

### Construction

Medium-density polyethylene tank, resistant to corrosion, with minimum overall dimensions.

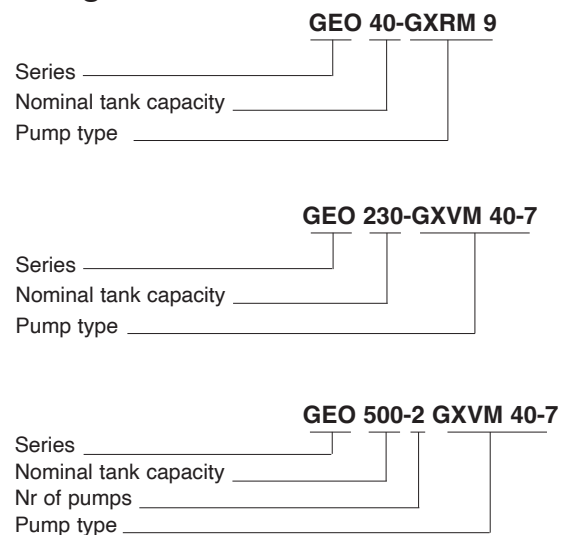
- **GEO 40** single tank with 40 liters nominal capacity for the installation of a GXRМ type.
- **GEO 230** single tank with 230 liters nominal capacity for the installation of an electropump type GM 10, GQ, GX or GM series.
- **GEO 500** double tank with 500 liters nominal capacity for the installation of two electropumps type GM 10, GQ, GX or GM series.

Pipe kit for electropump connection.  
 Two possible installation, at ground level or underground.  
 For underground installation, extensions can be used (maximum two extensions).  
 Easy pump access through a cover fixed with screws.

### Applications

Automatic waste water collecting and lifting stations, to handle domestic, civil and industrial waste water.  
 For collecting and lifting clean waste water and rain water.  
 For flood drainage.

### Designation

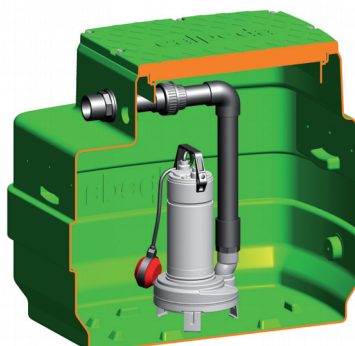


### Installation examples

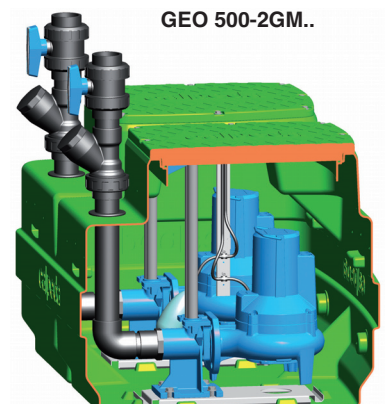
GEO 40-GXR



GEO 230-GX..



GEO 500-2GM..



### Pumps characteristics

GEO 40-GXRM

GEO 40-GXRM GF



#### Features

Automatic collecting and lifting station for clean water with GXRM pump type .

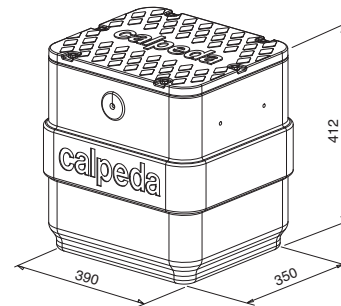
#### It includes:

- 1 tank capacity 40 l
- 1 single-phase pump with 5 m cable and float switch
- 1 non-return valve with clapet on the pump delivery side
- 1 discharge pipe kit arranged for the connection of a Ø 40 mm PVC pipe
- 1 PVC adapting nipple for Ø 40 mm inlet
- 1 connector for Ø 25 mm flexible pipe

#### On demand

- 1 pump with 10 m cable

Single-phase type	1 ~ 230 V		Q max m <sup>3</sup> /h	H max m
	kW	A		
GEO 40-GXRM 9	0,25	2,5	10,2	8,3
GEO 40-GXRM 9 GF	0,25	2,5	10,2	8,3
GEO 40-GXRM 11 GF	0,37	3,5	12	10,4
GEO 40-GXRM 13 GF	0,45	4,5	13,2	11,7



#### GXRM

Submersible drainage pump in chrome-nickel stainless steel, for clean water containing solids up to 10 mm grain size, with vertical delivery port.

Open impeller.

2-pole induction motor, 50Hz (n ≈ 2900 rpm),

Single-phase 230 V +/-10% with float switch and thermal protector.

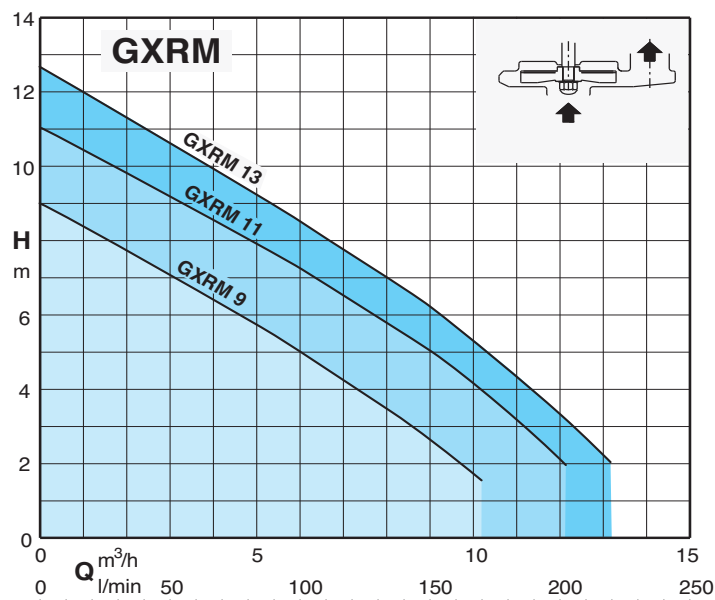
- GXRM: with standard float switch.

- GXRM .. GF: with vertical magnetic float switch.

Incorporated capacitor.

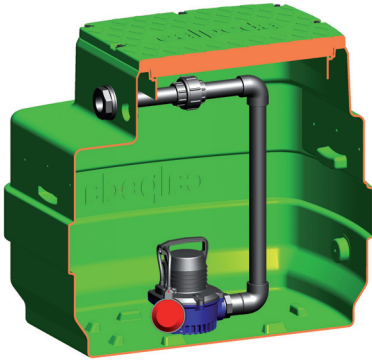
Cable length 5 m, Shuko plug.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 230-GM 10



#### Features

Automatic clear water collecting and lifting station GM 10 pump series.

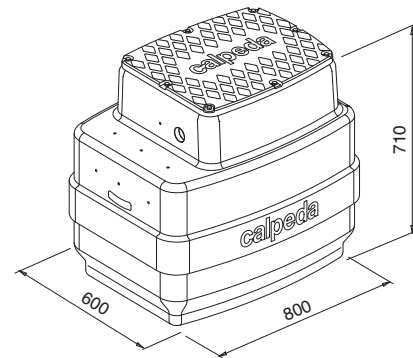
#### It includes:

- 1 tank capacity 230 l
- 1 single-phase pump with 5 m cable and float switch
- 1 control box QM 6,3 type with capacitor
- 1 discharge pipe kit Ø 40 mm in PVC

#### On demand

- 1 pump with 10 m cable
- 1 discharge pipe kit Ø 40 mm in PVC with a ball valve and non-return ball valve
- 1 support kit with safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m <sup>3</sup> /h	H max m
	kW	A		
<b>GEO 230-GM 10</b>	0,3	1,75	12	6,5



#### GM 10

Submersible drainage pump constructed from composite polymers.

Shaft of chrome steel AISI 430.

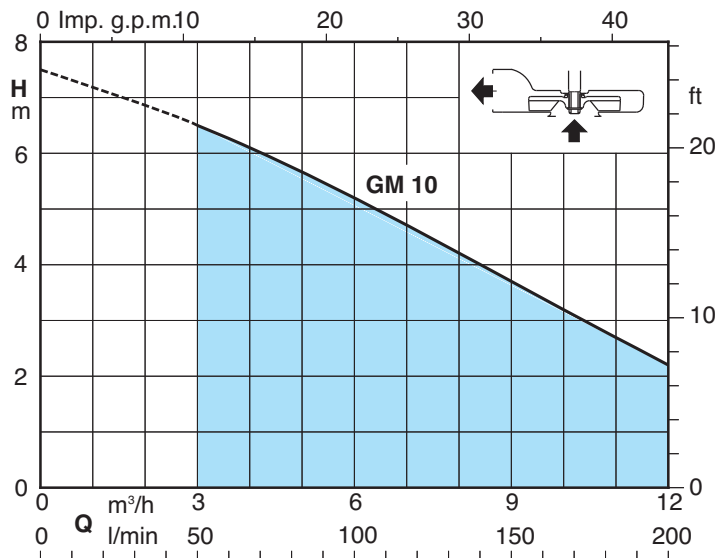
2-pole induction motor, 50Hz (n ≈ 2900 rpm).

Single-phase 230 V +/-10% with thermal protector.

Float switch for automatic operation.

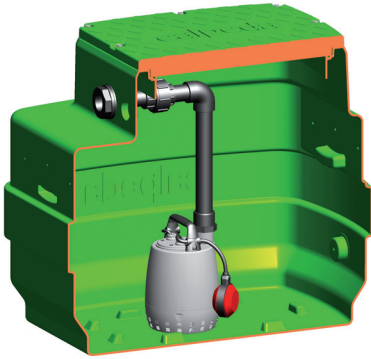
5 m cable and control box QM 6,3 with capacitor.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 230-GX..



#### Features

- Automatic collecting and lifting station - for clean water **GXR** pump series.
- for waste water **GXV** pump series.

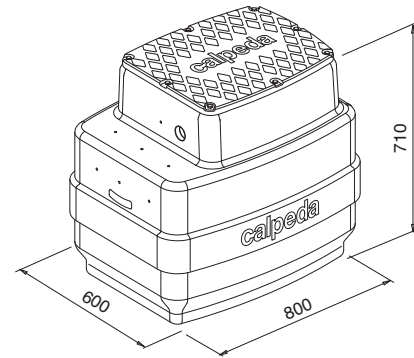
#### It includes:

- 1 tank capacity 230 l
- 1 single-phase pump with 5 m cable and float switch
- 1 discharge pipe kit Ø 40 mm in PVC

#### On demand

- 1 pump with 10 m cable
- 1 discharge pipe kit Ø 40 mm in PVC with a ball valve and non-return ball valve
- 1 support kit with safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 230-GXVM 25-6	0,25	2,5	10,2	5,7
GEO 230-GXVM 25-8	0,37	3,5	12	7,8
GEO 230-GXVM 25-10	0,45	4,5	13,2	9,5
GEO 230-GXRM 9	0,25	2,5	10,2	8,3
GEO 230-GXRM 11	0,37	3,5	12	10,4
GEO 230-GXRM 13	0,45	4,5	13,2	11,7



GXVM

GXR

#### GXR, GXVM

Submersible drainage pump in chrome-nickel stainless steel, with vertical delivery port.

**GXR**: with open impeller.

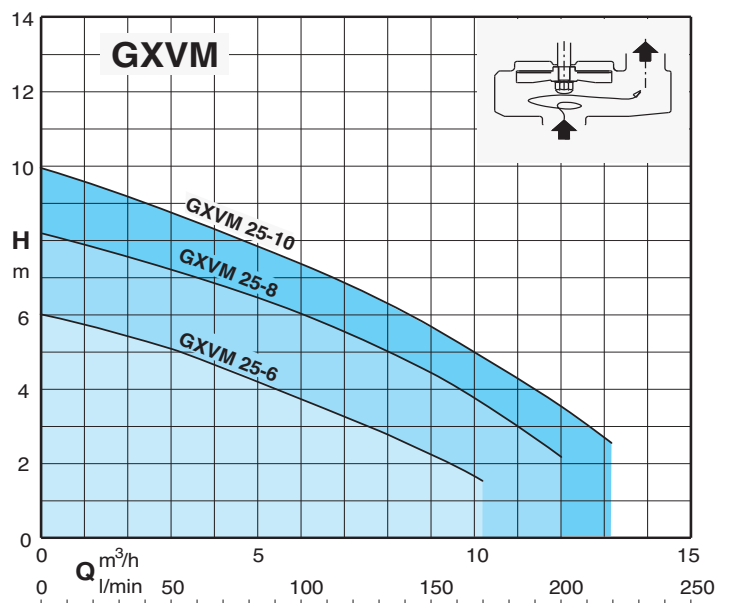
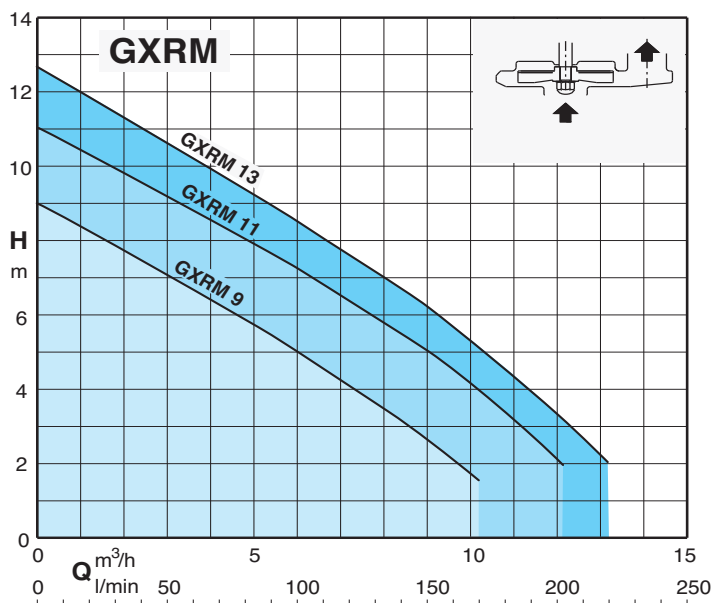
**GXVM**: with free-flow (vortex) impeller.

2-pole induction motor, 50Hz (n ≈ 2900 rpm),

Single-phase 230 V +/-10% with float switch and thermal protector. Incorporated capacitor.

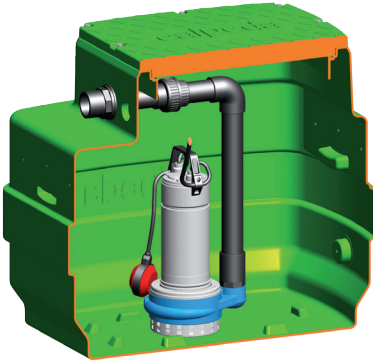
Cable length 5 m.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 230-QQR..



#### Features

Automatic collecting and lifting station for clean water with **GQR** pump series.

#### It includes:

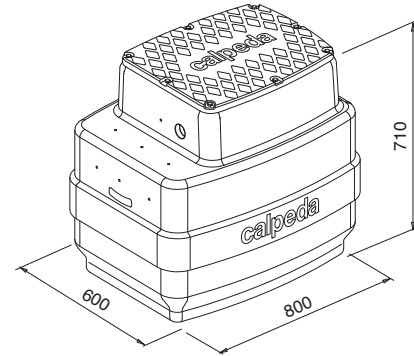
- 1 tank capacity 230 l
- 1 pump - single-phase with 10 m cable and float switch
  - three-phase with 10 m cable with support and float switch kit
- 1 control box for three-phase version
- 1 discharge pipe kit Ø 50 mm in PVC

#### On demand

- 1 discharge pipe kit Ø 50 mm in PVC with a ball valve and non-return ball valve
- 1 support kit with safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
  - extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
<b>GEO 230-QQRM 10-10</b>	0,45	3,1	18	9,5
<b>GEO 230-QQRM 10-12</b>	0,55	3,6	21	11,6
<b>GEO 230-QQRM 10-14</b>	0,75	4,6	24	13,5
<b>GEO 230-QQRM 10-16</b>	0,9	6	27	15,5
<b>GEO 230-QQRM 10-18</b>	1,1	8	30	17,5
<b>GEO 230-QQRM 10-20</b>	1,5	13	30	19,5

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
<b>GEO 230-QQR 10-10</b>	0,45	1,2	18	9,5
<b>GEO 230-QQR 10-12</b>	0,55	1,4	21	11,6
<b>GEO 230-QQR 10-14</b>	0,75	1,6	24	13,5
<b>GEO 230-QQR 10-16</b>	0,9	2,3	27	15,5
<b>GEO 230-QQR 10-18</b>	1,1	2,8	30	17,5
<b>GEO 230-QQR 10-20</b>	1,5	3,8	30	19,5



#### GQR

Single-impeller submersible drainage pump, with vertical delivery port.

