

**GEO 40****GEO 230****GEO 500****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 GXRM type.

GEO 230 single tank with 230 liters nominal capacity for the installation of an electropump type GM 10, GQ, GX or GM series. Pipe kit for electropump connection.

Two installation options: on the ground and 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.

Designation

Example: GEO 40-GXRM 9

GEO = Series

40 = Nominal flow rate in litres

GXRM 9 = Pump type

Example: GEO 230-GXVM 40

GEO = Series

230 = Nominal flow rate in litres

GXVM 40-7 = Pump type

Example: GEO 500-2GXRM 40-7

GEO = Series

500 = Nominal flow rate in litres

2GXRM 40-7 = Pump type

Automatic waste water collecting and lifting station

Pumps characteristics

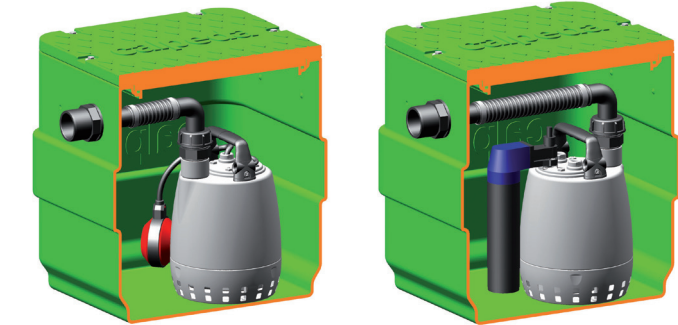
GEO 40-GXRM

GEO 40-GXRM .GF

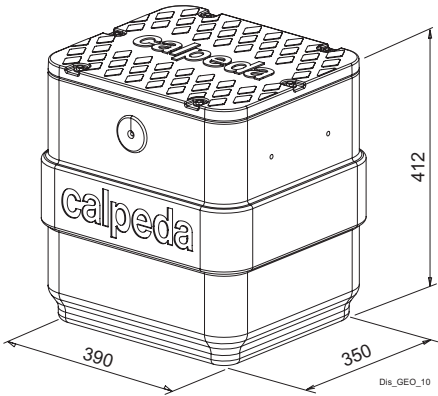
Characteristics
Automatic collecting and lifting station for clean water with GXRM pump type.

- It includes:**
- 1 40 lt capacity tank
 - 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 adapter nipple for 40 mm diameter inlet
 - 1 hose connector for 25 mm diameter hose

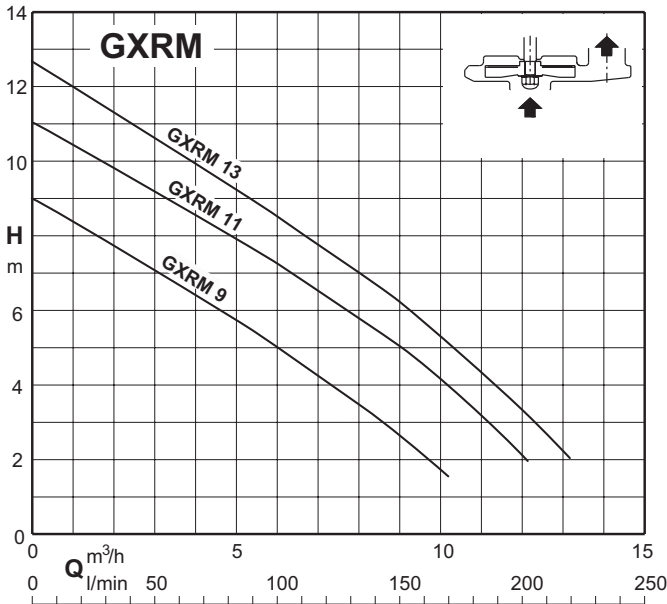
On request:
1 pump with 10 m cable



Type single-phase	1 ~ 230 V		Q max	H max
	kW	A	m3/h	m
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 pumps made of chrome-nickel stainless steel, 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.
Cable length 5 m, Shuko plug.
Liquid temperature up to 35° C.

