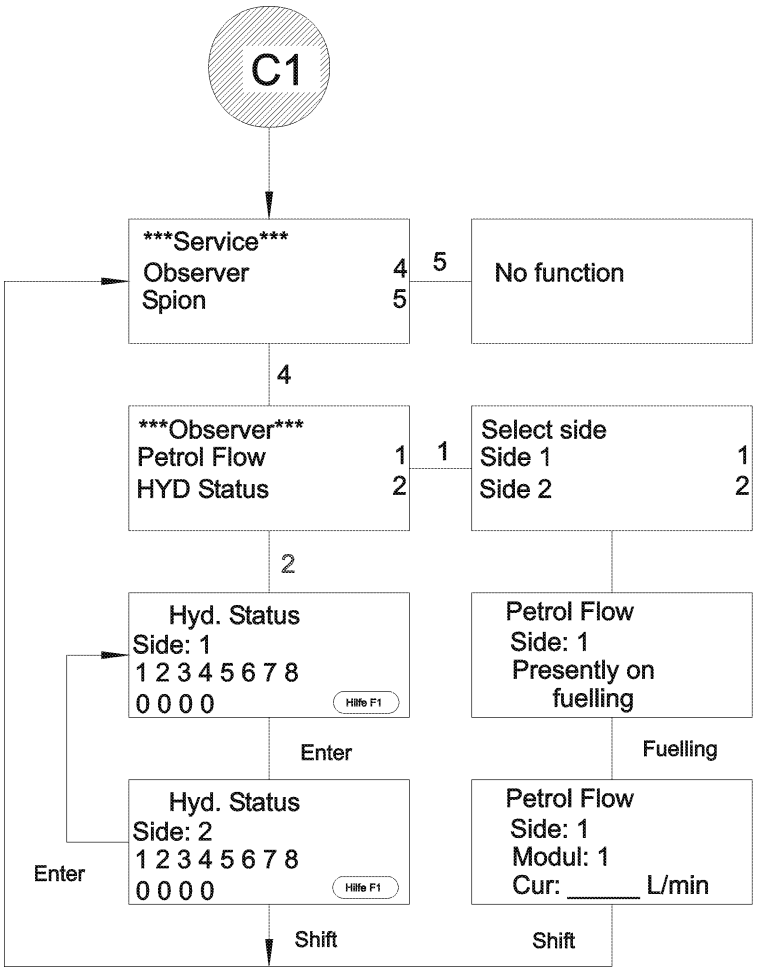
	Adjust as follows	Correction
circa 0,03%	Turn calibration wheel about 1/2 hole Alter locking pin from point A to point B or from point B to point A	- DECREASE = Minus = approved container-volume diminish
circa 0,06%	Turn calibration wheel about 1 hole Locking pin stay in point A respectively point B	- INCREASE = Plus = approved container-volume enlarge