**GQR:** with open impeller.

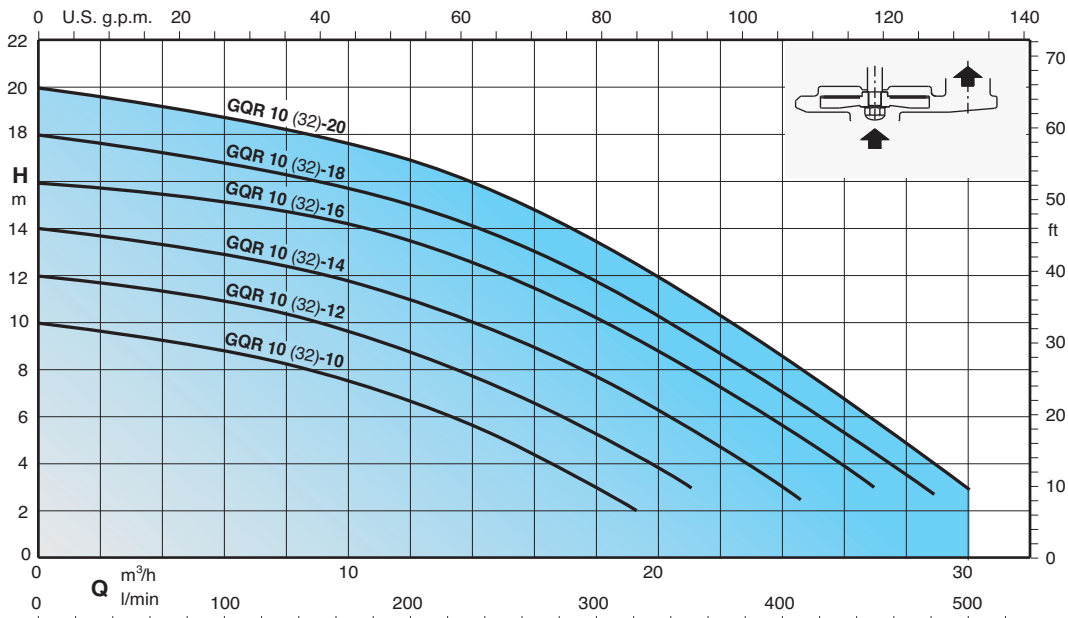
2-pole induction motor, 50Hz ( $n \approx 2900$  rpm),

**GQR:** three-phase 400 V +/-10%;

**QQRM:** Single-phase 230 V +/-10% with float switch and thermal protector. Incorporated capacitor.

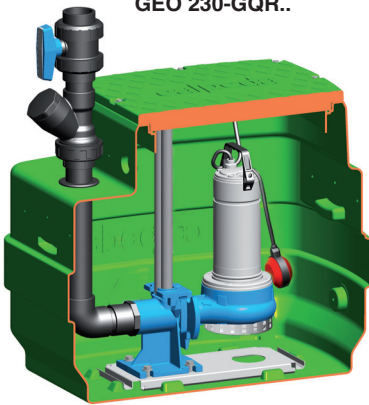
Cable length 10 m.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 230-GQR..



#### Features

Automatic collecting and lifting station for clean water with **GQR** pump series.

#### It includes:

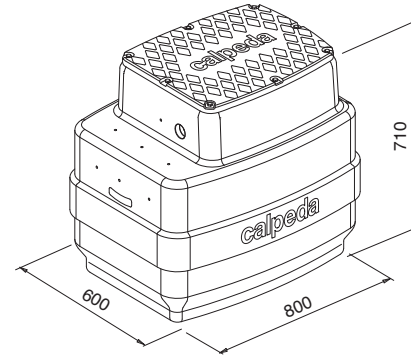
- 1 tank capacity 230 l
- 1 pump - single-phase 10 m cable and float switch
  - three-phase with 10 cable with support kit and float switch
- 1 control box for three-phase version
- 1 duck foot coupling kit
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch (with support for single-phase version) and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
<b>GEO 230-GQRM 10 32-10</b>	0,45	3,1	18	9,5
<b>GEO 230-GQRM 10 32-12</b>	0,55	3,6	21	11,6
<b>GEO 230-GQRM 10 32-14</b>	0,75	4,6	24	13,5
<b>GEO 230-GQRM 10 32-16</b>	0,9	6	27	15,5
<b>GEO 230-GQRM 10 32-18</b>	1,1	8	30	17,5
<b>GEO 230-GQRM 10 32-20</b>	1,5	13	30	19,5

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
<b>GEO 230-GQR 10 32-10</b>	0,45	1,2	18	9,5
<b>GEO 230-GQR 10 32-12</b>	0,55	1,4	21	11,6
<b>GEO 230-GQR 10 32-14</b>	0,75	1,6	24	13,5
<b>GEO 230-GQR 10 32-16</b>	0,9	2,3	27	15,5
<b>GEO 230-GQR 10 32-18</b>	1,1	2,8	30	17,5
<b>GEO 230-GQR 10 32-20</b>	1,5	3,8	30	19,5



#### GQR

Single-impeller submersible drainage pump, with horizontal delivery port.

**GQR:** with open impeller.

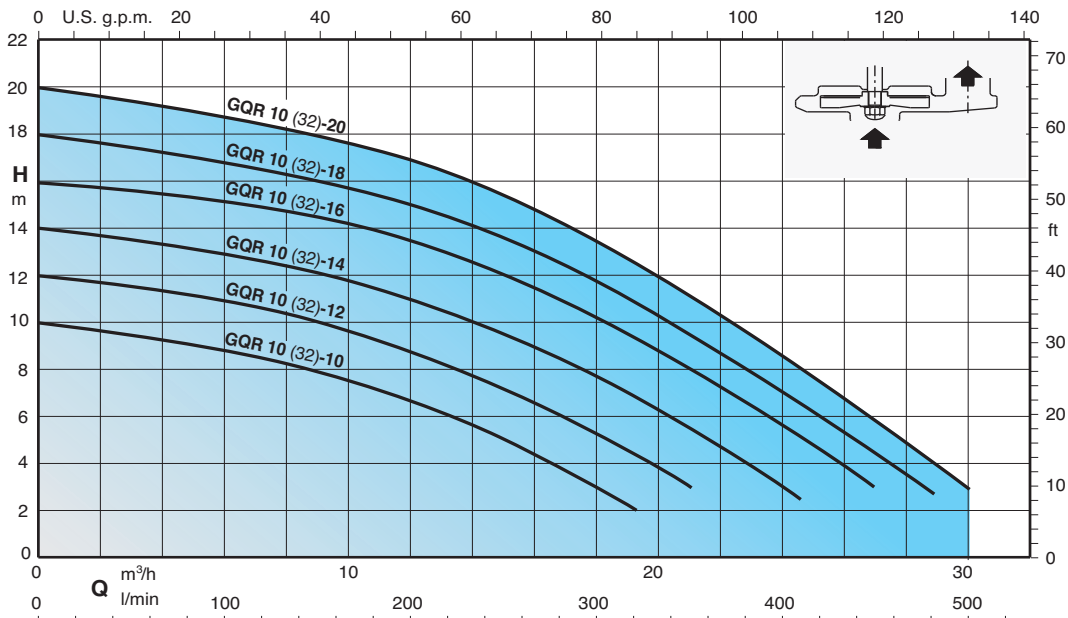
2-pole induction motor, 50Hz (n ≈ 2900 rpm),

**GQR:** three-phase 400 V +/-10%;

**GQRM:** Single-phase 230 V +/-10% with float switch and thermal protector. Incorporated capacitor.

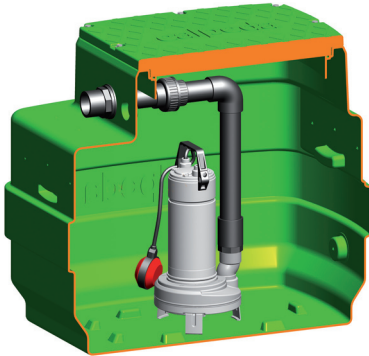
Cable length 10 m.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 230-GX..



#### Features

Automatic waste water collecting and lifting station GX 40 pump series.

#### It includes:

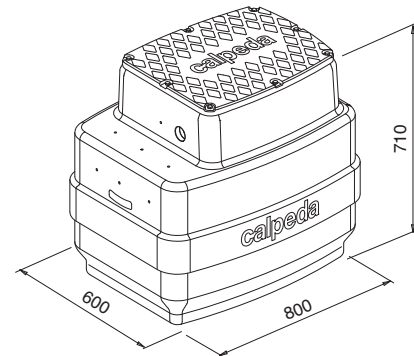
- 1 tank capacity 230 l
- 1 pump - single-phase with 10 m cable and float switch  
- three-phase with 10 m cable with support and float switch kit
- 1 control box for three-phase version
- 1 discharge pipe kit Ø 50 mm in PVC

#### On demand

- 1 discharge pipe kit Ø 50 mm in PVC with a ball valve and non-return ball valve
- 1 safety float switch (with support for single-phase version) and auto-supplied control panel for remote alarm with horn and flashing light - extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 230-GXCM 40-10	0,55	4,6	21	9
GEO 230-GXCM 40-13	0,9	6,6	26	11,6
GEO 230-GXVM 40-7	0,55	4,6	15	6,2
GEO 230-GXVM 40-8	0,75	5,4	18	7,2
GEO 230-GXVM 40-9	0,9	6	21	8,1

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 230-GXC 40-10	0,55	1,6	21	9
GEO 230-GXC 40-13	0,9	2,3	26	11,6
GEO 230-GXV 40-7	0,55	1,6	15	6,2
GEO 230-GXV 40-8	0,75	2,2	18	7,2
GEO 230-GXV 40-9	0,9	2,3	21	8,1



#### GXC, GXV

Submersible sewage and drainage pumps in chrome-nickel stainless steel, with vertical delivery port.

**GXC**, with two-passage impeller.

**GXV**: with free-flow (vortex) impeller

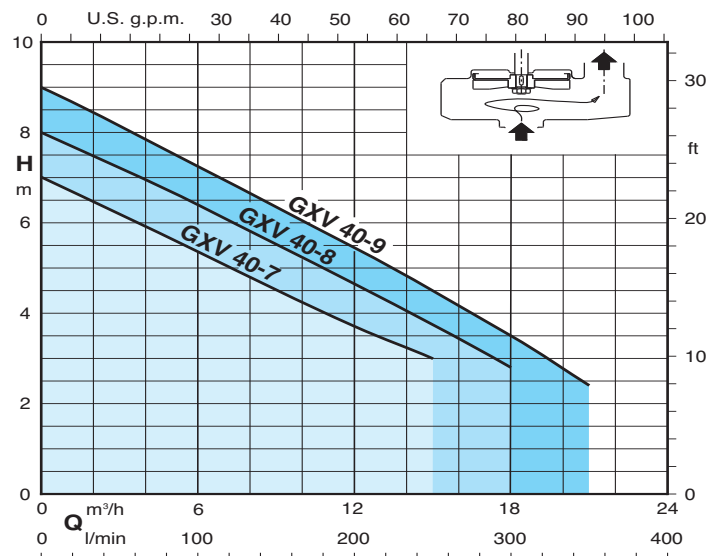
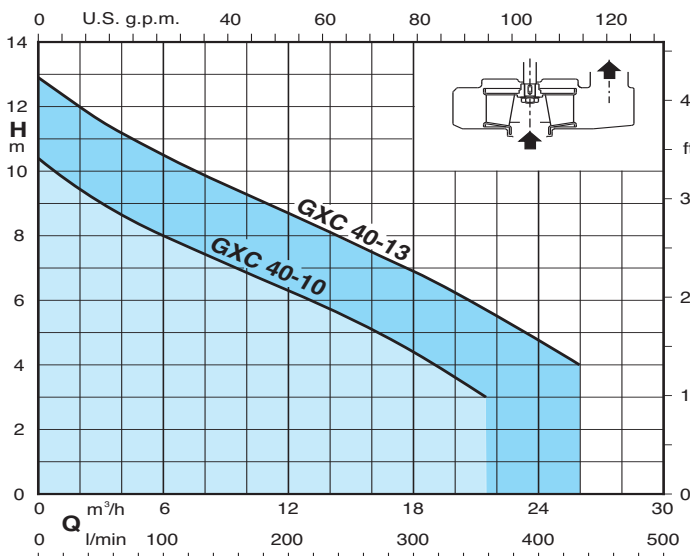
2-pole induction motor, 50Hz (n ≈ 2900 rpm).

**GXC, GXV**: three-phase 400 V; +/-10%

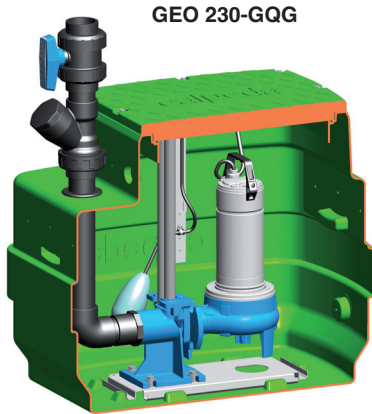
**GXCM, GXVM**: single-phase 230 V +/-10%, with float switch and thermal protector. Incorporated capacitor.

Cable length 10 m.

Liquid temperature up to 35 °C



### Pumps characteristics



GEO 230-GQG

#### Features

Automatic sewage water collecting and lifting station with grinder pumps GQG series.

#### It includes:

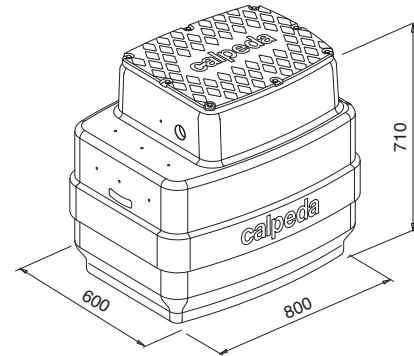
- 1 tank capacity 230 l
- 1 pump - single-phase with 10 m cable without float switch  
- three-phase with 10 m cable
- 1 support kit with float switch
- 1 control box (with capacitor for single-phase motors)
- 1 duck foot coupling kit
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 230-GQGM 6-18	0,9	7	13,2	16,5
GEO 230-GQGM 6-21	1,1	7,5	15	19,2
GEO 230-GQGM 6-25	1,5	9,5	16,8	23

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 230-GQG 6-18	0,9	2,3	13,2	16,5
GEO 230-GQG 6-21	1,1	2,8	15	19,2
GEO 230-GQG 6-25	1,5	3,8	16,8	23



#### GQG

Submersible pumps with high power grinder, with horizontal delivery port.

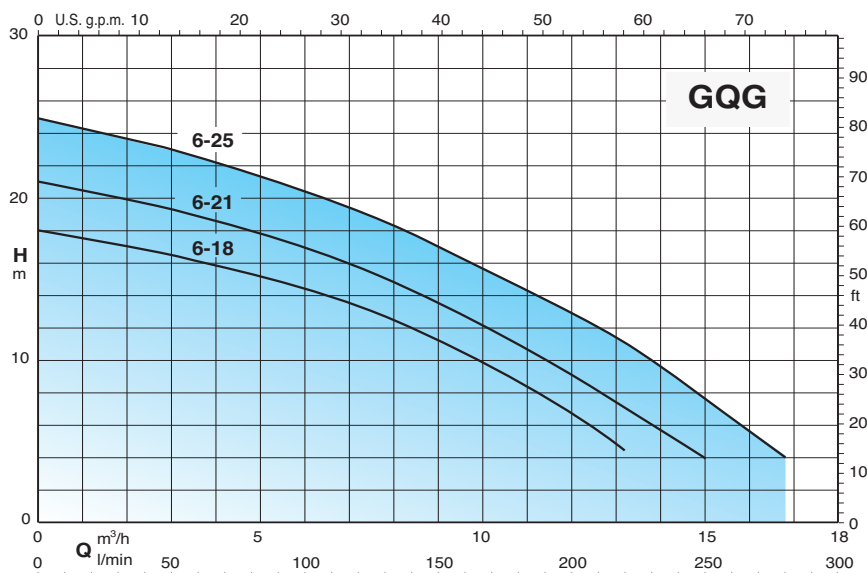
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

**GQG:** three-phase 400 V +/-10%;

**GQGM:** Single-phase 230 V +/-10% complete control box with thermal protector and capacitors (without float switch).

10 m cable.

Liquid temperature up to 35 °C.

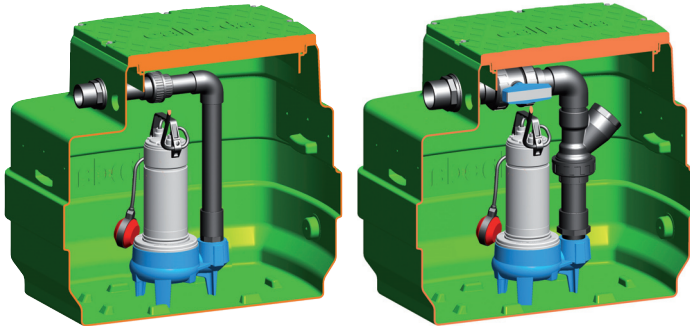




### Pumps characteristics

GEO 230-GQS 40

GEO 230-GQS 50



### Features

Automatic waste water collecting and lifting station GQS series.