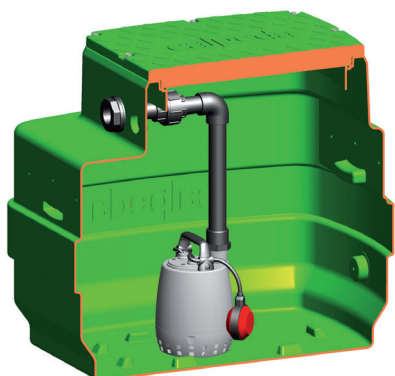


GEO 230



Pumps characteristics

GEO 230-GX..



Characteristics

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

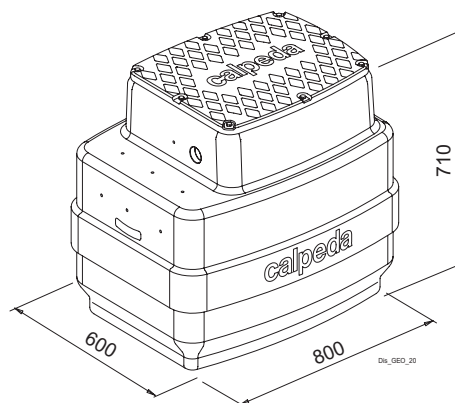
It includes:

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 request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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



GXRM, GXVM

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

GXRM: with open impeller.

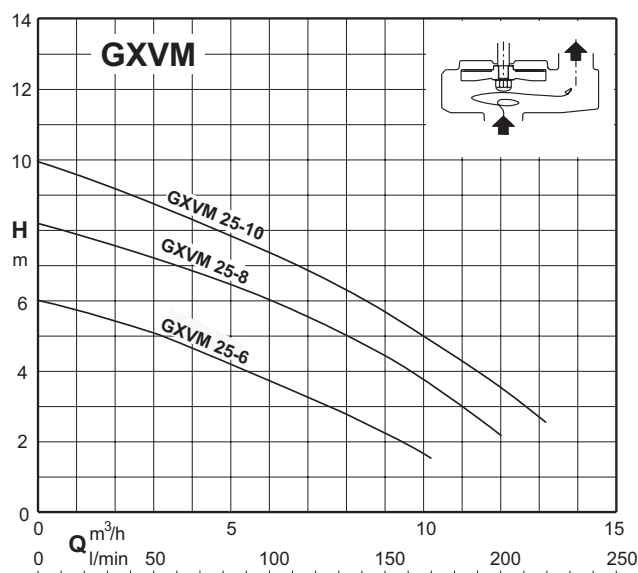
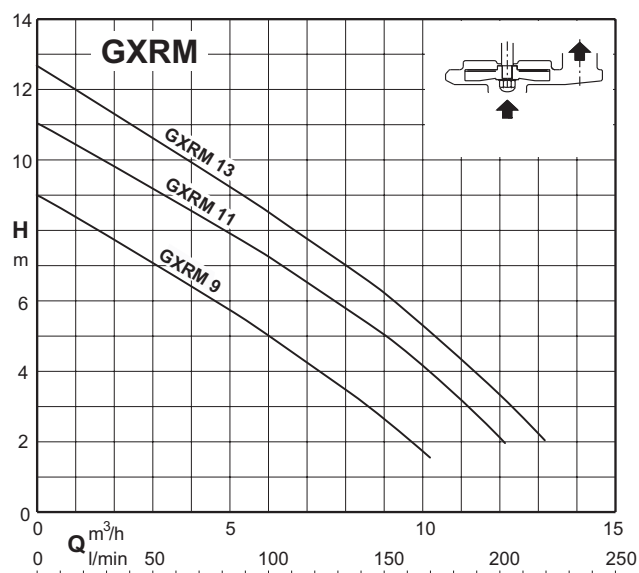
GXVM: with free-flow (vortex) impeller

2-pole induction motor, 50Hz (n ≈ 2900 rpm), Single-phase 230 V +/-10% with float switch and thermal protector.

Float switch for automatic operation.

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

Liquid temperature up to 35° C.

