4.3 CERTIFICADO DE CONFORMIDAD

Se certifica que el producto:

PS- DA- 690 / DES Equipo para estudio de una columna de destilación con columnas intercambiables (tres columnas montadas)

Fabricado por:

Generatoris S. A. de C. V.

Garantiza un producto de calidad a satisfacción del cliente y acorde a sus necesidades, para lo cual cuenta con personal competente, material de fabricación conforme a especificaciones y un Sistema de Gestión de Calidad que se encamina al mejoramiento continuo de los procesos, manteniendo el nivel de competencia en cada área.

Los rangos de operación para la el vidrio son los siguientes:

- ✓ El calentamiento o enfriamiento irregular y rápido provoca fácilmente la rotura a causa de las tensiones de tracción generadas.
- ✓ Transmite aproximadamente un 95% del calor irradiado que recibe.
- ✓ Destaca por su durabilidad y resistencia a los ataques químicos y las altas temperaturas.
- ✓ Es prácticamente inerte.
- ✓ Tiene un coeficiente de dilatación mayor. El valor de este coeficiente es 0.000005 centímetros por grado centígrado.
- ✓ Tiene una alta resistencia mecánica.
- ✓ El vidrio borosilicato es muy resistente al agua, a los ácidos, a las soluciones salinas, a las sustancias orgánicas e incluso a los halógenos.
- ✓ Mediante la acción del agua y los ácidos sólo se desprenden del vidrio pequeñas cantidades, principalmente de iones monovalentes, formándose entonces sobre la superficie del vidrio una capa de gel de sílice muy fina y poco porosa, que impide el ataque ulterior. El ácido fluorhídrico, el ácido fosfórico y las soluciones alcalinas atacan la superficie del vidrio dependiendo de la concentración y de la temperatura.
- ✓ El valor característico de resistencia del vidrio borosilicato es de 3.3: K/S = 7 N/mm2.

El equipo ha sido probado antes de su entrega y ha mostrado eficiencia en su operación sin presentar algún problema. (Ver reporte de pruebas de operación).

Los materiales utilizados son de alta calidad y se encuentran detallados en la sección de especificaciones técnicas de este manual.

_____

Ing. Gorostiza Esteva Eduardo Manuel

REPORTE DE PRUEBAS DE OPERACIÓN
PRODUCCIÓN
FABRICACIÓN

EQUIPO:	EQUIPO PARA ESTUDIO DE UNA COLUMNA DE DESTILACIÓN CON COLUMNAS INTERCAMBIABLES (TRES COLUMNAS MONTADAS)

MODELO:	PS-DA-690 / DES
SERIE:	GEN-0412-246

	OPERACIÓN		
EQUIPO GENERICO	**CORRECTA**	**INCORRECTA**	**OBSERVACIONES**
GABINETE	X		
SENSORES	X		
BOMBAS	X		
RECIPIENTES DE VIDRIO	X		
TANQUES	X		
INSTRUMENTOS	X		
TUBERÍA	X		
EQUIPO ESPECIFICO			
MANTILLA	X		
ROTÁMETRO	X		
COLUMNAS DE DESTILACIÓN	X		
SERPENTINES	X		
RESISTENCIA	X		
ELECTROVÁLVULA	X		

FECHAS DE PRUEBA:	27-JULIO-2012
REPORTAN:	FSS

APROBADO PARA EMBALAJE:

FABRICACIÓN:		Ing. Erick Castelán

PRÁCTICA 1. Identificación de componentes

Número	Nombre del accesorio
1	Portafusibles
2	Relevador
3	Clemas
4	Protector termomagnético
5	Contactores
6	Precalentador
7	Bomba de alimentación
8	Tanque de alimentación
9	Hervidor
10	Mantilla de calentamiento
11	Válvula de descarga
12	Sensor de temperatura
13	Condensador
14	Columna de destilación
15	Conexiones para los sensores de temperatura
16	Manovacuómetro
17	Balón receptor de productos
18	Electroválvula
19	Enfriador de productos
20	Rotámetro
21	Válvula de regulación de flujo
22	Tanque receptor de productos
23	Enfriador fondos