### It includes:

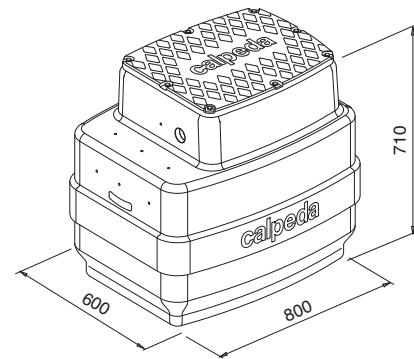
- 1 tank capacity 230 l
- 1 pump - single-phase 10 m cable and float switch
  - three-phase with 10 cable with support kit and float switch
- 1 control box for three-phase version
- For GQS 40: 1 discharge pipe kit Ø 50 mm in PVC
- For GQS 50: 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

### On demand

- For GQS 40: 1 discharge pipe kit Ø 50 mm in PVC with a ball valve and non-return ball valve
- 1 safety float switch (with support for single-phase version) and auto-supplied control panel for remote alarm with horn and flashing light - extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 230-GQSM 40-9	0,45	4,5	21	8,8
GEO 230-GQSM 50-8	0,55	4,3	24	7,4
GEO 230-GQSM 50-9	0,75	4,8	27	8,8
GEO 230-GQSM 50-11	0,9	6,6	33	10,5
GEO 230-GQSM 50-13	1,1	8,4	36	12,5
GEO 230-GQSM 50-15	1,5	13	36	14,4

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 230-GQS 40-9	0,45	1,6	21	8,8
GEO 230-GQS 50-8	0,55	1,5	24	7,4
GEO 230-GQS 50-9	0,75	1,8	27	8,8
GEO 230-GQS 50-11	0,9	2,3	33	10,5
GEO 230-GQS 50-13	1,1	3	36	12,5
GEO 230-GQS 50-15	1,5	4	36	14,4



### GQS

Single-impeller submersible pumps, with vertical delivery port.

**GQS:** with free-flow (vortex) impeller

2-pole induction motor, 50Hz (n ≈ 2900 rpm)

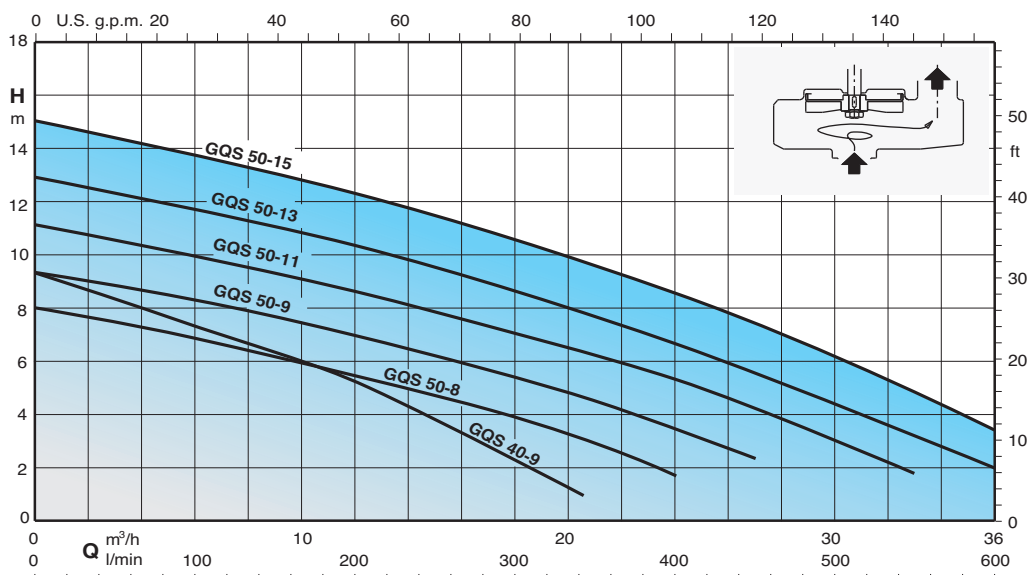
**GQS:** three-phase 400 V +/-10%;

**GQSM:** single-phase 230 V +/-10%, with float switch and thermal protector.

Incorporated capacitor.

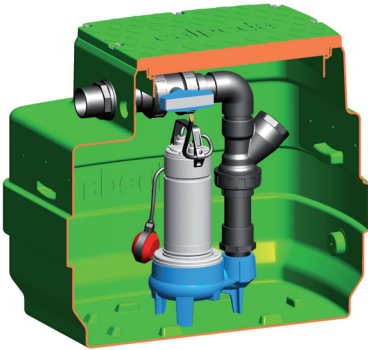
Cable length 10 m.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 230-GQN



#### Features

Automatic waste water collecting and lifting station GQN series.

#### It includes:

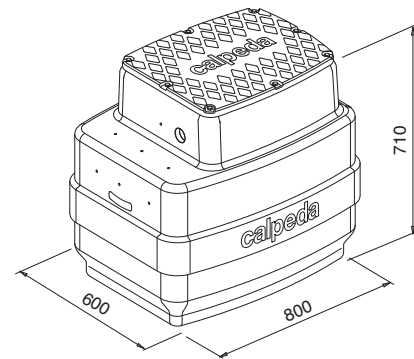
- 1 tank capacity 230 l
- 1 pump - single-phase 10 m cable and float switch
  - three-phase with 10 cable with support kit and float switch
- 1 control box for three-phase version
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch (with support for single-phase version) and auto-supplied control panel for remote alarm with horn and flashing light
  - extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
<b>GEO 230-GQNM 50-13</b>	0,9	6,6	36	11,6
<b>GEO 230-GQNM 50-15</b>	1,1	8,4	42	13,5
<b>GEO 230-GQNM 50-17</b>	1,5	12	48	15,7

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
<b>GEO 230-GQN 50-13</b>	0,9	2,3	36	11,6
<b>GEO 230-GQN 50-15</b>	1,1	3,3	42	13,5
<b>GEO 230-GQN 50-17</b>	1,5	4,5	48	15,7



#### GQN

Single-impeller submersible pumps, with vertical delivery port.

**GQN:** with channels impeller (with two-passage)

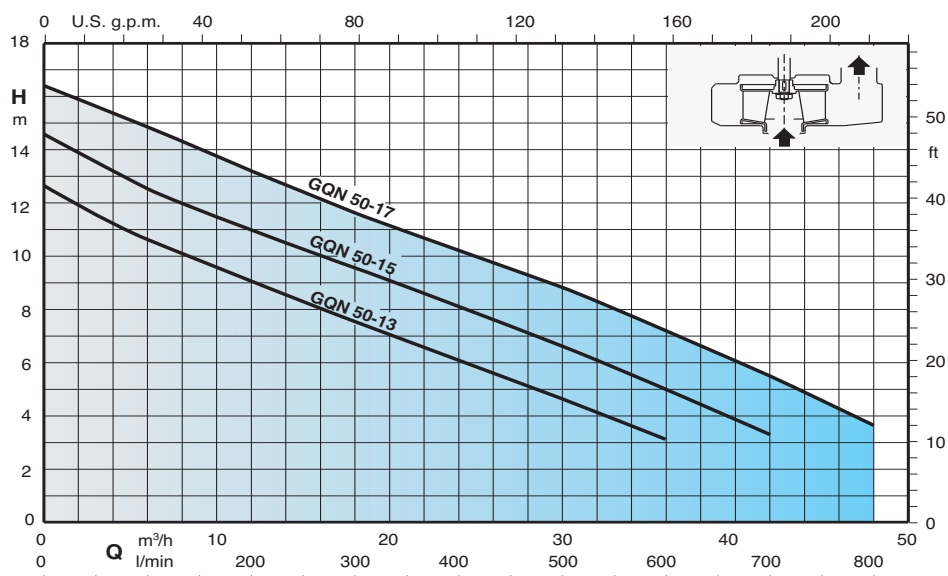
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

**GQN:** three-phase 400 V +/-10%;

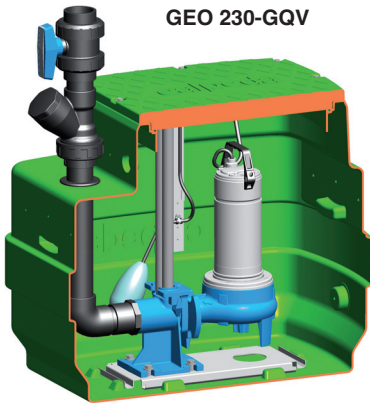
**GQNM:** single-phase 230 V +/-10%, with float switch and thermal protector.  
Incorporated capacitor.

Cable length 10 m.

Liquid temperature up to 35 °C



### Pumps characteristics



GEO 230-GQV

#### Features

Automatic waste water collecting and lifting station GQV series.

#### It includes:

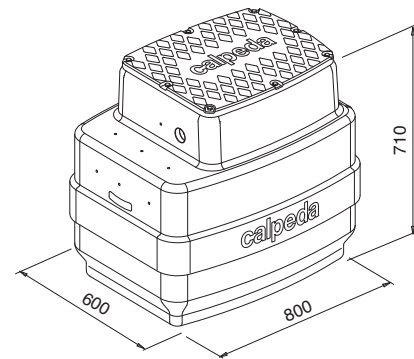
- 1 tank capacity 230 l
- 1 pump - single-phase with 10 m cable, without float switch
  - three-phase with 10 cable, without float switch
- 1 support kit with float switch
- 1 control box
- 1 duck foot coupling kit
- 1 discharge pipe kit Ø 63 mm in PVC/inox with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 230-GQVM 50-8	0,55	4,3	24	7,4
GEO 230-GQVM 50-9	0,75	4,8	27	8,8
GEO 230-GQVM 50-11	0,9	6,6	33	10,5
GEO 230-GQVM 50-13	1,1	8,4	36	12,5
GEO 230-GQVM 50-15	1,5	13	36	14,4

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 230-GQV 50-8	0,55	1,5	24	7,4
GEO 230-GQV 50-9	0,75	1,8	27	8,8
GEO 230-GQV 50-11	0,9	2,3	33	10,5
GEO 230-GQV 50-13	1,1	3	36	12,5
GEO 230-GQV 50-15	1,5	4	36	14,4



### GQV

Single-impeller submersible pumps, with horizontal delivery port.

**GQV:** with free-flow (vortex) impeller

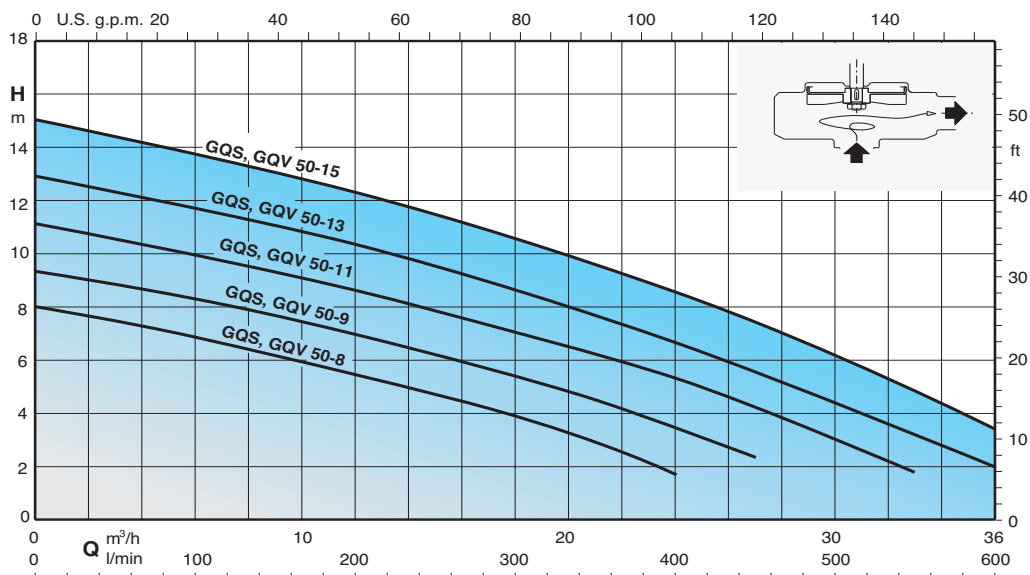
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

**GQV:** three-phase 400 V +/-10%;

**GQVM:** single-phase 230 V +/-10%, with thermal protector, with built-in capacitor (without float switch).

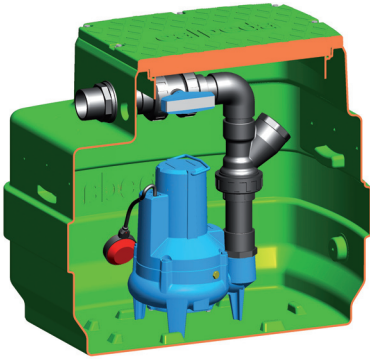
Cable length 10 m.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 230-GM..



#### Features

Automatic waste water collecting and lifting station GMV, GMC series.

#### It includes:

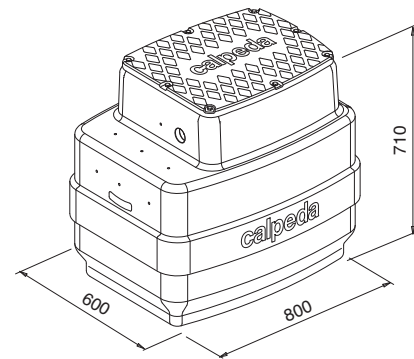
- 1 tank capacity 230 l
- 1 pump - single-phase 10 m cable and float switch
  - three-phase with 10 cable with support kit and float switch
- 1 control box for three-phase version
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch (with support for single-phase version) and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 230-GMCM 50CE	0,75	4,5	36	9,5
GEO 230-GMCM 50BE	1,1	6,5	42	12,5
GEO 230-GMVM 50CE	0,75	4,5	31	8
GEO 230-GMVM 50BE	1,1	6,5	35	9,5

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 230-GMC 50CE	0,75	1,9	36	9,5
GEO 230-GMC 50BE	1,1	2,7	42	12,5
GEO 230-GMC 50AE	1,5	3,8	48	14,5
GEO 230-GMV 50CE	0,75	1,9	31	8
GEO 230-GMV 50BE	1,1	2,7	35	9,5
GEO 230-GMV 50AE	1,5	3,8	39	11,5



#### GMC, GMV

Submersible sewage and drainage pumps.

**GMC**, with single-channel impeller.

**GMV**, with free-flow (vortex) impeller.

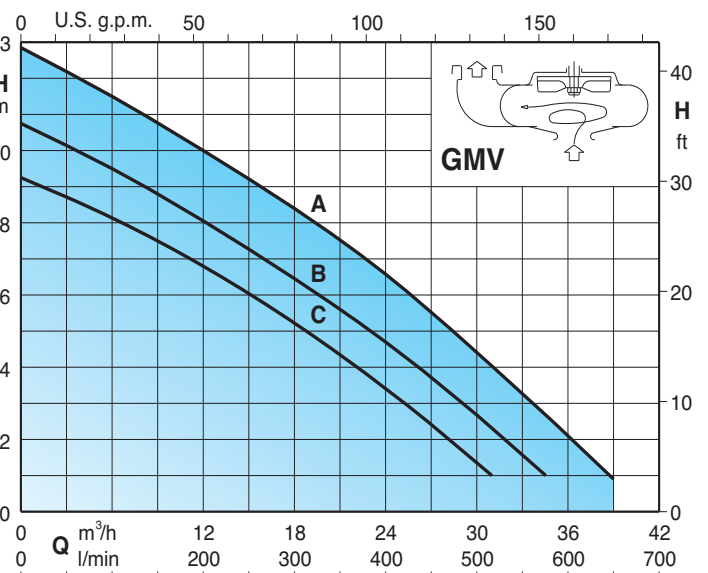
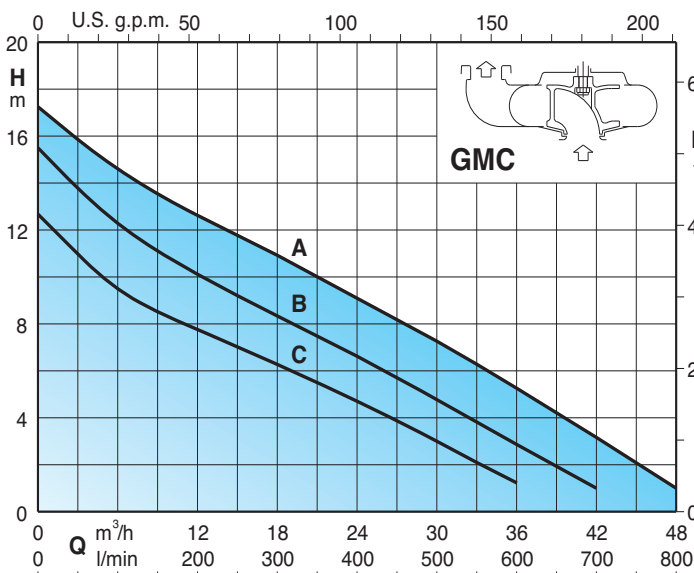
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

**GMV, GMC:** three-phase 400 V +/-10%;  
with 2 built-in thermal protectors to be connected to the control panel.

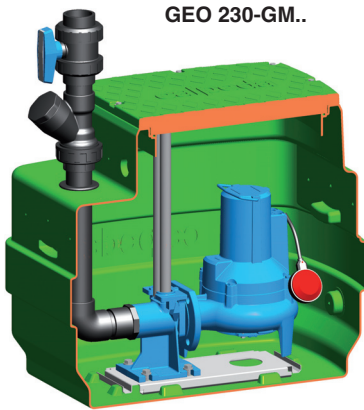
**GMVM, GMVM:** single-phase 230 V ± 10%, built-in thermal protector and built-in capacitor.  
Float switch for automatic operation.