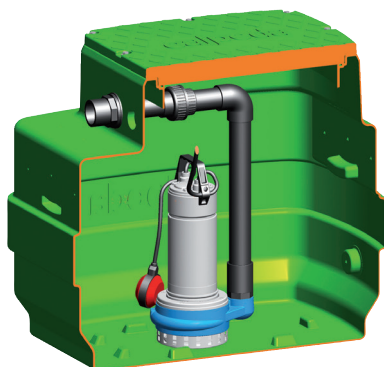


GEO 230



Pumps characteristics

GEO 230-GQR..



Characteristics

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

It includes:

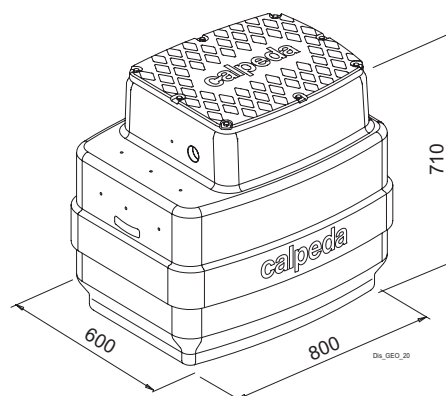
- 1 tank capacity 230 l
- 1 pump
 - single-phase with 10 m cable and float switch
 - three-phase with 10 m cable with support and float switch kit
- 1 control box for three-phase version
- 1 discharge pipe kit Ø 50 mm in PVC

On request:

- 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

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

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
GEO 230-GQR 10-10	0,45	1,2	18	9,5
GEO 230-GQR 10-12	0,55	1,4	21	11,6
GEO 230-GQR 10-14	0,75	1,6	24	13,5
GEO 230-GQR 10-16	0,9	2,3	27	15,5
GEO 230-GQR 10-18	1,1	2,8	30	17,5
GEO 230-GQR 10-20	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, 50 Hz ($n \approx 2900$ rpm).

GQR: three-phase 400 V $\pm 10\%$;

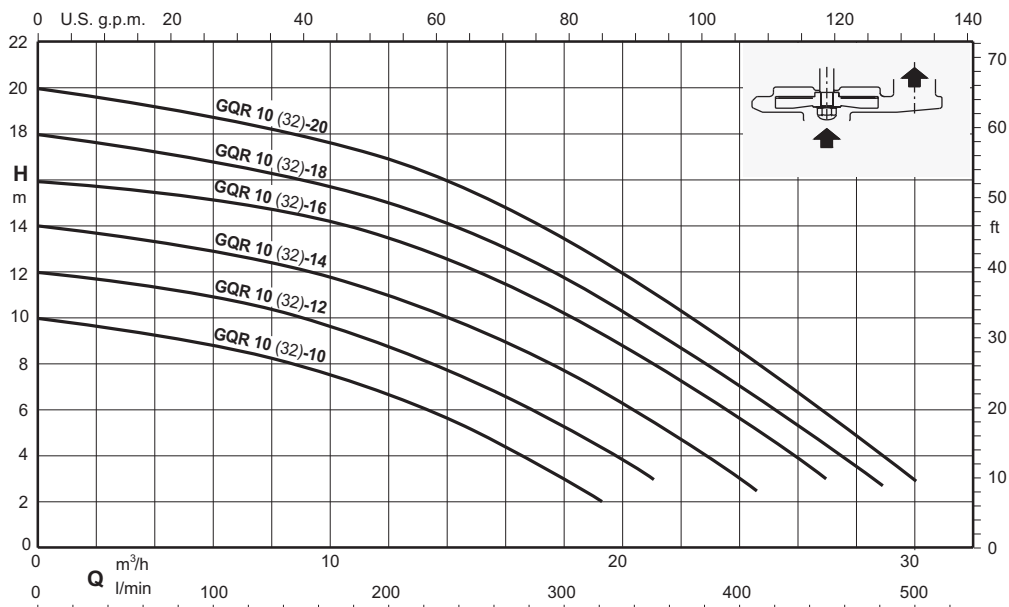
GQRM: Single-phase 230 V $\pm 10\%$ with float switch and thermal protector.

Incorporated capacitor.

Float switch for automatic start and stop.

Cable length 10 m.

Liquid temperature up to 35° C.