Operating Instructions Manual

gamma/ L

Solenoid Metering Pump

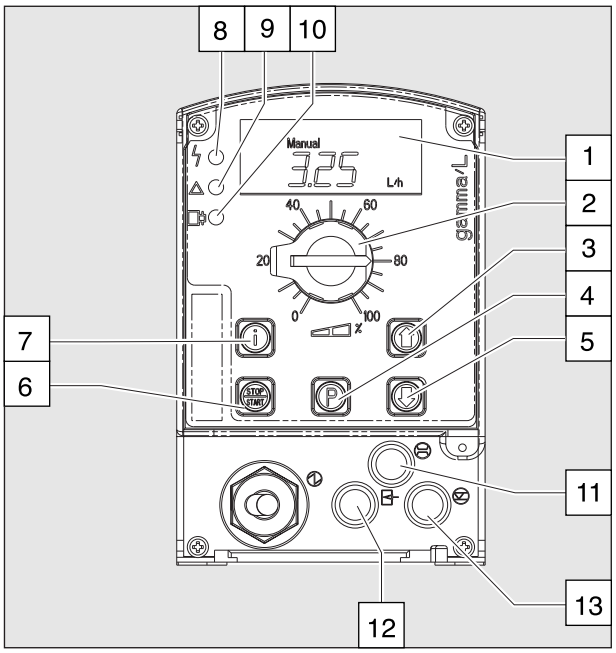
GALA ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Please enter identcode of the device here

Two sets of operating instructions are required for the safe and correct use of the metering pumps:
The product specific operating instructions manual
and the "ProMinent® Solenoid Metering Pumps General Operating Instructions Manual".
The two are valid only when read in conjunction with one another.
Please read the operating instructions through completely before commissioning this equipment! Do not discard!
The operator shall be liable for any damage caused by installation or operating errors!

Part No. 987604 **ProMinent Dosiertechnik GmbH · 69123 Heidelberg · Germany** BA G 030 06/09 GB