8. Overview of the functions of the service terminal FB1 - Block diagram

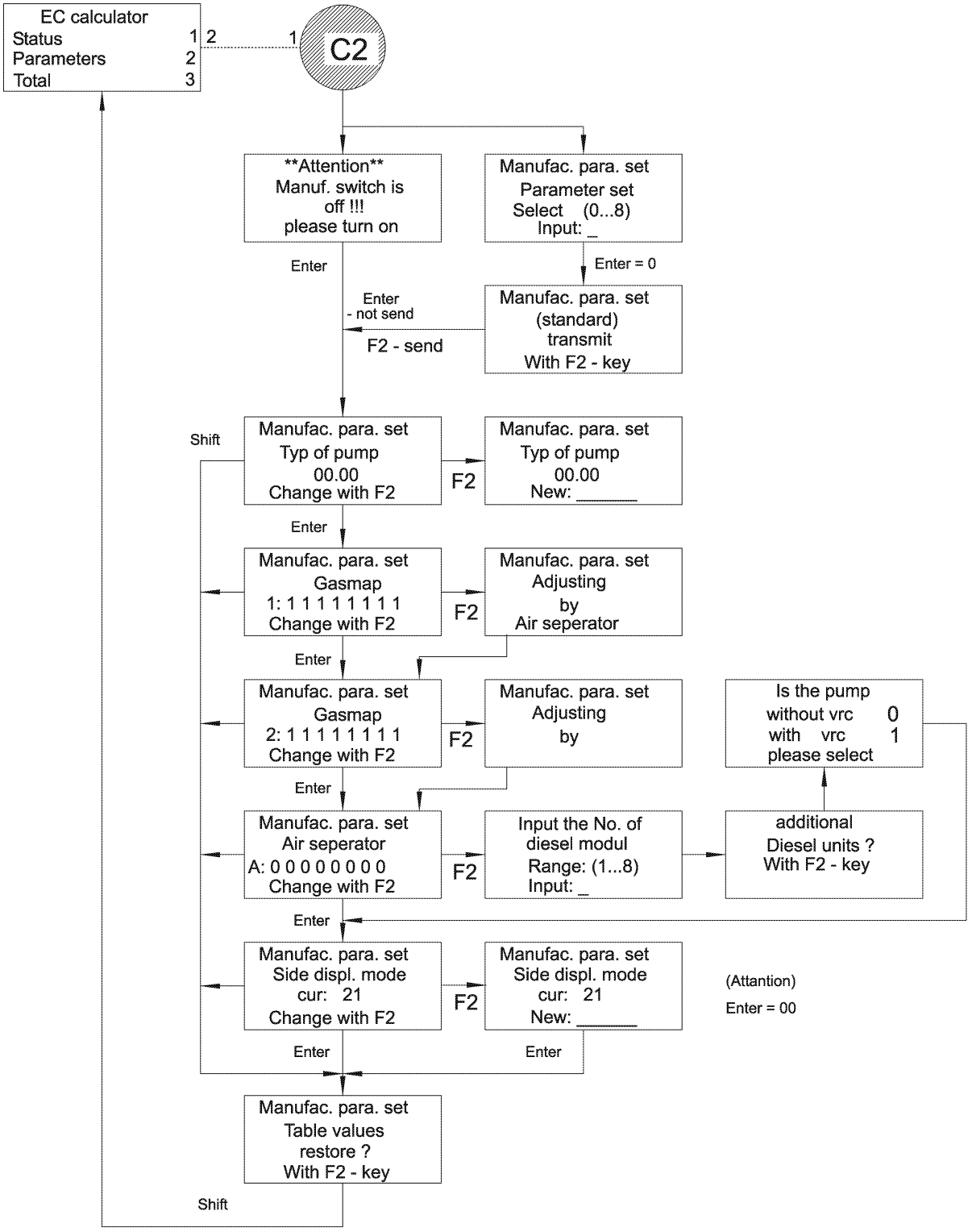
8.1 General overview - Version S 5.7 – e