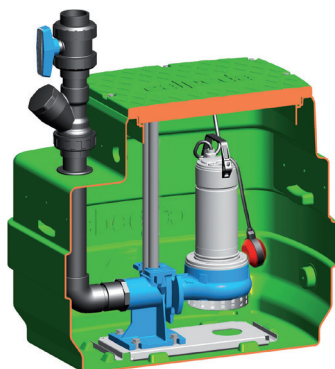


GEO 230



Pumps characteristics

GEO 230-GQR..



Characteristics

Dirty water collection and lifting station with GQR series pumps.

It includes:

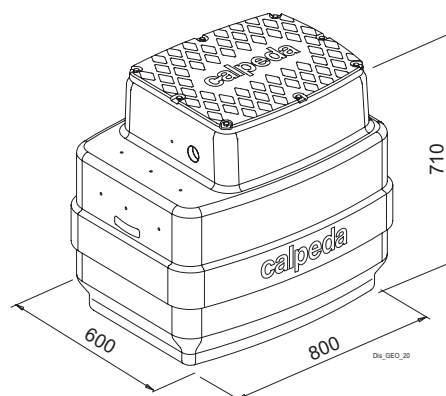
- 1 tank capacity 230 l
- 1 pump
 - - single-phase with 10 m cable and float switch
 - - three-phase with 10 m cable with support and float switch kit
- 1 control box for three-phase version
- 1 duck foot coupling kit
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

On request:

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

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

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



GQR

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

GQR:with open impeller.

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

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

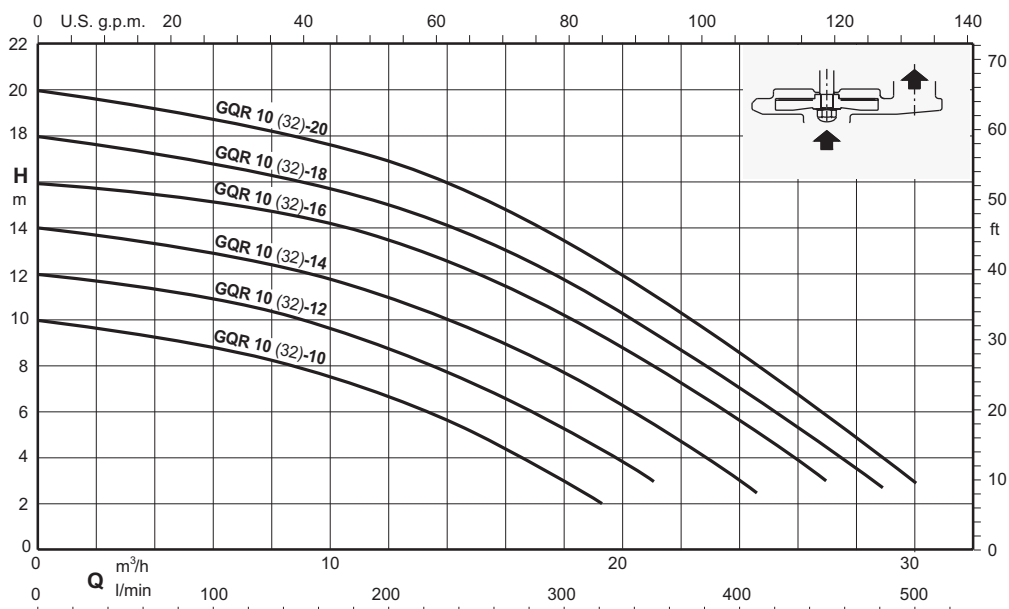
GQRM:Single-phase 230 V +/-10% with float switch and thermal protector.

Incorporated capacitor.

Float switch for automatic start and stop.

Cable length 10 m.

Liquid temperature up to 35° C.

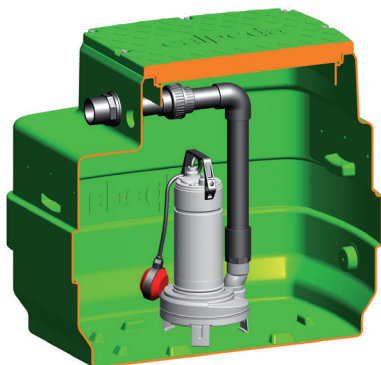


GEO 230



Pumps characteristics

GEO 230-GX..