Cable length 10 m.

Liquid temperature up to 35 °C.



### Pumps characteristics



#### Features

Automatic waste water collecting and lifting station GMV, GMC series.

#### It includes:

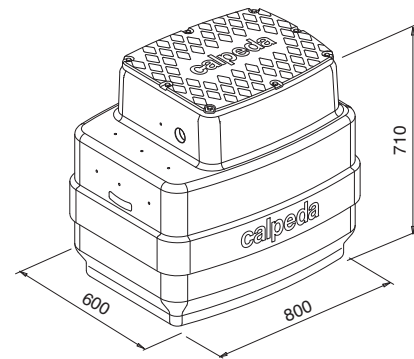
- 1 tank capacity 230 l
- 1 pump - single-phase 10 m cable and float switch
  - three-phase with 10 cable with support kit and float switch
- 1 control box for three-phase version
- 1 duck foot coupling kit
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch (with support for single-phase version) and auto-supplied control panel for remote alarm with horn and flashing light - extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 230-GMCM 50-65C	0,75	4,5	36	9,5
GEO 230-GMCM 50-65B	1,1	6,5	42	12,5
GEO 230-GMVM 50-65C	0,75	4,5	31	8
GEO 230-GMVM 50-65B	1,1	6,5	35	9,5

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 230-GMC 50-65C	0,75	1,9	36	9,5
GEO 230-GMC 50-65B	1,1	2,7	42	12,5
GEO 230-GMC 50-65A	1,5	3,8	48	14,5
GEO 230-GMV 50-65C	0,75	1,9	31	8
GEO 230-GMV 50-65B	1,1	2,7	35	9,5
GEO 230-GMV 50-65A	1,5	3,8	39	11,5



#### GMC, GMV

Submersible sewage and drainage pumps.

**GMC**, with single-channel impeller.

**GMV**, with free-flow (vortex) impeller.

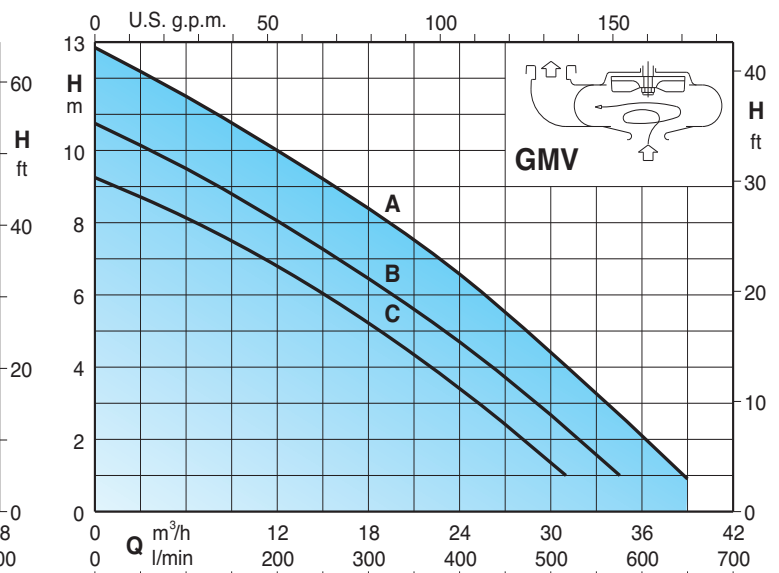
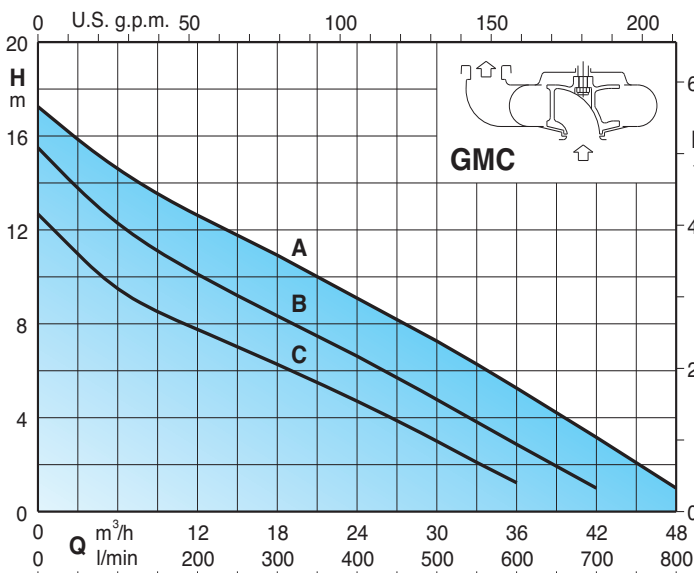
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

**GMV, GMC:** three-phase 400 V +/-10%;  
with 2 built-in thermal protectors to be connected to the control panel.

**GMVM, GMVM:** single-phase 230 V ± 10%, built-in thermal protector and built-in capacitor.  
Float switch for automatic operation.

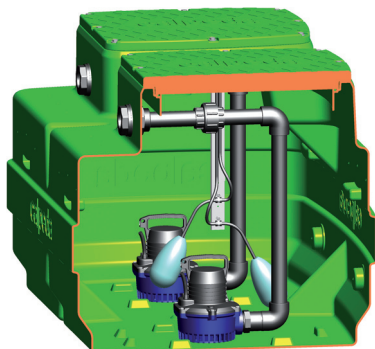
Cable length 10 m.

Liquid temperature up to 35 °C.



### Pumps characteristics

GEO 500-GM 10



#### Features

Automatic clear water collecting and lifting station with GM 10 pump series.

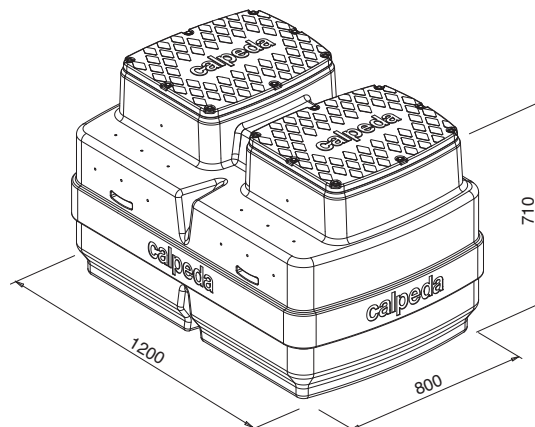
#### It includes:

- 1 tank capacity 500 l
- 2 single-phase pump with 5 m cable without float switch
- 1 support kit with 2 float switch
- 1 control box
- 2 discharge pipe kit  $\varnothing$  40 mm in PVC

#### On demand

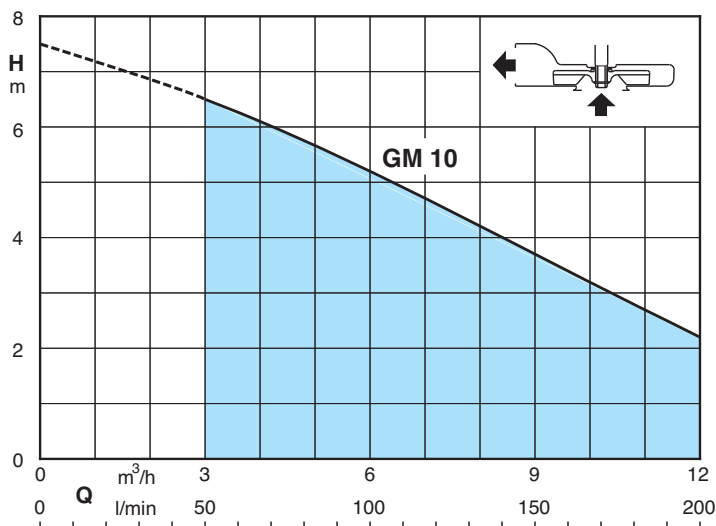
- 2 single-phase pumps with 10 m cable, without float switch
- 2 discharge pipe kit  $\varnothing$  40 mm in PVC with a ball valve and non-return ball valve
- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light

Single-phase type	1 ~ 230 V		Q max m <sup>3</sup> /h	H max m
	kW	A		
<b>GEO 500-2GM 10</b>	0,3x2	1,75x2	12x2	6,5



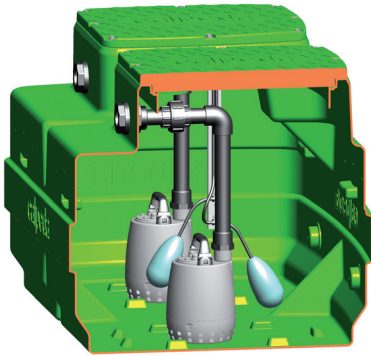
#### GM 10

Submersible drainage pump constructed from composite polymers.  
 Shaft of chrome steel AISI 430.  
 2-pole induction motor, 50Hz ( $n \approx 2900$  rpm).  
 Single-phase 230 V +/-10% with thermal protector (without float switch).  
 5 m cable and control box with capacitor.  
 Liquid temperature up to 35 °C



### Pumps characteristics

GEO 500-2GX..



#### Features

Automatic collecting and lifting station - for clean water with **GXR** pump series  
- for waste water with **GXV** pump series.

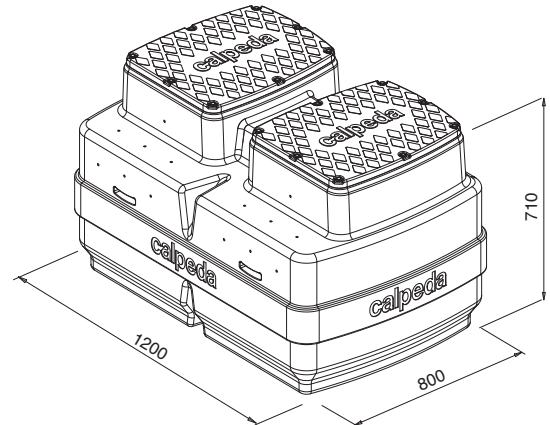
#### It includes:

- 1 tank capacity 500 l
- 2 single-phase pump with 5 m cable without float switch
- 1 support kit with 2 float switch
- 1 control box
- 2 discharge pipe kit Ø 40 mm in PVC

#### On demand

- 2 single-phase pumps with 10 m cable, without float switch
- 2 discharge pipe kit Ø 40 mm in PVC with a ball valve and non-return ball valve
- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GXVM 25-6	0,25x2	2,5x2	10,2x2	5,7
GEO 500-2GXVM 25-8	0,37x2	3,5x2	12x2	7,8
GEO 500-2GXVM 25-10	0,45x2	4,5x2	13,2x2	9,5
GEO 500-2GXRM 9	0,25x2	2,5x2	10,2x2	8,3
GEO 500-2GXRM 11	0,37x2	3,5x2	12x2	10,4
GEO 500-2GXRM 13	0,45x2	4,5x2	13,2x2	11,7



GXR

GXV

#### GXR, GXV

Submersible drainage pump in chrome-nickel stainless steel, with vertical delivery port.

**GXR**: with open impeller.

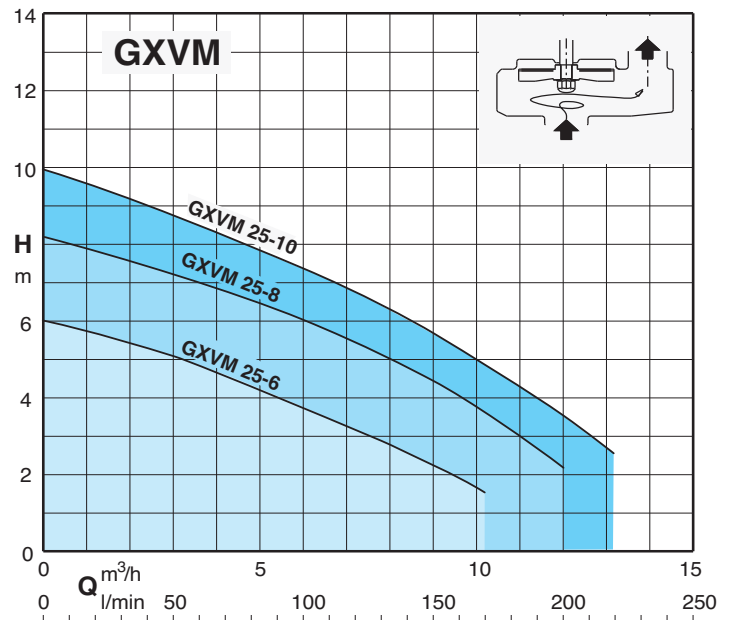
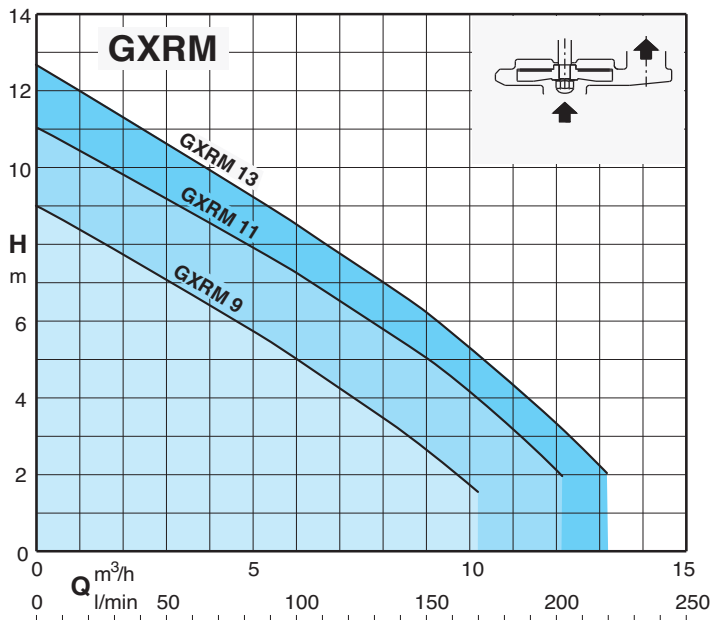
**GXV**: with free-flow (vortex) impeller.

2-pole induction motor, 50Hz (n ≈ 2900 rpm),

Single-phase 230 V +/-10% with thermal protector. Incorporated capacitor.

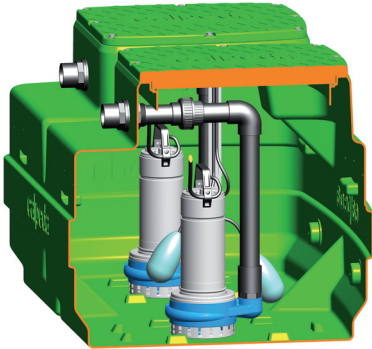
Cable length 5 m.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 500-2GQR



#### Features

Automatic collecting and lifting station for clean water with GQR pump series

#### It includes:

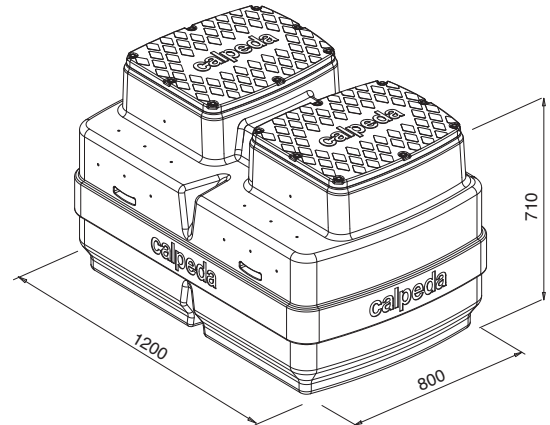
- 1 tank capacity 500 l
- 2 pumps - single-phase with 10 m cable without float switch  
- three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 control box
- 2 discharge pipe kit Ø 50 mm in PVC

#### On demand

- 2 discharge pipe kit Ø 50 mm in PVC with a ball valve and non-return ball valve
- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GQRM 10-10	0,45x2	3,1x2	18x2	9,5
GEO 500-2GQRM 10-12	0,55x2	3,6x2	21x2	11,6
GEO 500-2GQRM 10-14	0,75x2	4,6x2	24x2	13,5
GEO 500-2GQRM 10-16	0,9x2	6x2	27x2	15,5
GEO 500-2GQRM 10-18	1,1x2	8x2	30x2	17,5
GEO 500-2GQRM 10-20	1,5x2	13 x2	30x2	19,5

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GQR 10-10	0,45x2	1,2x2	18x2	9,5
GEO 500-2GQR 10-12	0,55x2	1,4x2	21x2	11,6
GEO 500-2GQR 10-14	0,75x2	1,6x2	24x2	13,5
GEO 500-2GQR 10-16	0,9x2	2,3x2	27x2	15,5
GEO 500-2GQR 10-18	1,1x2	2,8x2	30x2	17,5
GEO 500-2GQR 10-20	1,5x2	3,8x2	30x2	19,5



#### GQR

Single-impeller submersible drainage pump, with vertical delivery port.