Control elements: overview



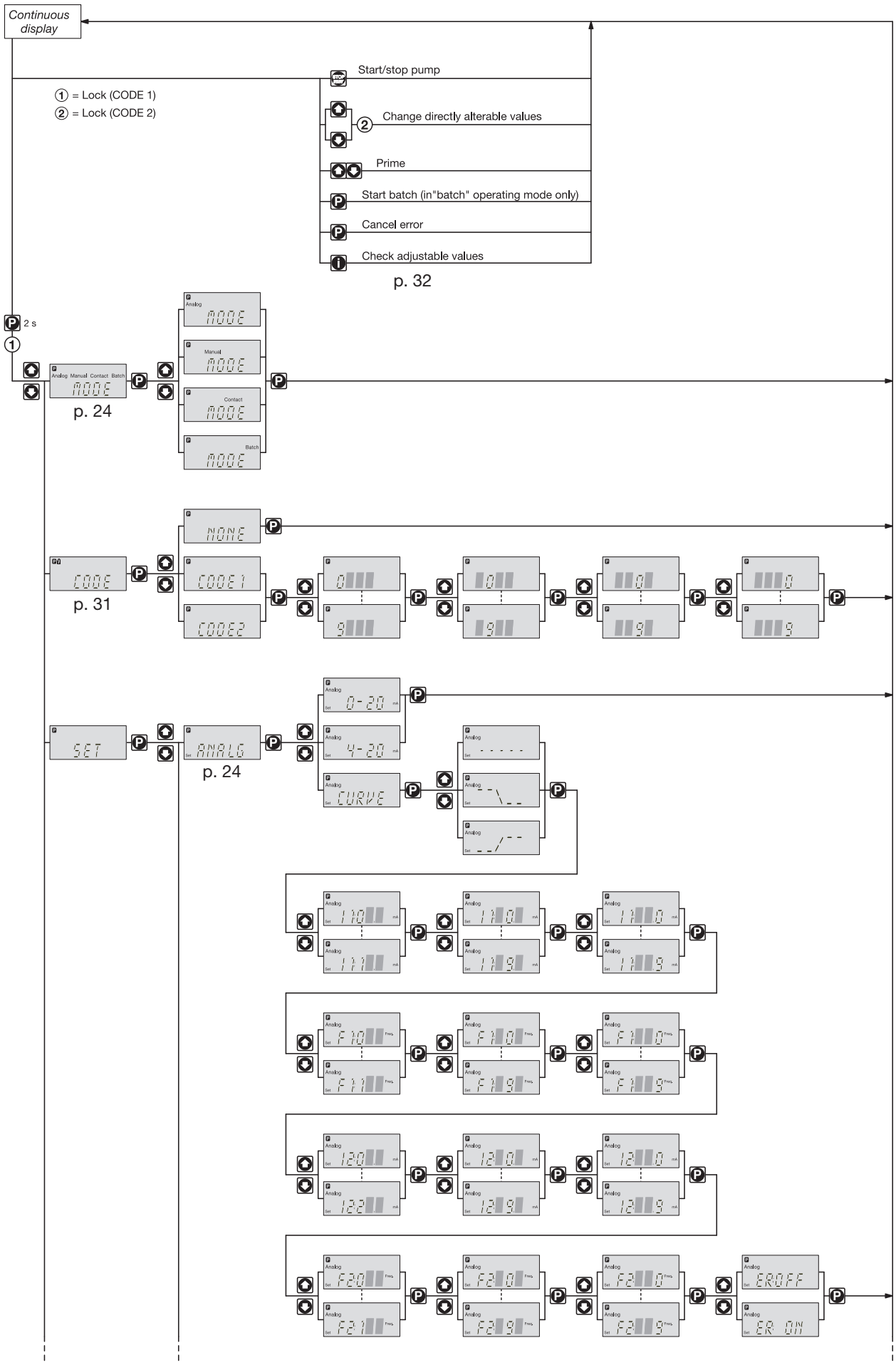
1 LCD display
2 Stroke length adjusting knob
3 UP key
4 P key
5 DOWN key
6 STOP/START key
7 i key
8 Fault indicator (red)
9 Warning indicator (yellow)
10 Operating indicator (green)