Characteristics

Dirty water collection and lifting station with GX 40 series pumps.

It includes:

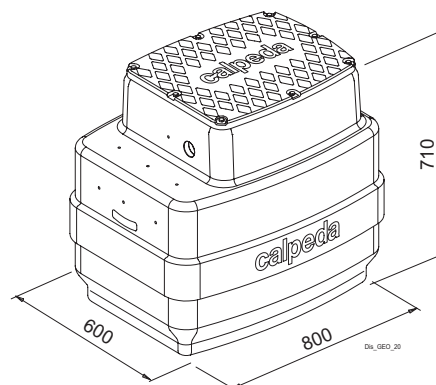
- 1 tank capacity 230l
- 1 Pump
 - - single-phase with 10 m cable and float switch
 - - three-phase with 10 m cable with support and float switch kit
- 1 control box for three-phase version
- 1 discharge pipe kit Ø 50 mm in PVC

On request:

- 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 autosupplied control panel for remote alarm with horn and flashing light
- - extension 300 mm

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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, 50 Hz (n ≈ 2900 rpm).

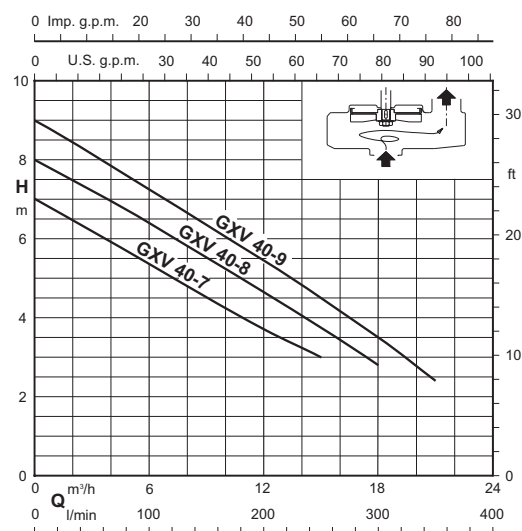
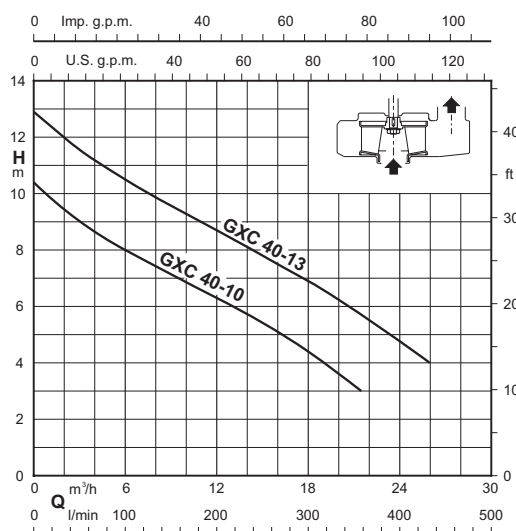
GXC, GXV: three-phase 400 V +/-10%;

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

Float switch for automatic start and stop.

Cable length 10 m.

Liquid temperature up to 35° C.

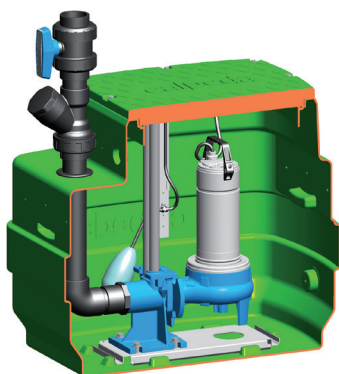


GEO 230



Pumps characteristics

GEO 230-GQG



Characteristics

Dirty water collection and lifting station with GQG series grinder pumps.

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 request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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.

GQG:with grinding system.