**GQR:** with open impeller.

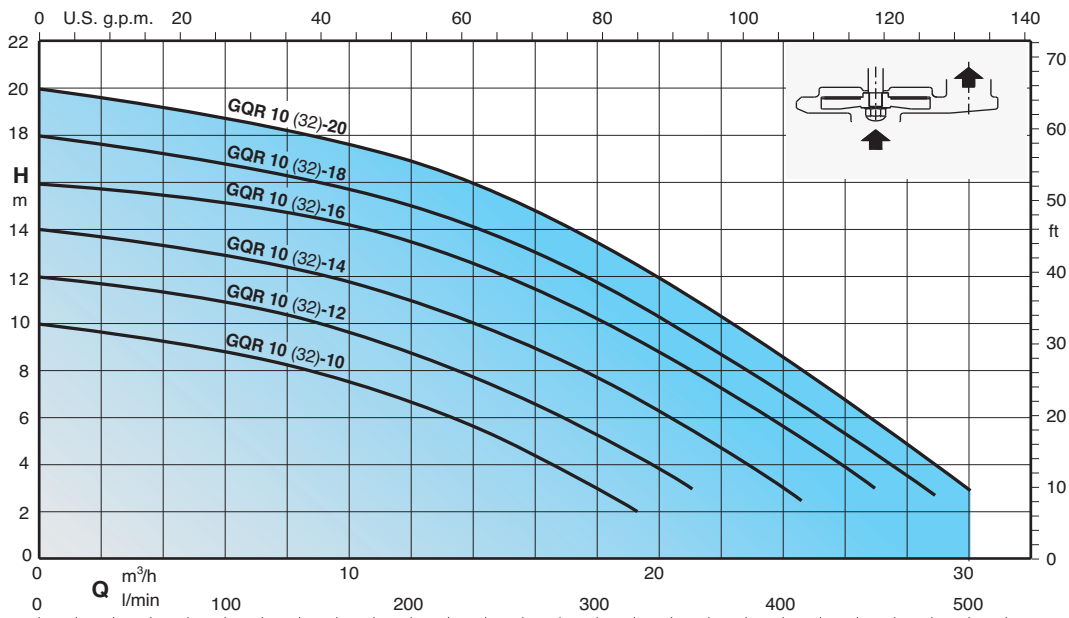
2-pole induction motor, 50Hz ( $n \approx 2900$  rpm),

**GQR:** three-phase 400 V +/-10%;

**GQRM:** Single-phase 230 V +/-10% with thermal protector and incorporated capacitor (without float switch).

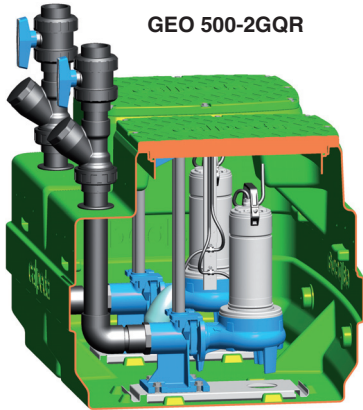
Cable length 10 m.

Liquid temperature up to 35 °C.





### Pumps characteristics



GEO 500-2GQR

#### Features

Automatic waste water collecting and lifting station with GQR pump series.

#### It includes:

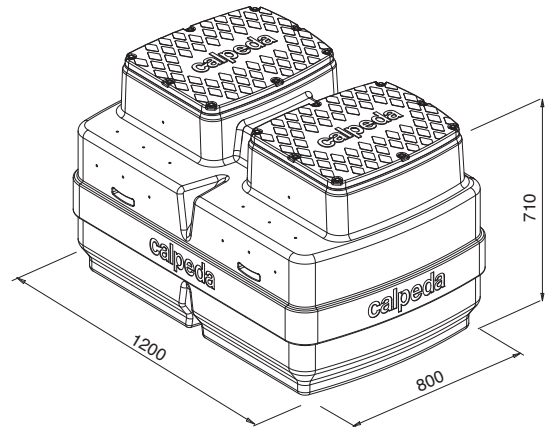
- 1 tank capacity 500 l
- 2 pumps - single-phase 10 m cable without float switch
  - three-phase with 10 cable
- 1 support kit with 2 float switch
- 1 control box
- 2 duck foot coupling kit
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch and auto-supplied control panel for remote alarm
  - with horn and flashing light
  - extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GQRM 10 32-10	0,45x2	3,1x2	18x2	9,5
GEO 500-2GQRM 10 32-12	0,55x2	3,6x2	21x2	11,6
GEO 500-2GQRM 10 32-14	0,75x2	4,6x2	24x2	13,5
GEO 500-2GQRM 10 32-16	0,9x2	6x2	27x2	15,5
GEO 500-2GQRM 10 32-18	1,1x2	8x2	30x2	17,5
GEO 500-2GQRM 10 32-20	1,5x2	13x2	30x2	19,5

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GQR 10 32-10	0,45x2	1,2x2	18x2	9,5
GEO 500-2GQR 10 32-12	0,55x2	1,4x2	21x2	11,6
GEO 500-2GQR 10 32-14	0,75x2	1,6x2	24x2	13,5
GEO 500-2GQR 10 32-16	0,9x2	2,3x2	27x2	15,5
GEO 500-2GQR 10 32-18	1,1x2	2,8x2	30x2	17,5
GEO 500-2GQR 10 32-20	1,5x2	3,8x2	30x2	19,5



#### GQR

Single-impeller submersible drainage pump, with horizontal delivery port.

**GQR:** with open impeller.

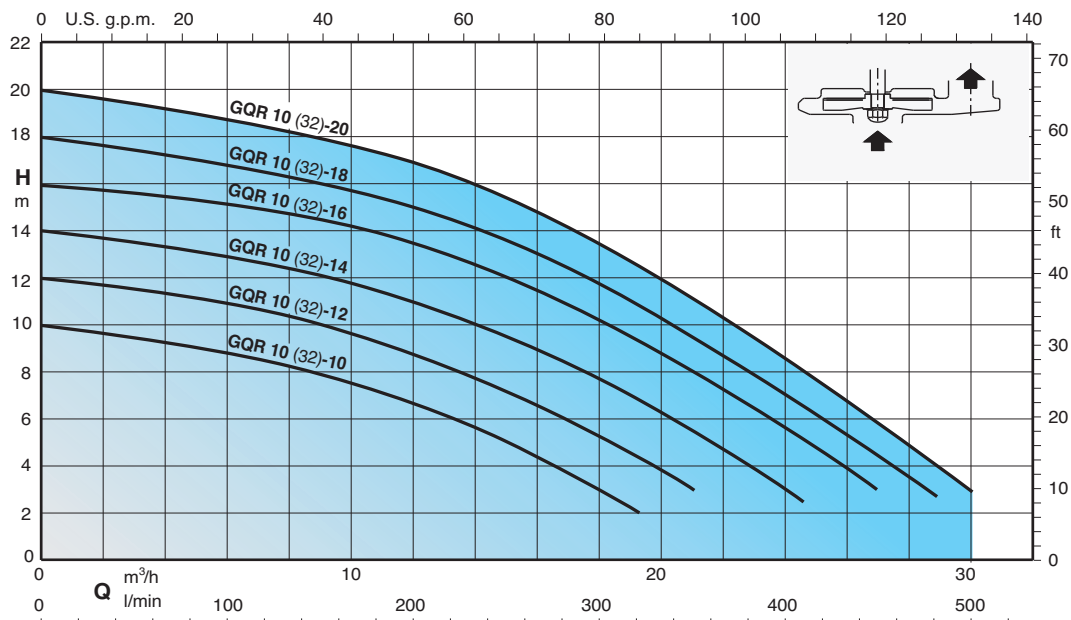
2-pole induction motor, 50Hz (n ≈ 2900 rpm),

**GQR:** three-phase 400 V +/-10%;

**GQRM:** single-phase 230 V +/-10%, with thermal protector, with built-in capacitor (without float switch).

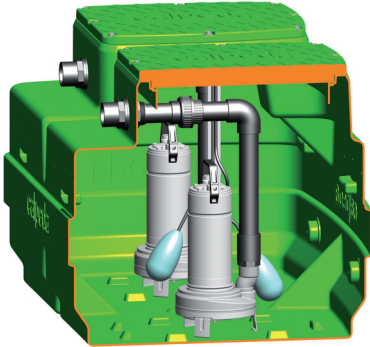
10 m cable.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 500-2GX..



#### Features

Automatic waste water collecting and lifting station with GX 40 pump series.

#### It includes:

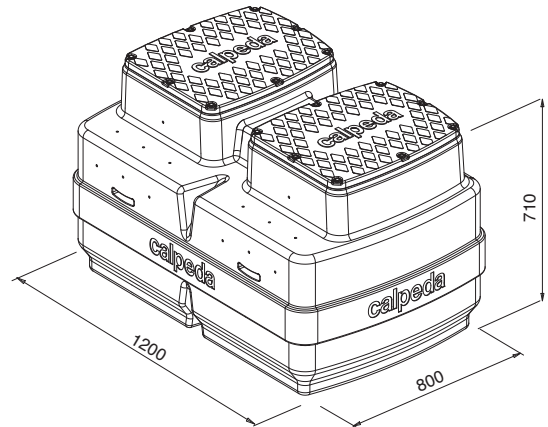
- 1 tank capacity 500 l
- 2 pumps - single-phase with 10 m cable without float switch
- three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 electric control box
- 2 discharge pipe kit Ø 50 mm in PVC

#### On demand

- 2 discharge pipe kit Ø 50 mm in PVC with a ball valve and non-return ball valve
- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GXCM 40-10	0,55x2	4,6x2	21x2	9
GEO 500-2GXCM 40-13	0,9x2	6,6x2	26x2	11,6
GEO 500-2GXVM 40-7	0,55x2	4,6x2	15x2	6,2
GEO 500-2GXVM 40-8	0,75x2	5,4x2	18x2	7,2
GEO 500-2GXVM 40-8	0,9x2	6x2	21x2	8,1

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GXC 40-10	0,55x2	1,6x2	21x2	9
GEO 500-2GXC 40-13	0,9x2	2,3x2	26x2	11,6
GEO 500-2GXV 40-7	0,55x2	1,6x2	15x2	6,2
GEO 500-2GXV 40-8	0,75x2	2,2x2	18x2	7,2
GEO 500-2GXV 40-9	0,9x2	2,3x2	21x2	8,1



#### GXC, GXV

Submersible sewage and drainage pumps in chrome-nickel stainless steel, with vertical delivery port.

**GXC**, with single-channel impeller.

**GXV**: with free-flow (vortex) impeller

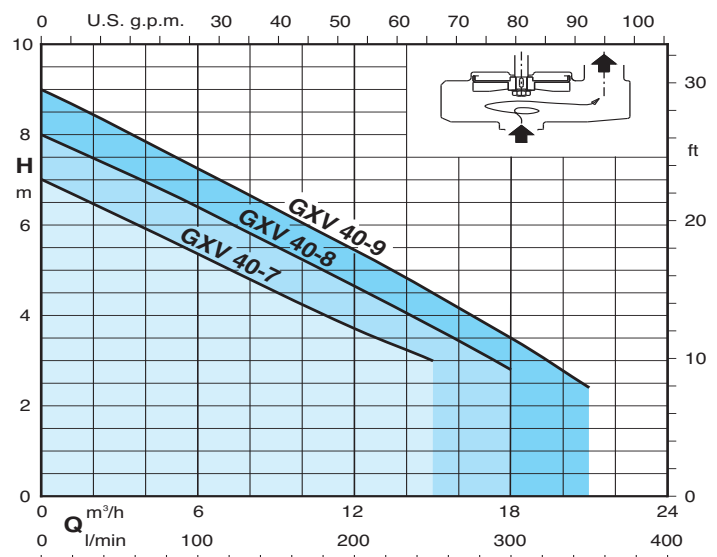
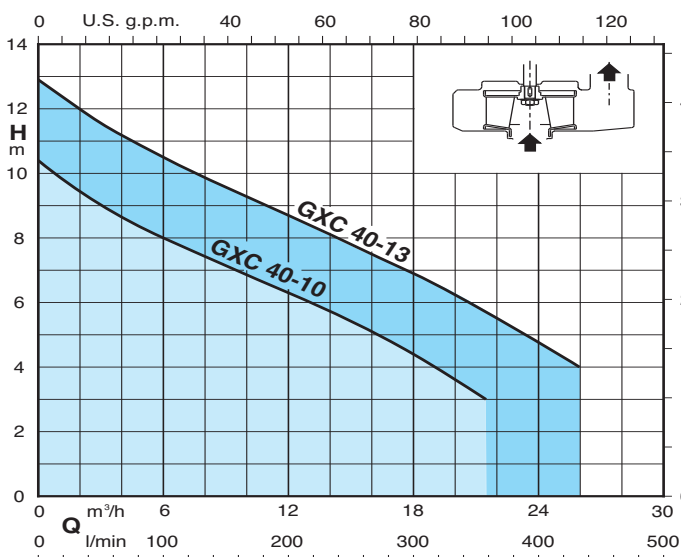
2-pole induction motor, 50Hz (n ≈ 2900 rpm).

**GXC, GXV**: three-phase 400 V +/-10%;

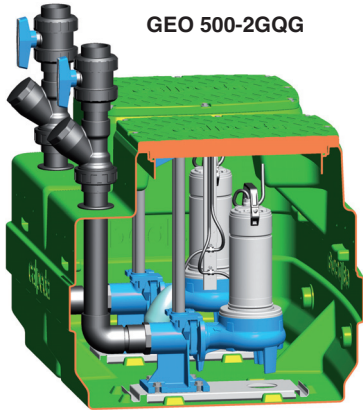
**GXCM, GXVM**: single-phase 230 V +/-10%, with thermal protector and incorporated capacitor (without float switch).

Cable length 10 m.

Liquid temperature up to 35 °C



### Pumps characteristics



GEO 500-2GQG

#### Features

Automatic sewage water collecting and lifting station with grinder pumps GQG series.

#### It includes:

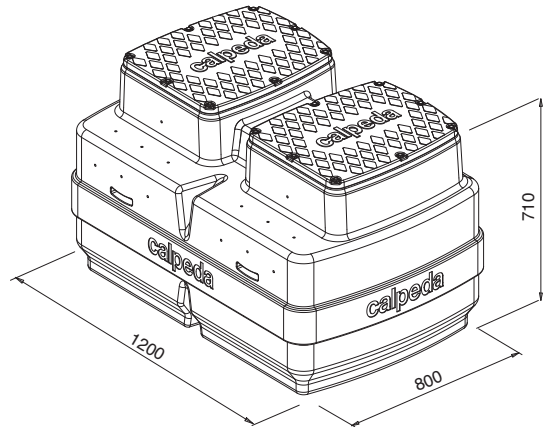
- 1 tank capacity 500 l
- 2 pumps - single-phase 10 m cable without float switch  
- three-phase with 10 cable
- 1 support kit with 2 float switch
- 1 electric control box (with capacitor for single-phase motors)
- 2 duck foot coupling kit
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
<b>GEO 500-2GQGM 6-18</b>	0,9x2	7x2	13,2x2	16,5
<b>GEO 500-2GQGM 6-21</b>	1,1x2	7,5x2	15x2	19,2
<b>GEO 500-2GQGM 6-25</b>	1,5x2	9,5x2	16,8x2	23

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
<b>GEO 500-2GQG 6-18</b>	0,9x2	2,3x2	13,2x2	16,5
<b>GEO 500-2GQG 6-21</b>	1,1x2	2,8x2	15x2	19,2
<b>GEO 500-2GQG 6-25</b>	1,5x2	3,8x2	16,8x2	23



#### GQG

Submersible pumps with high power grinder, with horizontal delivery port.

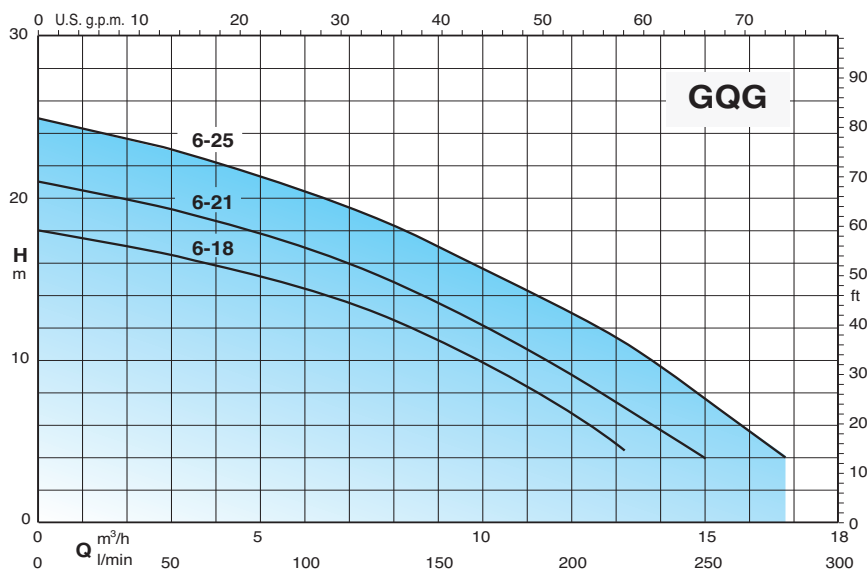
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

**GQG:** three-phase 400 V +/-10%;

**GQGM:** Single-phase 230 V +/-10% complete control box with thermal protector and capacitors (without float switch).

10 m cable.