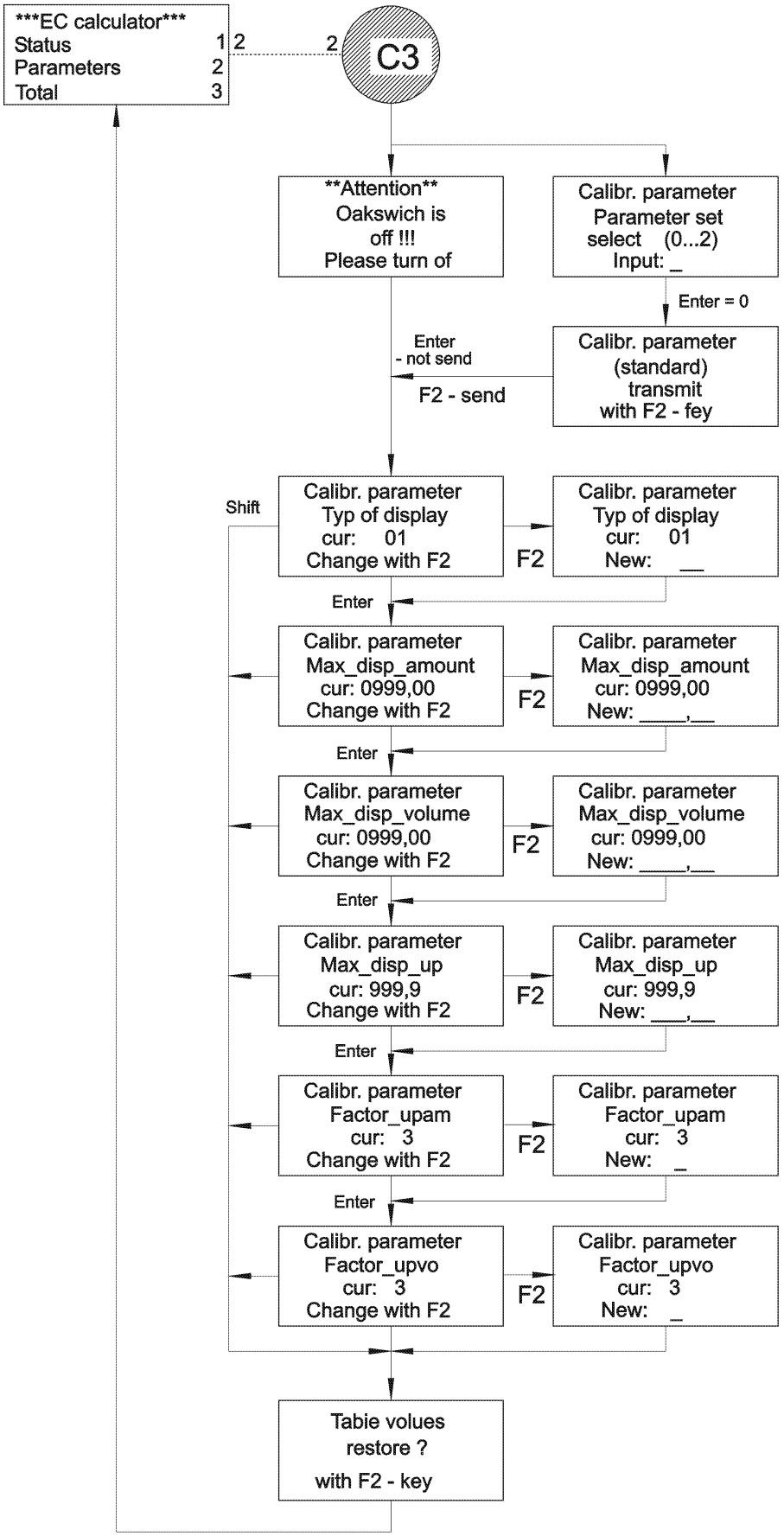
8.2 Observer - Version S 5.7 C1 – e