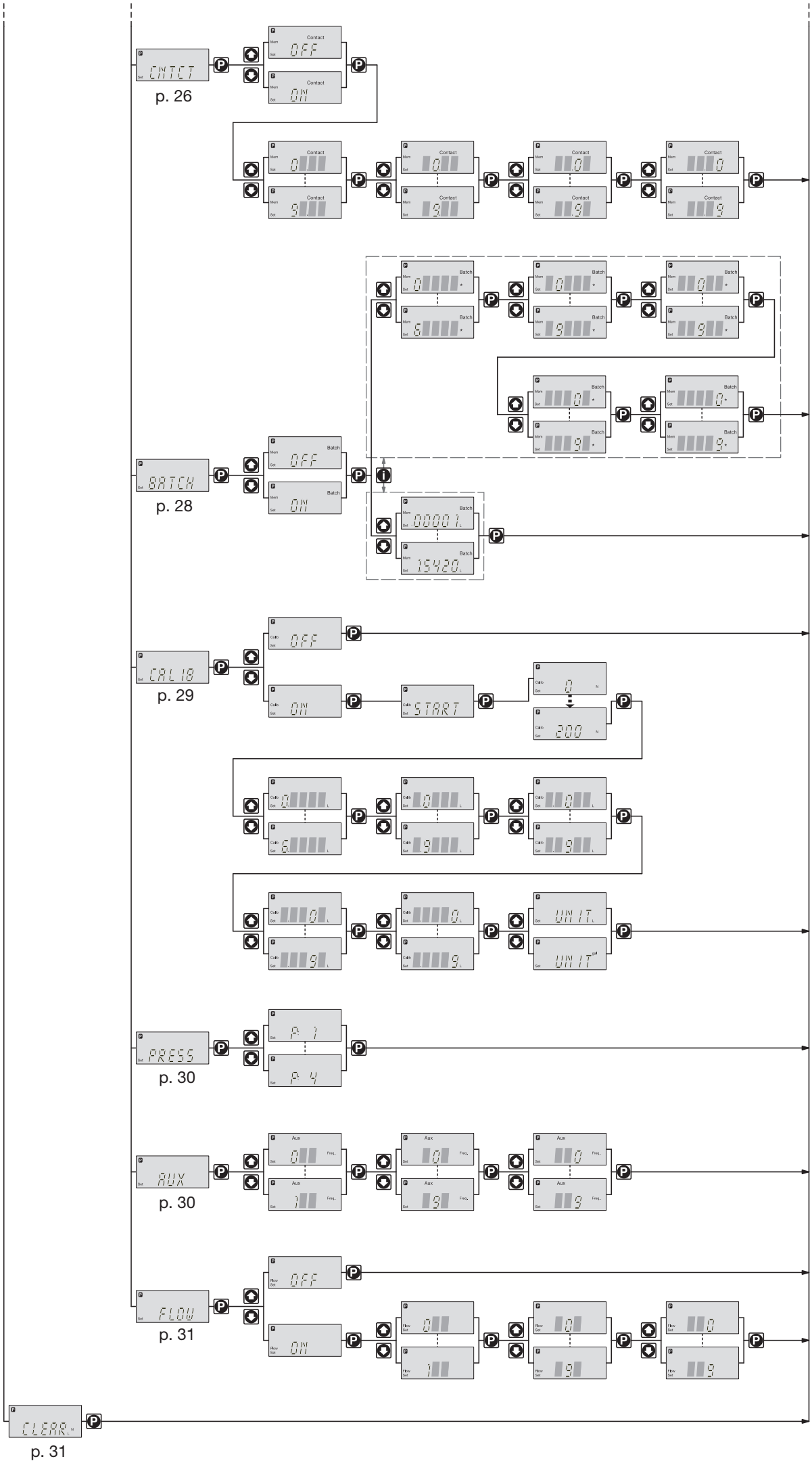
11 “Dosing monitor” terminal
12 “External control” terminal
13 “Float switch” terminal

Key functions

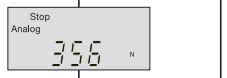
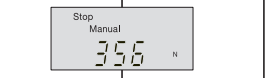
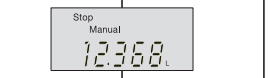
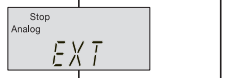
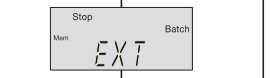
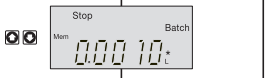
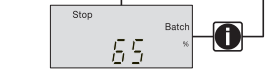
	In continuous display mode (operating)	In settings mode (settings)
STOP/START key		
Press briefly	Stop pump, start pump	Stop pump, start pump
P key		
Press briefly	Start batch (in “batch” operating mode only), Cancel error	Confirm entry- jump to next menu option or continuous display
Press for 2 s	Change to settings mode	---
Press for 3 s	---	Jump to continuous display
Press for 10 s	Display software version	---
Press for 15 s	Load factory settings (calibration)	---
Touche i		
Press x1	Toggle between continuous displays	Toggle between “change individual digits” and change a figure”
Press x2	---	For “change individual digits”: jumps to first digit
Arrow keys UP and DOWN		
Press x1 (until “Set” appears)	Change directly alterable values	Select other settings, change individual digit or figure
Press simultaneously	Prime	---