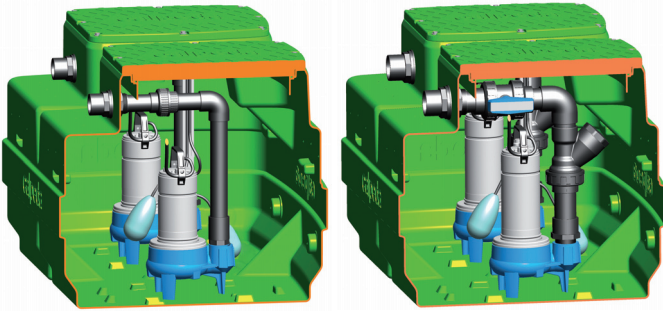
Liquid temperature up to 35 °C.



### Pumps characteristics

GEO 500-2GQS 40

GEO 500-2GQS 50



#### Features

Automatic waste water collecting and lifting station GQS series.

#### It includes:

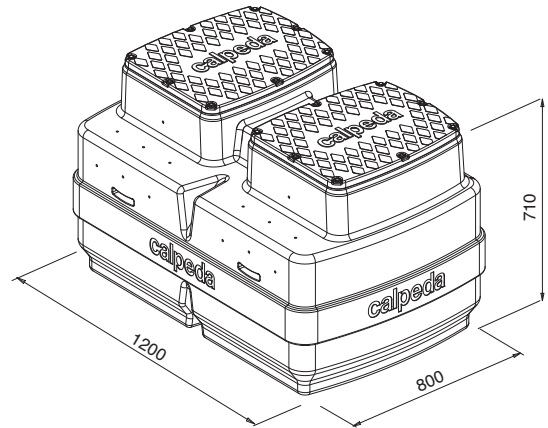
- 1 tank capacity 500 l
- 2 pumps - single-phase 10 m cable without float switch
- three-phase with 10 cable
- 1 support kit with 2 float switch
- 1 control box for three-phase version
- For GQS 50: 2 discharge pipe kit Ø 50 mm in PVC
- For GQS 50: 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- For GQS 50: 2 discharge pipe kit Ø 50 mm in PVC with a ball valve and non-return ball valve
- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GQSM 40-9	0,45x2	4,5x2	21x2	8,8
GEO 500-2GQSM 50-8	0,55x2	4,3x2	24x2	7,4
GEO 500-2GQSM 50-9	0,75x2	4,8x2	27x2	8,8
GEO 500-2GQSM 50-11	0,9x2	6,6x2	33x2	10,5
GEO 500-2GQSM 50-13	1,1x2	8,4x2	36x2	12,5
GEO 500-2GQSM 50-15	1,5x2	13x2	36x2	14,4

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GQS 40-9	0,45x2	1,6x2	21x2	8,8
GEO 500-2GQS 50-8	0,55x2	1,5x2	24x2	7,4
GEO 500-2GQS 50-9	0,75x2	1,8x2	27x2	8,8
GEO 500-2GQS 50-11	0,9x2	2,3x2	33x2	10,5
GEO 500-2GQS 50-13	1,1x2	3x2	36x2	12,5
GEO 500-2GQS 50-15	1,5x2	4x2	36x2	14,4



#### GQS

Single-impeller submersible pumps, with vertical delivery port.

GQS: with free-flow (vortex) impeller

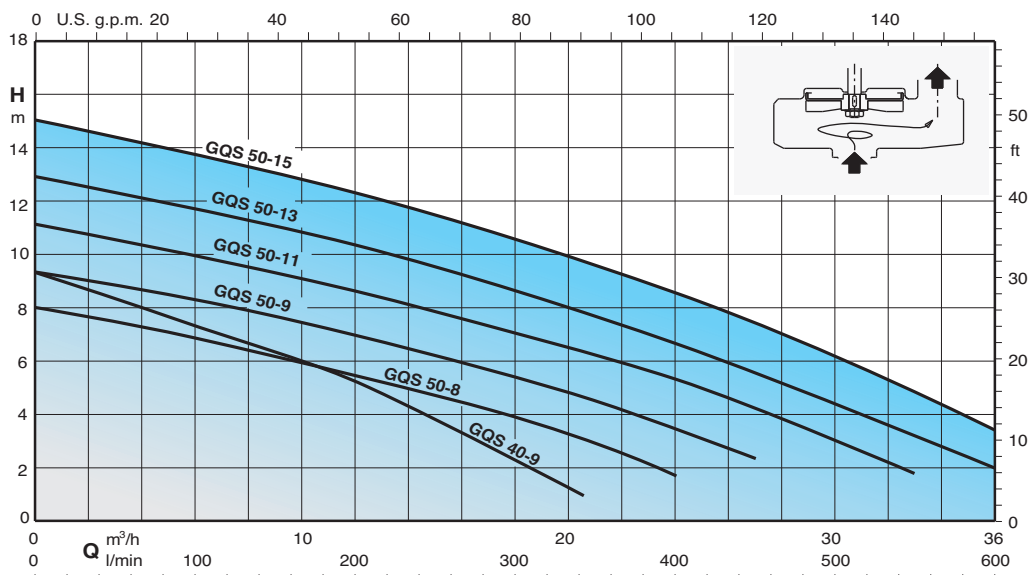
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

GQS: three-phase 400 V +/-10%;

GQSM: single-phase 230 V +/-10%, with thermal protector, with built-in capacitor (without float switch).

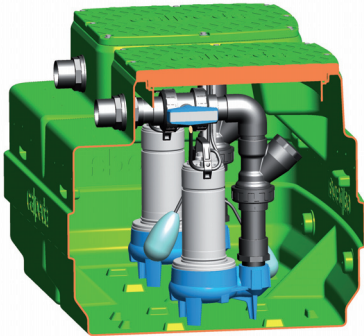
10 m cable.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 500-2GQN



#### Features

Automatic waste water collecting and lifting station GQN series.

#### It includes:

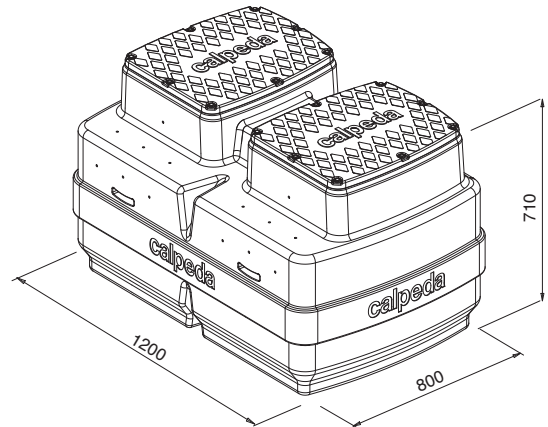
- 1 tank capacity 500 l
- 2 pumps - single-phase 10 m cable without float switch
- three-phase with 10 cable
- 1 support kit with 2 float switch
- 1 control box for three-phase version
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
<b>GEO 500-2GQNM 50-13</b>	0,9x2	6,6x2	36x2	11,6
<b>GEO 500-2GQNM 50-15</b>	1,1x2	8,4x2	42x2	13,5
<b>GEO 500-2GQNM 50-17</b>	1,5x2	12x2	48x2	15,7

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
<b>GEO 500-2GQN 50-13</b>	0,9x2	2,3x2	36x2	11,6
<b>GEO 500-2GQN 50-15</b>	1,1x2	3,3x2	42x2	13,5
<b>GEO 500-2GQN 50-17</b>	1,5x2	4,5x2	48x2	15,7



#### GQN

Single-impeller submersible pumps, with vertical delivery port.

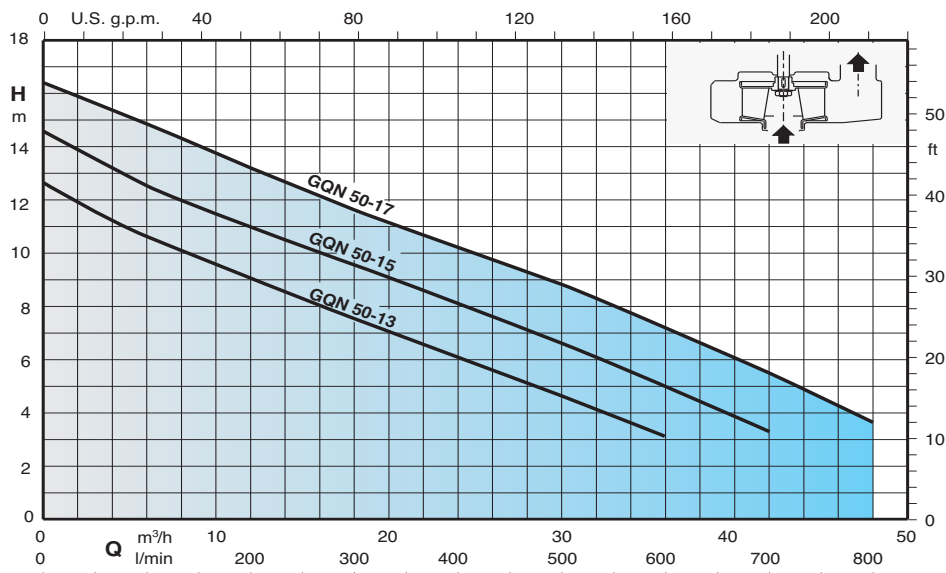
**GQN:** with channels impeller (with two-passage)

2-pole induction motor, 50Hz (n ≈ 2900 rpm)

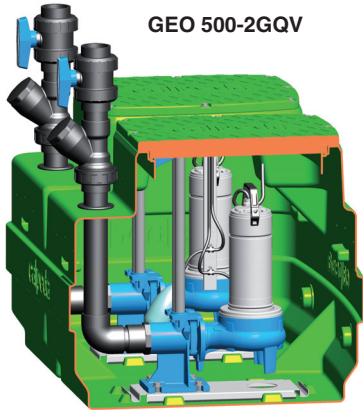
**GQN:** three-phase 400 V +/-10%;

**GQNM:** single-phase 230 V +/-10%, with thermal protector, with built-in capacitor (without float switch).  
10 m cable.

Liquid temperature up to 35 °C



### Pumps characteristics



GEO 500-2GQV

#### Features

Automatic waste water collecting and lifting station with GQV pump series.

#### It includes:

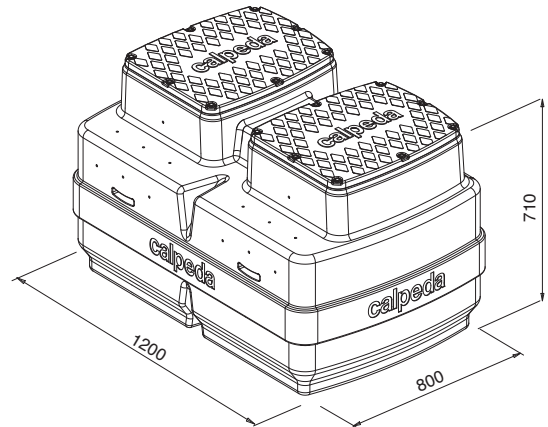
- 1 tank capacity 500 l
- 2 pumps - single-phase 10 m cable without float switch
  - three-phase with 10 cable
- 1 support kit with 2 float switch
- 1 control box
- 2 duck foot coupling kit
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GQVM 50-8	0,55x2	4,3x2	24x2	7,4
GEO 500-2GQVM 50-9	0,75x2	4,8x2	27x2	8,8
GEO 500-2GQVM 50-11	0,9x2	6,6x2	33x2	10,5
GEO 500-2GQVM 50-13	1,1x2	8,4x2	36x2	12,5
GEO 500-2GQVM 50-15	1,1x2	13x2	36x2	12,5

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GQV 50-8	0,55x2	1,5x2	24x2	7,4
GEO 500-2GQV 50-9	0,75x2	1,8x2	27x2	8,8
GEO 500-2GQV 50-11	0,9x2	2,3x2	33x2	10,5
GEO 500-2GQV 50-13	1,1x2	3x2	36x2	12,5
GEO 500-2GQV 50-15	1,5x2	4x2	36x2	14,4



#### GQV

Single-impeller submersible pumps, with horizontal delivery port.

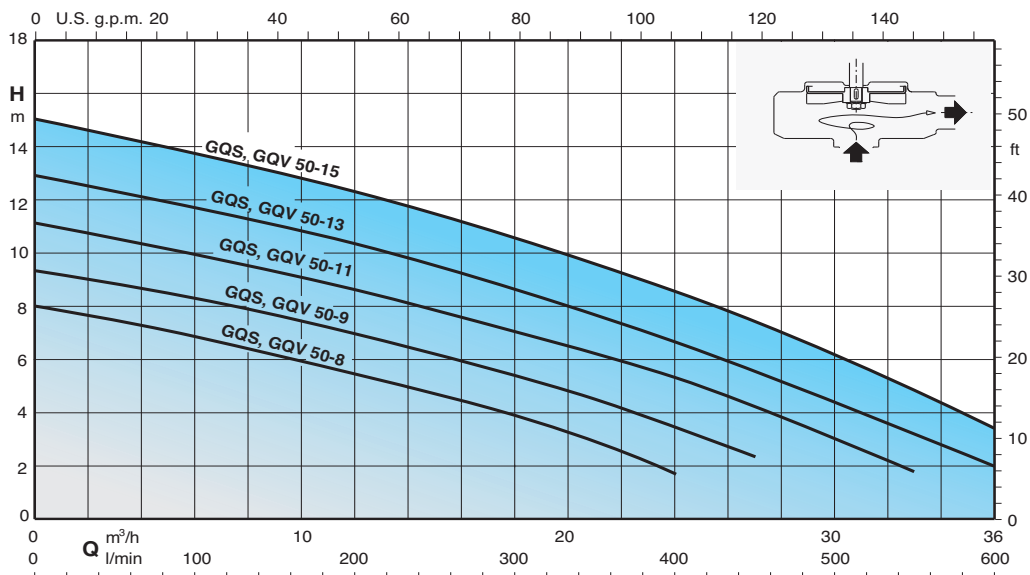
**GQV:** with free-flow (vortex) impeller

2-pole induction motor, 50Hz (n ≈ 2900 rpm)

**GQV:** three-phase 400 V +/-10%;

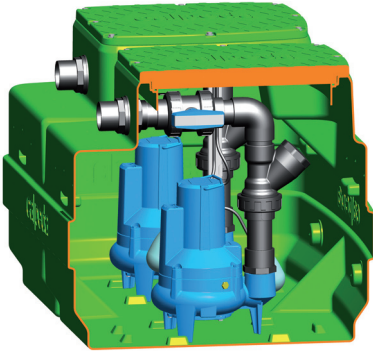
**GQVM:** single-phase 230 V +/-10%, with thermal protector, with built-in capacitor (without float switch).  
10 m cable.

Liquid temperature up to 35 °C



### Pumps characteristics

GEO 500-2GM..



#### Features

Automatic waste water collecting and lifting station GMV, GMC series.

#### It includes:

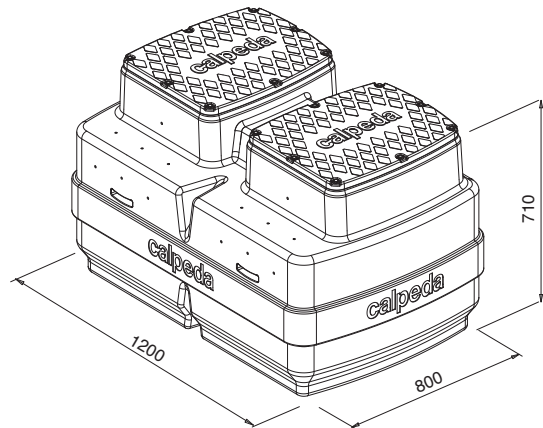
- 1 tank capacity 500 l
- 2 pumps - single-phase 10 m cable without float switch
  - three-phase with 10 cable
- 1 support kit with 2 float switch
- 1 control box for three-phase version
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GMCM 50CE	0,75x2	4,5x2	36x2	9,5
GEO 500-2GMCM 50BE	1,1x2	6,5x2	42x2	12,5
GEO 500-2GMVM 50CE	0,75x2	4,5x2	31x2	8
GEO 500-2GMVM 50BE	1,1x2	6,5x2	35x2	9,5

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GMC 50CE	0,75x2	1,9x2	36x2	9,5
GEO 500-2GMC 50BE	1,1x2	2,7x2	42x2	12,5
GEO 500-2GMC 50AE	1,5x2	3,8x2	48x2	14,5
GEO 500-2GMV 50CE	0,75x2	1,9x2	31x2	8
GEO 500-2GMV 50BE	1,1x2	2,7x2	35x2	9,5
GEO 500-2GMV 50AE	1,5x2	3,8x2	39x2	11,5



#### GMC, GMV

Submersible sewage and drainage pumps.