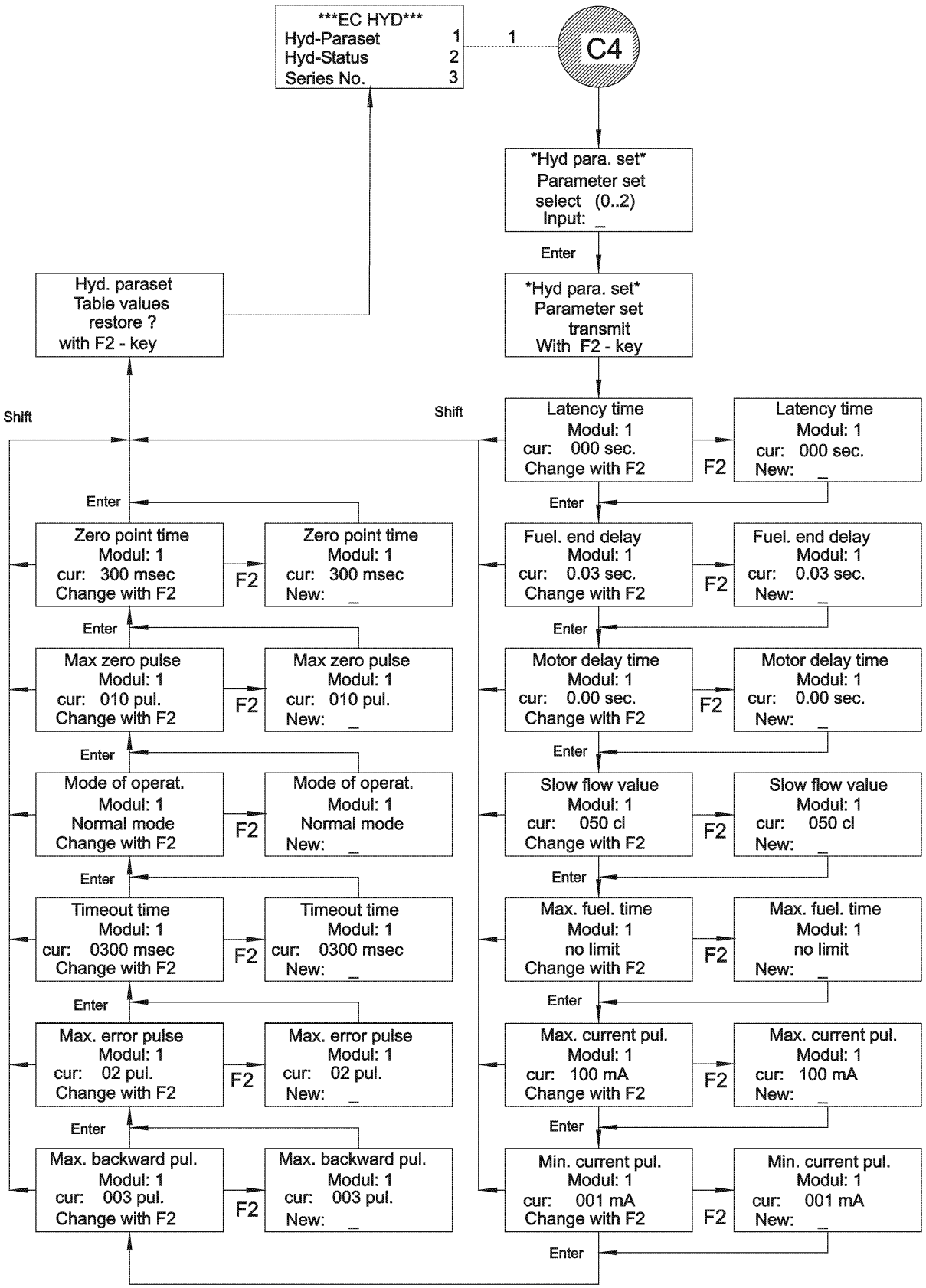
8.3 Works parameters - Version S 5.7 C2 – e