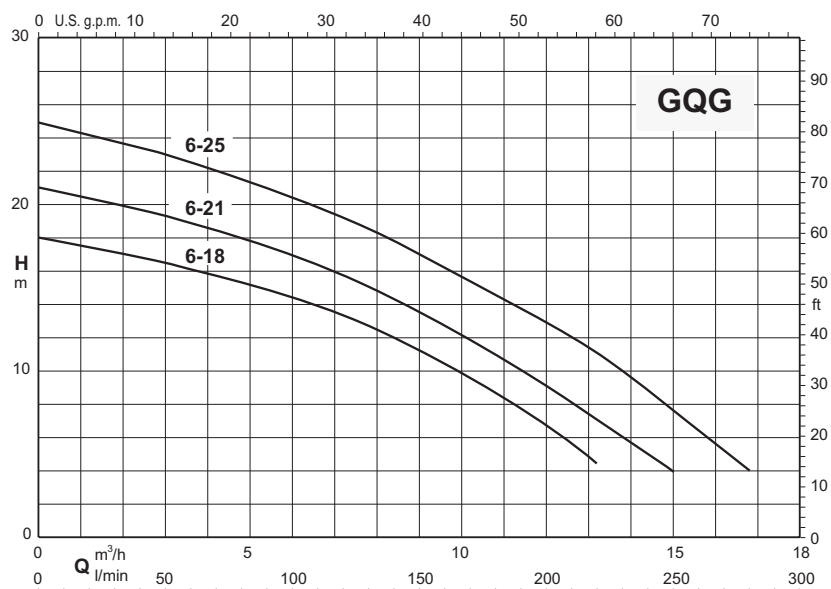
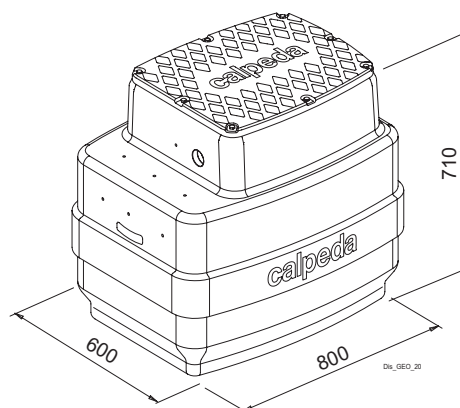
2-pole induction motor, 50 Hz ($n \approx 2900$ rpm).

GQG:three-phase 400 V $\pm 10\%$;

GQGM:single-phase 230V $\pm 10\%$ complete with control panel with thermal protection and starting capacitors (without float).

Cable length 10 m.

Liquid temperature up to 35° C.



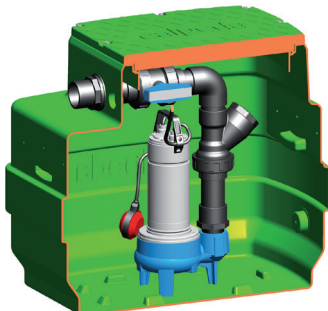
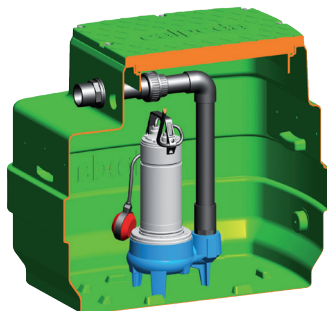
GEO 230



Pumps characteristics

GEO 230-GQS 40

GEO 230-GQS 50



Characteristics

Dirty water collection and lifting station with GQS series pumps.

It includes:

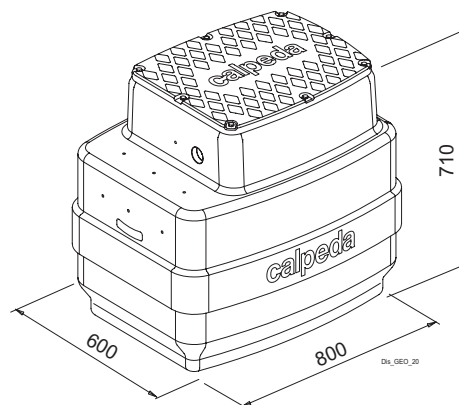
- 1 tank capacity 230 l
- 1 pump
 - single-phase with 10 m cable and float switch
 - three-phase with 10 m cable with support and float switch kit
- 1 control box for three-phase version
- For GQS 40: 1 x Ø 50 mm PVC drainage pipe kit
- For GQS 50: 1 x Ø 63 mm PVC drainage pipe kit with ball valve and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

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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, 50 Hz ($n \approx 2900$ rpm).