**GMC**, with single-channel impeller.

**GMV**, with free-flow (vortex) impeller.

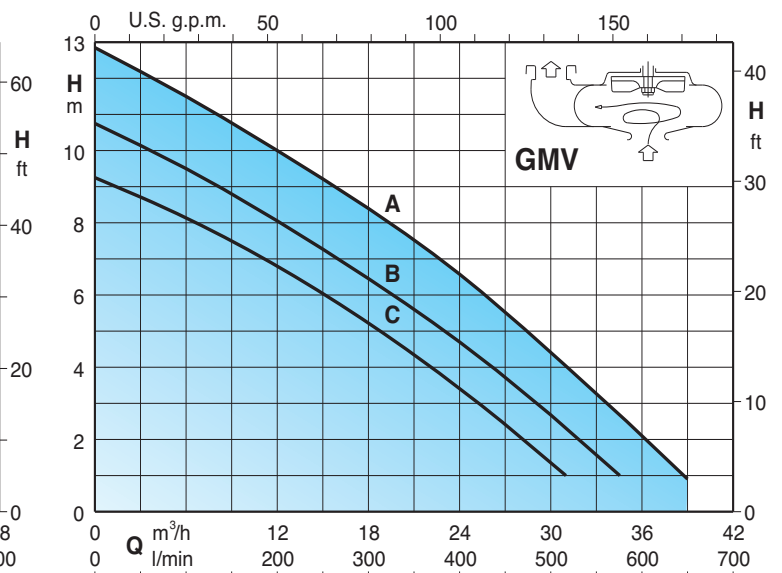
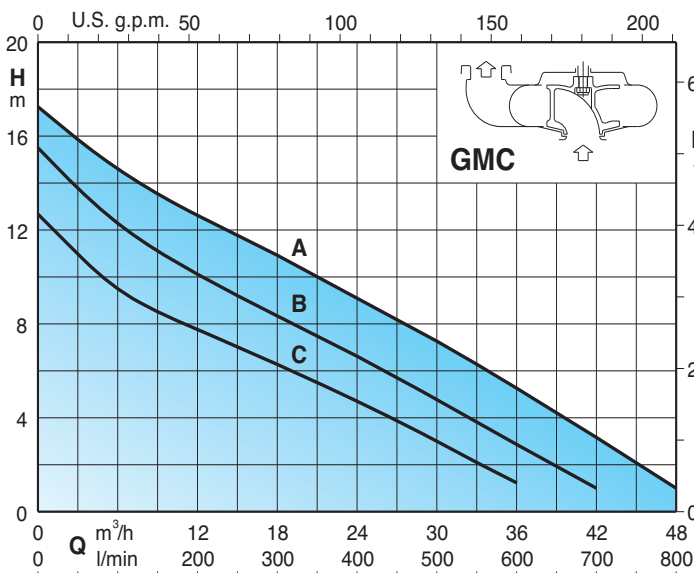
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

**GMV, GMC:** three-phase 400 V +/-10%;  
with 2 built-in thermal protectors to be connected to the control panel.

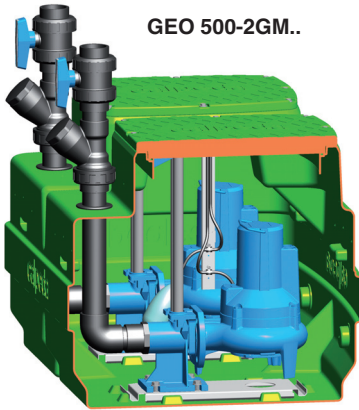
**GMVM, GMVM:** single-phase 230 V ± 10%, built-in thermal protector and built-in capacitor.  
(without float switch)

Cable length 10 m.

Liquid temperature up to 35 °C.



### Pumps characteristics



GEO 500-2GM..

#### Features

Automatic waste water collecting and lifting station GMV, GMC series.

#### It includes:

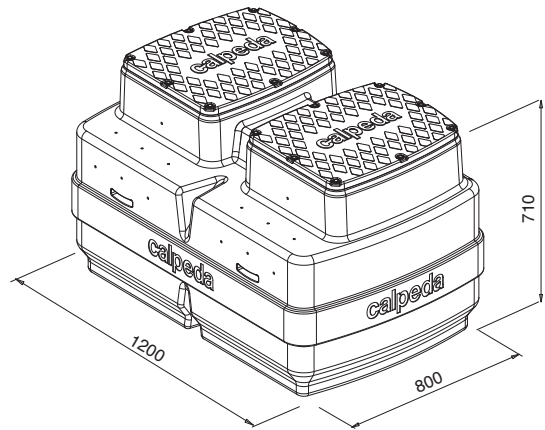
- 1 tank capacity 500 l
- 2 pumps - single-phase 10 m cable without float switch
  - three-phase with 10 cable
- 1 support kit with 2 float switch
- 1 control box for three-phase version
- 2 duck foot coupling kit
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

#### On demand

- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Single-phase type	1 ~ 230 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GMCM 50-65C	0,75x2	4,5x2	36x2	9,5
GEO 500-2GMCM 50-65B	1,1x2	6,5x2	42x2	12,5
GEO 500-2GMVM 50-65C	0,75x2	4,5x2	31x2	8
GEO 500-2GMVM 50-65B	1,1x2	6,5x2	35x2	9,5

Three-phase type	3 ~ 400 V		Q max m³/h	H max m
	kW	A		
GEO 500-2GMC 50-65C	0,75x2	1,9x2	36x2	9,5
GEO 500-2GMC 50-65B	1,1x2	2,7x2	42x2	12,5
GEO 500-2GMC 50-65A	1,5x2	3,8x2	48x2	14,5
GEO 500-2GMV 50-65C	0,75x2	1,9x2	31x2	8
GEO 500-2GMV 50-65B	1,1x2	2,7x2	35x2	9,5
GEO 500-2GMV 50-65A	1,5x2	3,8x2	39x2	11,5



#### GMC, GMV

Submersible sewage and drainage pumps.

**GMC**, with single-channel impeller.

**GMV**, with free-flow (vortex) impeller.

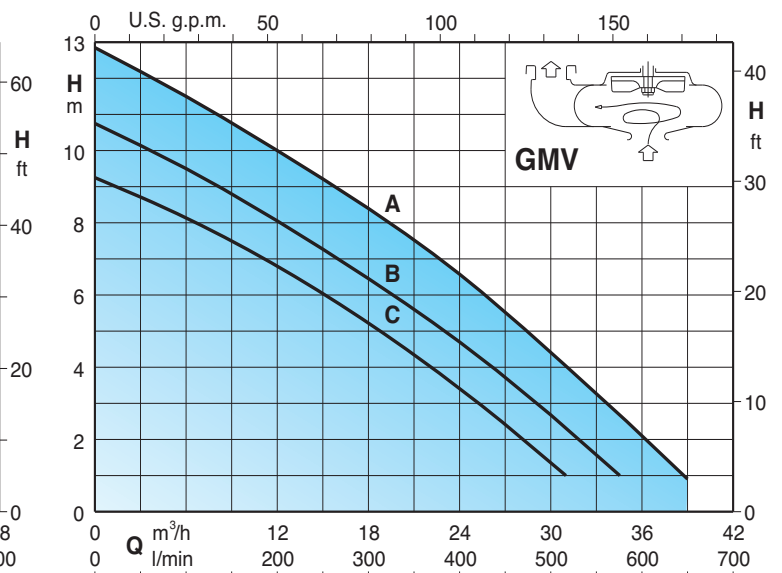
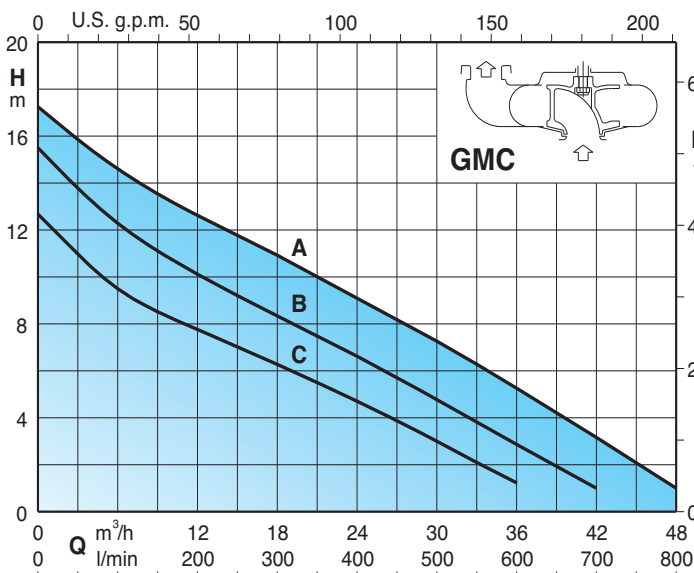
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

**GMV, GMC:** three-phase 400 V +/-10%;  
with 2 built-in thermal protectors to be connected to the control panel.

**GMVM, GMVM:** single-phase 230 V ± 10%, built-in thermal protector and built-in capacitor.  
(without float switch)

Cable length 10 m.

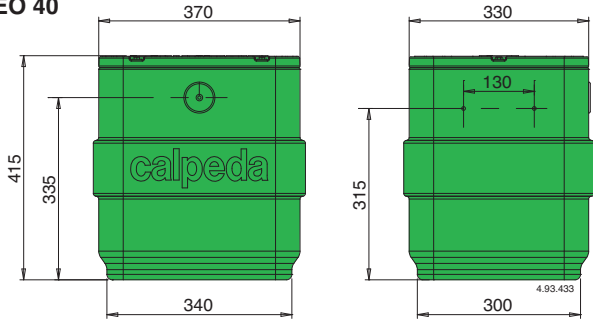
Liquid temperature up to 35 °C.



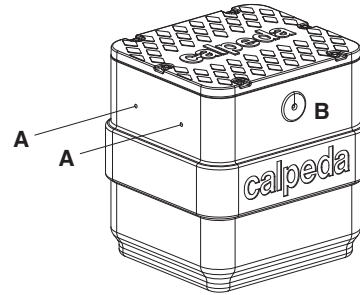
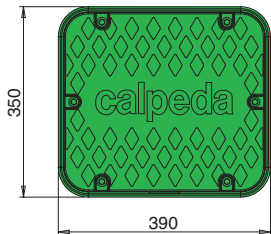


### Dimensions and weights

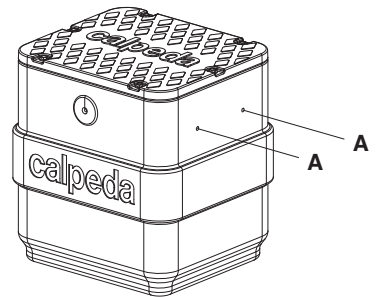
#### GEO 40



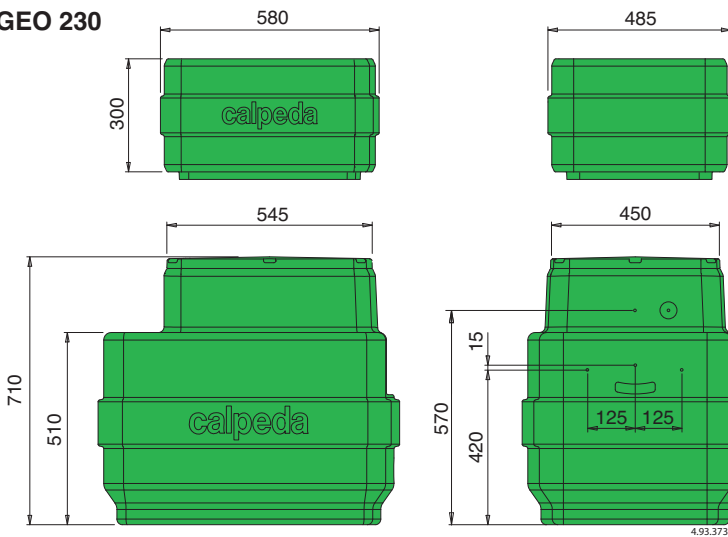
Tank  
kg.6



- A) Arrangement for :  
 Ø 40 mm inlet  
 Ø 40 mm outlet  
 Ø 25 mm relief
- B) Cable passage with Shuko plug

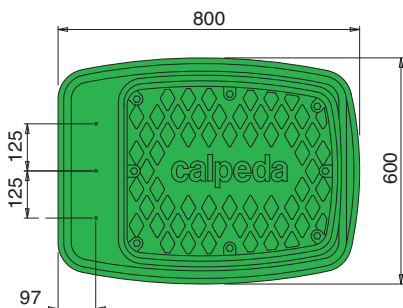
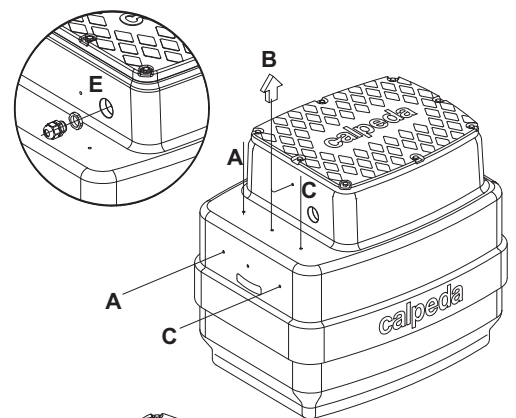


#### GEO 230

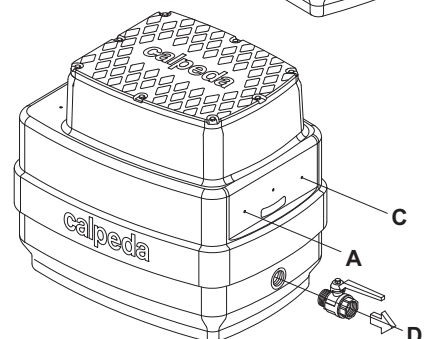


Extention  
kg.4,5

Tank  
kg.16

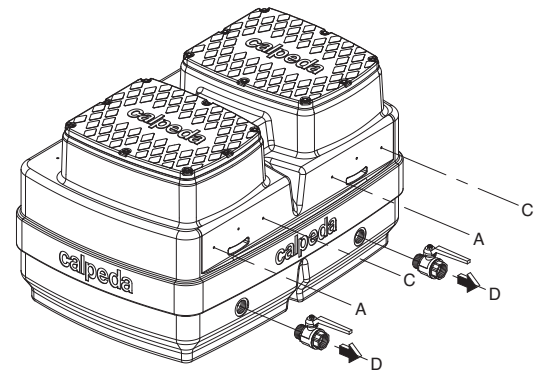
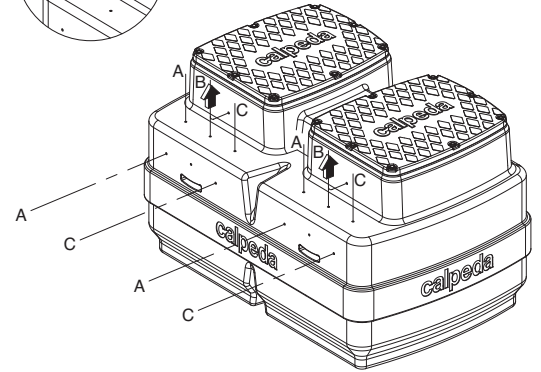
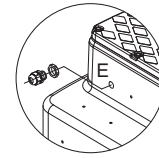
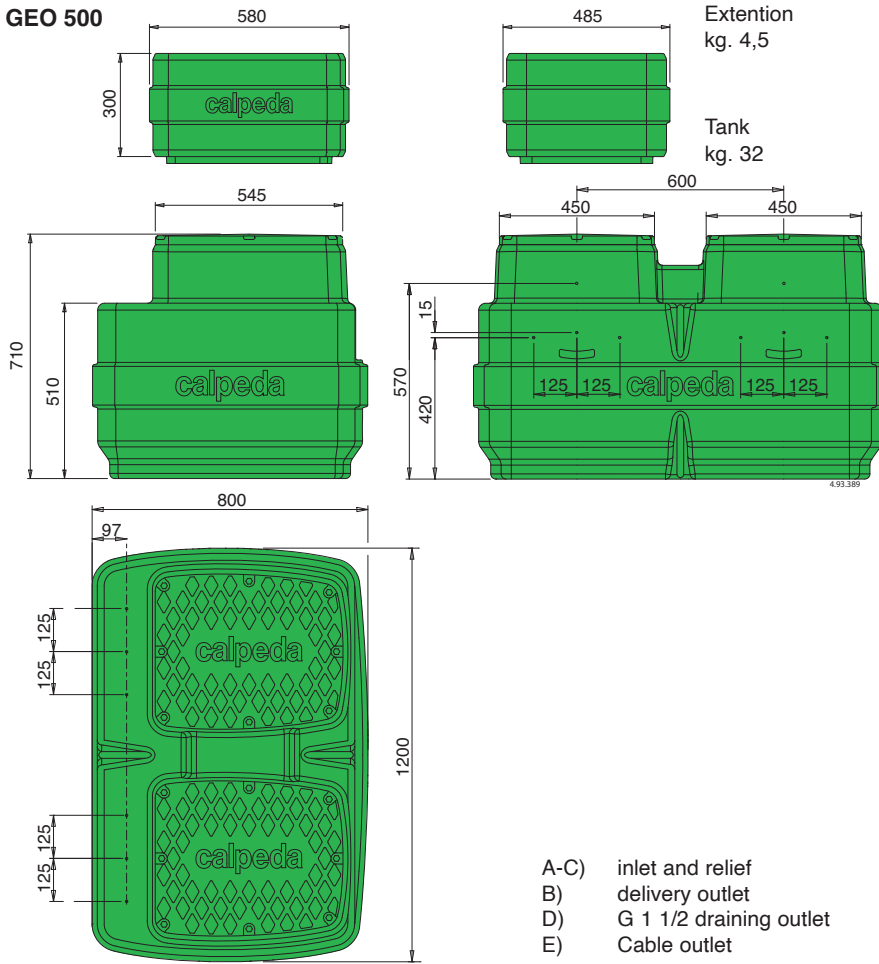