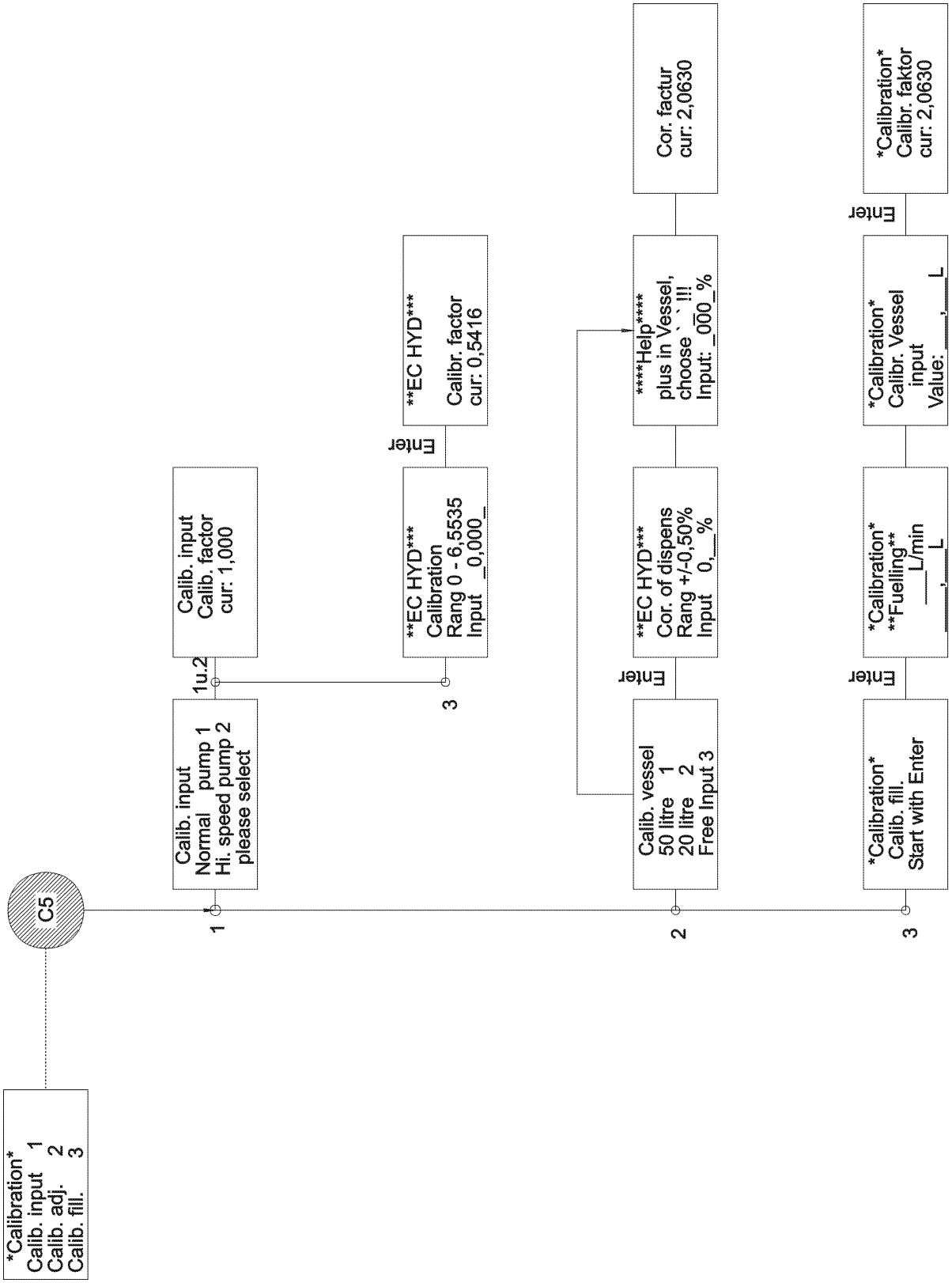
8.4 Calibration parameter - Version S 5.7 C3 – e