Operating-/Settings Diagram




CNTCT
OFF
ON
p. 26
BATCH
OFF
ON
p. 28
CALIB
OFF
ON
START
p. 29
PRESS
p. 30
AUX
p. 30
FLOW
OFF
ON
p. 31
CLEAR
p. 31

Continuous display

Continuous display	Operating mode "**Analog**" 0-20 mA	Operating mode "**Manual**"	Operating mode "**Contact**" with memory and tansfer factor 5	Operating mode "**Batch**" with memory and tansfer factor 5
Stroke rate				
Feed rate				
Total stroke number				
Total litres (feed quantity)				
"External" display				
Signal current				
Strokes remaining				
Batch size/ Litres remaining				
Factor				
Stroke length				

⏣⏣ = UP and/or DOWN arrow keys, directly alterable values

"Mem" appears only when "memory" function activated

Table of Contents

Identcode

Please enter the identity code on the device label into the grey box below

GALA — **GALA Series gamma/ L, version a**

Type	Capacity bar	Capacity l/h	
1000	10	0.74	Solenoid Ø 70/M70
1601	16	1,1	
1602	16	2.1	
1005	10	4.4	
0708	7	7.1	
0413	4	12.3	
0220	2	19.0	
1605	16	4.1	Solenoid Ø 85/M85
1008	10	6.8	
0713	7	11.0	
0420	4	17.1	
0232	2	32.0	

Material version:

PPE	Polypropylene/EPDM
PPB	Polypropylene/FPM
NPE	Acrylic glass/EPDM
NPB	Acrylic glass/FPM
PVT	PVDF/PTFE
TTT	PTFE/PTFE
SST	Stainless steel 1.4571/PTFE

Liquid end version:

0	Non-bleed, no valve spring, for NP, TT and SS only
1	Non-bleed, with valve spring, for NP, TT and SS only
2	Bleed function, no valve spring for PP, NP, PV, not type 0232
3	Bleed function, no valve spring for PP, NP, PV, not type 0232
4	No-vent with valve springs for highly viscous media
9	Self bleed function, for PP, NP, not for type 1000 and 0232

Hydraulic connection:

0	Standard connector as indicated in technical data
5	12/6 hose connector, pressure side only
9	10/4 hose connector, pressure side only

Version:

0	With ProMinent® logo

Power supply:

U	100 - 230 V, ±10 %, 50/60 Hz
M	12...24 V DC (only M 70)
N	24 V DC (only M 85)
P	24 V AC

Cable and plug:

A	2 m Euro
B	2 m Swiss
C	2 m Australian
D	2 m USA
1	2 m open end

Relay:

0	No relay
1	Fault indicating relay, (N/C) changeover relay
3	Fault indicating relay, (N/O) changeover relay
4	As 1 + pacing relay, (1 input each)
5	As 3 + pacing relay, (1 input each)

Accessories:

0	No accessories
1	Foot and dosing valve,, 2 m PVC suction tube, 5 m PE discharge tubing, PP, PC, and NP only
2	As 0 + calibrating cylinder
3	As 1 + calibrating cylinder

Control variants:

0	Manual + external 1:1
1	Manual + external with pulse control
2	Manual + external 1:1 with analogue current
3	Manual + external with pulse control + analogue current
4	as 0 + timer
5	as 3 + timer
P	as 3 + Profibus®

Access code:

0	No access code
1	Access code

Dosing monitoring:

0	Pulse input
1	Input for continuous contact

Pause/level:

0	Pause N/C level N/C

FPM = Fluorkautschuk

GALA ____ — — — — — — — — — — — —

General User Guidelines

Please read through the following user Guidelines. Familiarity with these points ensures optimum use of the operating instructions.

On the fold-out page after the title page you will find the overviews “control elements and key functions” and “operating/settings diagrams”.
You will find it useful to open out the “control elements and key functions” overview as you read this instruction manual.