- A-C) inlet and relief
- B) delivery outlet
- D) G 1 1/2 draining outlet
- E) Cable outlet



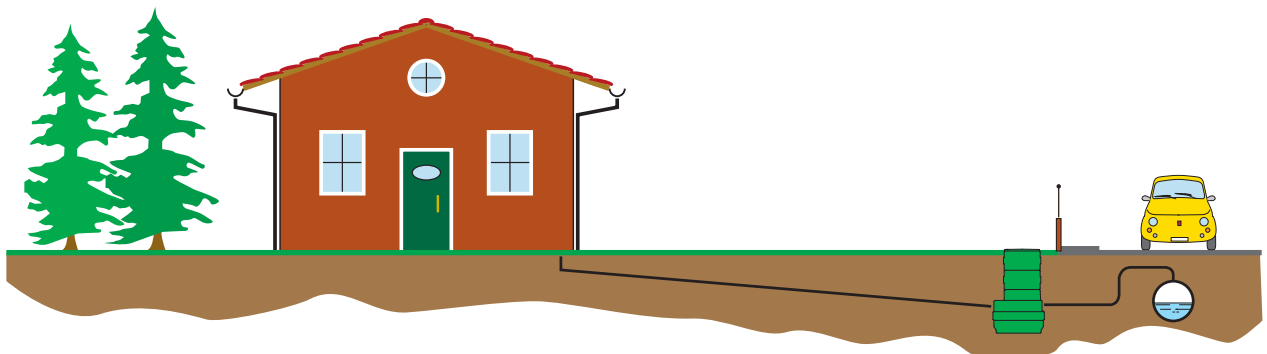
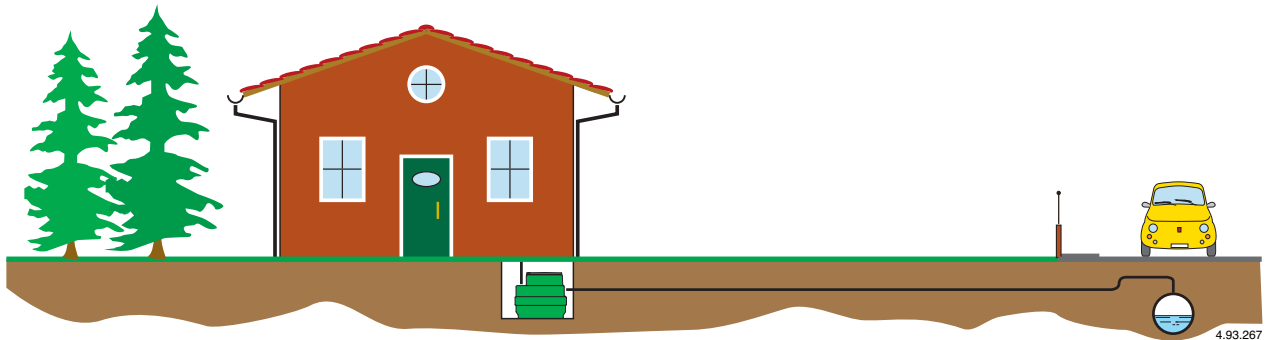
### Dimensions and weights

#### GEO 500



- A-C) inlet and relief
- B) delivery outlet
- D) G 1 1/2 draining outlet
- E) Cable outlet

### Installation examples



### LIFTING STATION SIZING

Normally the domestic waste water flows by gravity into the mains sewage collectors.

If there are underground rooms with discharge positions below the sewage main, a lifting station with one or more pumps may be required.

It is necessary to remember that the UNI-EN 12056-4 standard allows rainwater to be pumped to the sewage main only in exceptional cases.

To sizing a lifting station pump it is necessary to calculate the flow  $Q_{tot}$  and the Head  $h_{mt}$  necessary for the water drainage.

### FLOW CALCULATION

The flow of the lifting pumps can be calculated using Table 1, according to the number of people using the building and the location of the building. It is easy to calculate the flow  $Q_r$  of the sewage water.

The  $Q_r$  value is already adjusted by a coefficient that includes the peak hours, when the water consumption is higher.

The lifting systems of waste water are usually separated from the rainwater system. In case of a mixed system is required to sum the flow  $Q_m$  of the rainwater of the Table 2 with the flow  $Q_r$  of the Table 1.

The table indicates the rainwater flow  $Q_m$  as a function of the exposed surface to rainfall, it varies according to the capacity of the surface to absorb rain water (Table 3).

The total flow of the pump or pumps is:

$$Q_{tot} = Q_r + Q_m$$

### HEAD CALCULATION

To calculate the head  $h_{mt}$  it is necessary to add the geodetic head existing between the fluid levels with the head losses from internal friction created by the flow of the fluid in the hydraulic pipes and fittings (Figure 1).

After the choice of the discharge pipe diameter, such that the flow speed it is not lower than 0,7 m/s (to avoid deposits) and higher than 2,3 m/s, it is possible to determine the distributed head loss  $H_d$  and concentrated head loss  $H_v$   $H_c$ , due to valves and curves (Table 4).

The sum of the head losses  $\Delta P_c$  is:

$$\Delta P_c = H_d + \sum H_v + \sum H_c$$

The total head  $h_{mt}$  is calculated as:

$$H_{mt} = H_g + \Delta P_c$$

- 1) Water arriving from sinks discharge, toilets, showers, washing machines etc.
- 2) Excluding consumption from industrial processes.
- 3) The unit flow reference is 1,5 l/min/m<sup>2</sup>

Table 1

Maximum flow of domestic waste water at peak demand

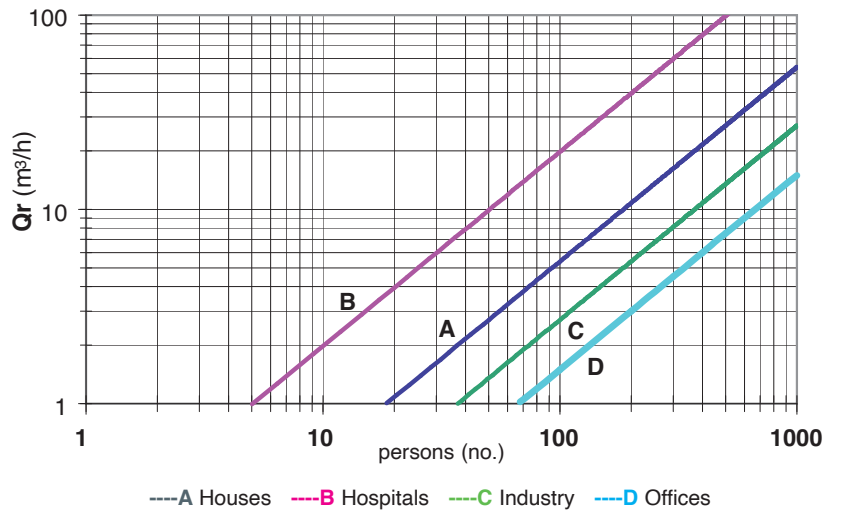


Table 2

Rainwater Flow

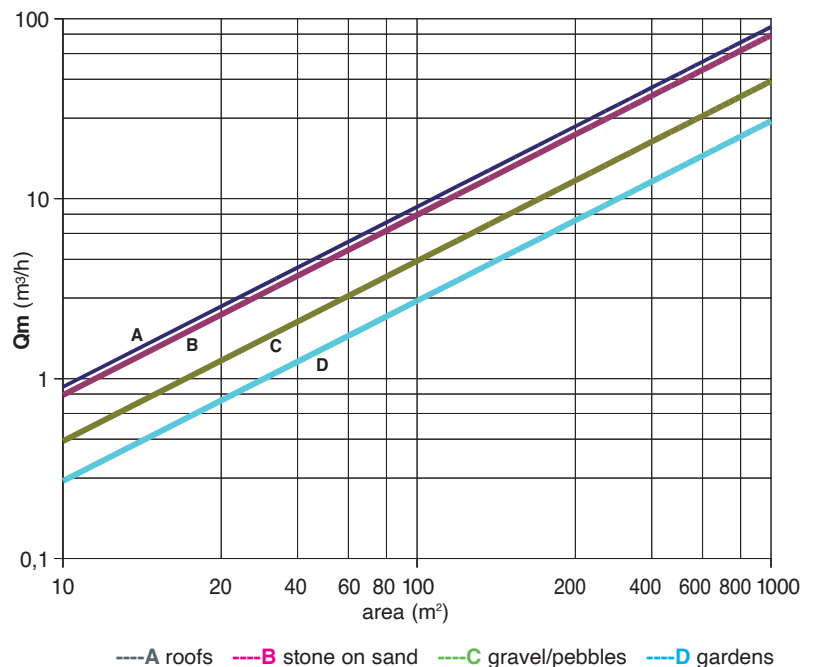


Figure 1

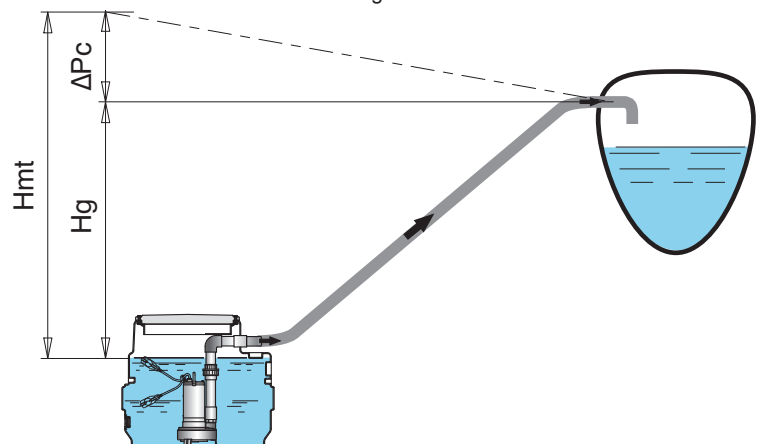


Table no. 3  
Head loss in m for PVC PN6 (m) pipes

PVC pipe PN6 Øe mm	Q m³/h	1,8	3,6	5,4	7,2	9	18	27	36	50,4	64,8	90	126	162	180
	Q l/min	30	60	90	120	150	300	450	600	840	1080	1500	2100	2700	3000
50		0,24	0,85	1,8	3,1	4,6	16,7	35,3	-	-	-	-	-	-	-
	HL	0,30	0,59	0,89	1,18	1,48	2,96	4,44	-	-	-	-	-	-	-
63		0,08	0,26	0,56	0,95	1,11	5,2	10,9	18,6	34,8	-	-	-	-	-
	v	0,18	0,37	0,55	0,73	0,92	1,83	2,75	3,66	5,13	-	-	-	-	-
75		0,11	0,24	0,4	0,61	2,2	4,6	7,9	14,7	23,4	43	-	-	-	-
	m/100m	0,26	0,39	0,51	0,64	1,29	1,93	2,57	3,6	4,63	6,43	-	-	-	-
90		0,05	0,1	0,16	0,25	0,9	1,9	3,3	6,1	9,7	17,8	33,2	-	-	-
	m/s	0,18	0,27	0,36	0,45	0,89	1,34	1,79	2,5	3,22	4,47	6,26	-	-	-
110			0,04	0,06	0,09	0,3	0,67	1,15	2,15	3,4	6,25	11,7	18,5	22,5	-
			0,17	0,2	0,29	0,58	0,87	1,16	1,63	2,10	2,91	4,08	5,24	5,82	-
125				0,03	0,05	0,17	0,36	0,6	1,15	1,84	3,37	6,3	10	12,2	-
				0,18	0,23	0,45	0,68	0,90	1,26	1,63	2,26	3,16	4,06	4,52	-
140				0,03	0,1	0,2	0,35	0,65	1,05	1,95	3,6	5,77	7	-	-
				0,18	0,36	0,54	0,72	1,01	1,30	1,80	2,52	3,24	3,60	-	-
160					0,05	0,11	0,18	0,34	0,55	1,02	1,9	3	3,66	-	-
					0,28	0,41	0,55	0,77	0,99	1,38	1,93	2,48	2,76	-	-
180					0,03	0,06	0,1	0,19	0,31	0,57	1,06	1,69	2,05	-	-
					0,22	0,33	0,43	0,61	0,78	1,09	1,52	1,96	2,17	-	-
200					0,02	0,04	0,06	0,12	0,18	0,34	0,64	1	1,23	-	-
					0,18	0,26	0,35	0,49	0,63	0,88	1,23	1,59	1,76	-	-
225						0,02	0,04	0,07	0,1	0,19	0,36	0,57	0,7	-	-
						0,21	0,28	0,39	0,55	0,70	0,97	1,25	1,39	-	-
250							0,02	0,04	0,06	0,12	0,22	0,34	0,42	-	-
							0,23	0,32	0,41	0,56	0,79	1,02	1,13	-	-
280							0,01	0,02	0,04	0,07	0,13	0,2	0,24	-	-
							0,18	0,25	0,32	0,45	0,63	0,81	0,90	-	-

Table no. 4  
Head loss in cm for bends and gate valves

Water flow velocity m/sec.	α = 90 sweep elbow					Gate valves
	d/R = 0,4	d/R = 0,6	d/R = 0,8	d/R = 1	d/R = 1,5	
0,4	0,11	0,13	0,16	0,23	0,43	0,23
0,5	0,18	0,21	0,26	0,37	0,67	0,37
0,6	0,25	0,29	0,36	0,52	0,97	0,52
0,7	0,34	0,40	0,48	0,70	1,35	0,70
0,8	0,45	0,53	0,64	0,93	1,7	0,95
0,9	0,57	0,67	0,82	1,18	2,2	1,20
1,0	0,7	0,82	1,0	1,45	2,7	1,45
1,5	1,6	1,9	2,3	3,3	6	3,3
2,0	2,8	3,3	4,0	5,8	11	5,8
2,5	4,4	5,2	6,3	9,1	17	9,1
3,0	6,3	7,4	9	13	25	13
3,5	8,5	10	12	18	33	18
4,0	11	13	16	23	42	23
4,5	14	21	26	37	55	37
5,0	18	29	36	52	67	52

### EXAMPLE OF CALCULATION

Suppose it is required to size a lifting station, for a residential building where 80 people live. The pumps will have to lift waste water up to an additional tank located 5m higher, the linear distance between the 2 tanks is 70 m. In addition the station will receive rainwater from 400 m<sup>2</sup> of tarmac, roof surfaces and 120 m<sup>2</sup> of garden.

Considering:  $Q_{tot} = Q_r + Q_m$

It is possible to calculate the  $Q_r$  from the Table 1 which is 4 m<sup>3</sup>/h, while  $Q_m$  is obtained from the Table 2 and is 36 m<sup>3</sup>/h ( roofs and tarmac) plus 2 m<sup>3</sup>/h from gardens, with this value  $Q_{tot}$  is 42 m<sup>3</sup>/h. At this flow it will be necessary split the flow between two pumps.

We choose a delivery pipe diameter such that the flow rate with two pumps in operation does not exceed 2.3 m / sec and not be lower than 0.7 m / s with a single pump.

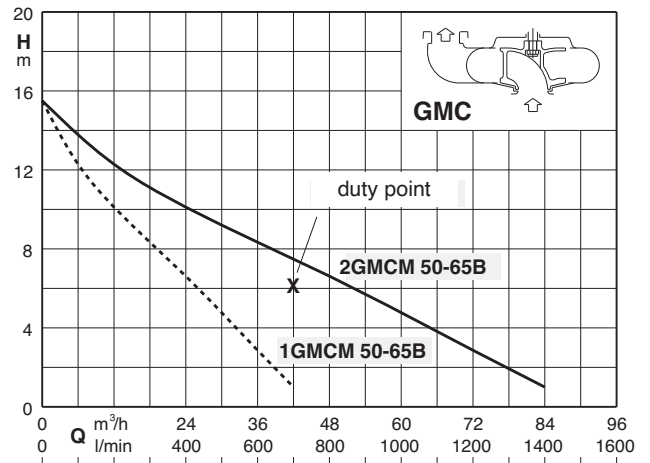
From (Table 3) we obtain:  
**42 m<sup>3</sup>/h => 1,4 m/s => TUBO DN 110** (with two pumps in parallel operation)  
**21 m<sup>3</sup>/h => 0,7 m/s => TUBO DN 110** (with one operating pump)

The distributed head loss in 70 m pipe with 720 l / min is 1.13 m (Table 3), then from the formula:

$$H_{mt} = H_g + \Delta p_c$$

It is obtained  $H_{mt} = 6,13$  mca

he suitable pumps are no. 2 GMCM 50-65B and then it result a station type **GEO 500-2GMCM 50-65B**.



### INSTALLATION EXAMPLE