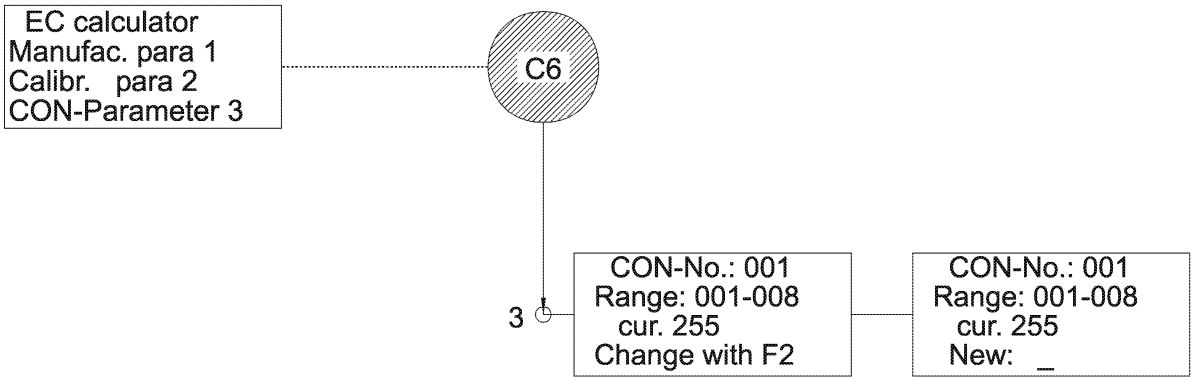
8.5 Hydraulics-Controller-Parameter - Version S 5.7 C4 – e



8.6 Calibration - Version S 5.7 C5 – e



8.7 Calibration - Version S 5.7 C6 – e



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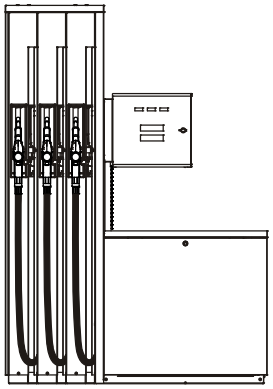
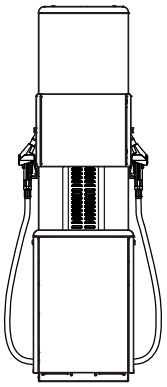
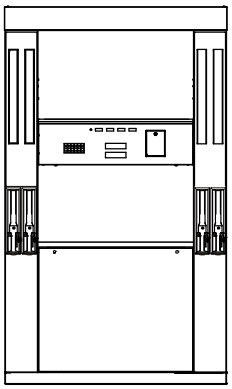
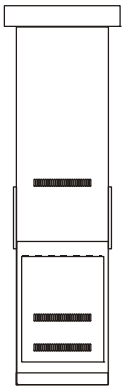
SK700-2



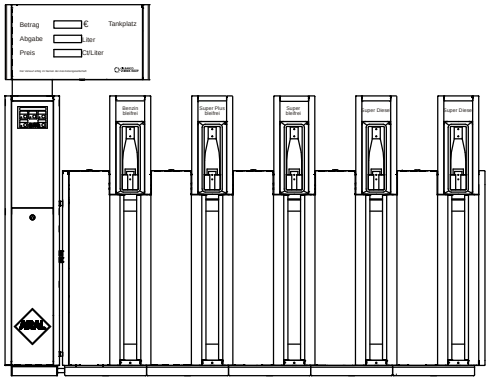


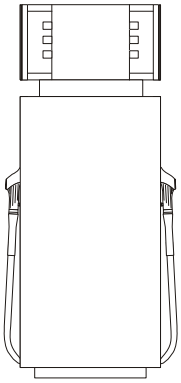
Encore 510



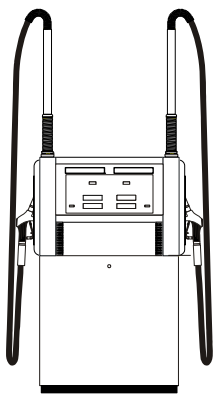


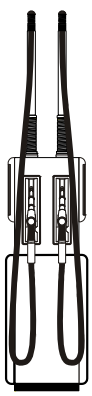
Aral-MPD 02





397 G





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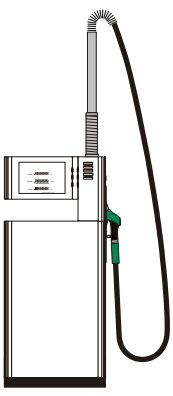

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