Key points in the text are indicated as follows:

- Enumerated points

▶ Hints

Working Guidelines:

NOTE

Guidelines are intended to make your work easier.

Safety Guidelines and Safety information identified with pictographs (see Section 2).

The type identification label affixed to the title page is identical to that on the supplied gamma/ L pump, thus providing clear allocation of the operating instructions to the respective pump.

Please specify the identity code and the serial number provided on the type identification label in all correspondence or when ordering spare parts. This will enable us to clearly identify the pump type and material variants.

1 About This Pump

The pumps in the ProMinent® gamma/ L pump series are microprocessor controlled solenoid dosing pumps with the following special features:

- The feed rate can be displayed in l/h and/or gal/h (calibrated), or in strokes/min.
- The stroke rate is continuously adjustable and is displayed in the LCD display.
- Stroke rate adjustment is digitally accurate and is displayed in the LCD display.
- The rated pressure of the gamma/ L can be adapted to individual systems.
- Two pumps can be controlled in different ways via the same standard signal.
- Large, illuminated LCD display

The hydraulic parts of the gamma/ L are identical to those of the Beta®.

2 Safety

Identification of Safety Information

Keywords are used in these operating instructions for the different danger or hazard severity levels:

WARNING

Denotes a possibly dangerous or hazardous situation. If this situation is not avoided, fatal and serious injury may ensue.

CAUTION

Denotes a possibly dangerous or hazardous situation. If this situation is not avoided, minor to moderate injuries or damage may ensue.

These operating instructions use the following warnings for different types of danger:

WARNING of a dangerous/hazardous location

WARNING of dangerous electrical voltage

Correct use

The gamma/ L must be used for liquids only!
The gamma/ L may be used only in compliance with the technical data and specifications given in the operating instructions!
It is forbidden to use the gamma/ L for any other purpose, or to modify it in any way!
The gamma/ L is not suitable for dosing gases or solids!
The gamma/ L must be used by trained and authorised personnel only!
You must take notice of the information in the operating instructions concerning the various stages in the lifecycle of the device.

Safety Guidelines

WARNING

- **As soon as the gamma/ L is connected to the electricity supply it may commence pumping!**
  Avoid leakage of hazardous chemicals in this case!
  If this should occur, then press the STOP/START key or disconnect the gamma/ L from the power supply immediately!
- **Disconnect cable from the mains power supply before commencing work on the gamma/ L!**
- **Always depressurise liquid end before commencing work on the gamma/ L!**
- **Empty and rinse out the liquid end before commencing work on the gamma/ L after use with hazardous or unknown chemicals!**
- **Pumps for radioactive materials may not be returned to ProMinent after use!**

WARNING

- **The gamma/ L cannot be switched to a current-free status! In the event of an electrical accident, disconnect cable from the mains power supply!**

CAUTION

- **It is not permitted to assemble and install ProMinent® dosing pumps with non-original parts unless these have been checked and recommended by ProMinent. It can result in harm to persons and property for which no liability will be accepted!**
- **When dosing aggressive materials, check the resistance of the pump materials (see ProMinent® resistance list in the product catalogue!)**
- **If another liquid end size is installed the pump must be reprogrammed on factory premises!**
- **Observe applicable national directives during installation!**

Sound intensity level

The sound intensity level is < 70 dB (A) at maximum stroke, maximum stroke rate, maximum back pressure (water) in accordance with:
DIN EN 12639 (Metering Pump Noise Measurement)

3 Storage, Transport and Unpacking

Transport and store the gamma/ L in the original packaging!

Protect the packed gamma/ L from moisture and the effects of chemicals!
Environmental conditions for storage and transport:
Storage and transport temperature: -10 bis +50 °C
Humidity: < 92 % relative humidity

Check that the delivery is complete:

Delivery range

- Dosing pump with mains lead
- Operating instructions manual with EU conformity declaration
- Accessories if applicablesecteur