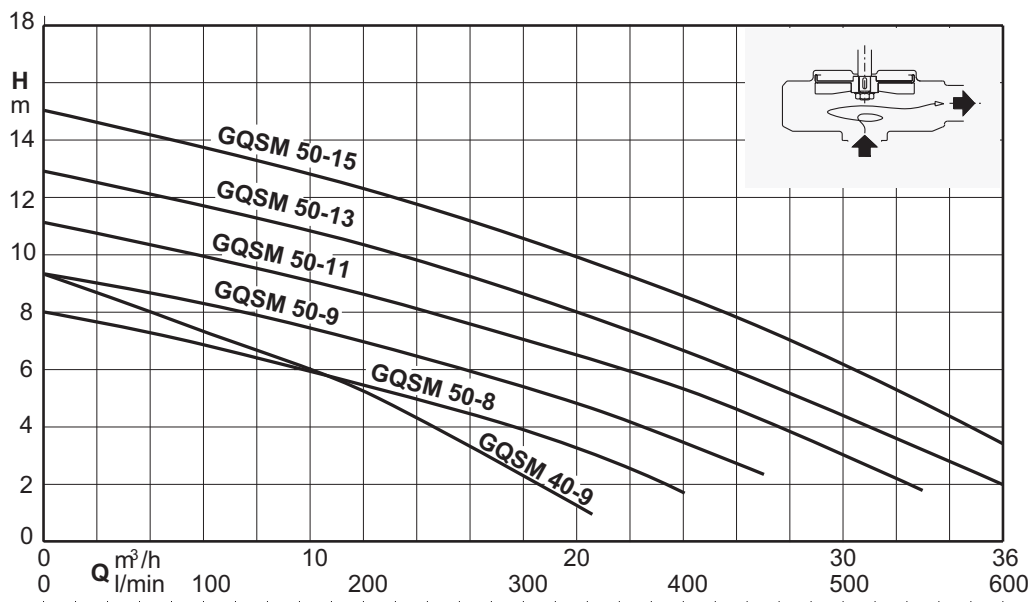
GQS: three-phase 400 V +/-10%;

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

Incorporated capacitor.

Cable length 10 m.

Liquid temperature up to 35° C.

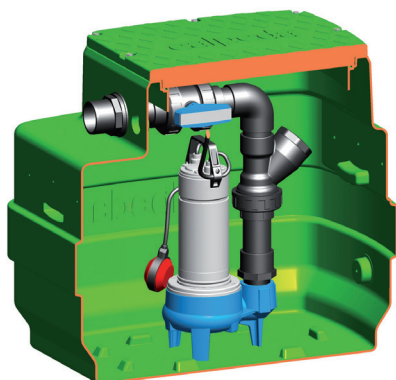


GEO 230



Pumps characteristics

GEO 230-GQN



Characteristics

Dirty water collection and lifting station with GQN series pumps.

It includes:

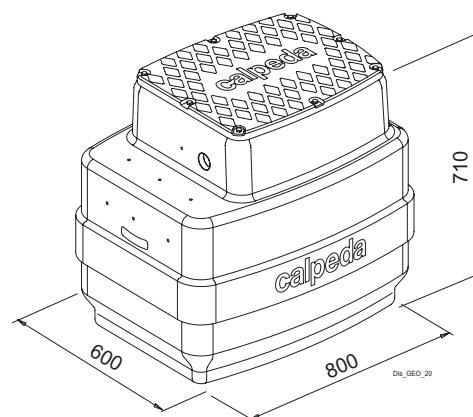
- 1 tank capacity 230 l
- 1 pump
 - single-phase with 10 m cable, with float
 - three-phase with 10 m cable with support and float switch kit
- 1 support kit with float switch
- 1 control box for three-phase version
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
GEO 230-GQNM 50-13	0,9	6,6	36	11,6
GEO 230-GQNM 50-15	1,1	8,4	42	13,5
GEO 230-GQNM 50-17	1,5	12	48	15,7

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



GQN

Single-impeller submersible pumps, with vertical delivery port.

GQN:with two-passage impeller.

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

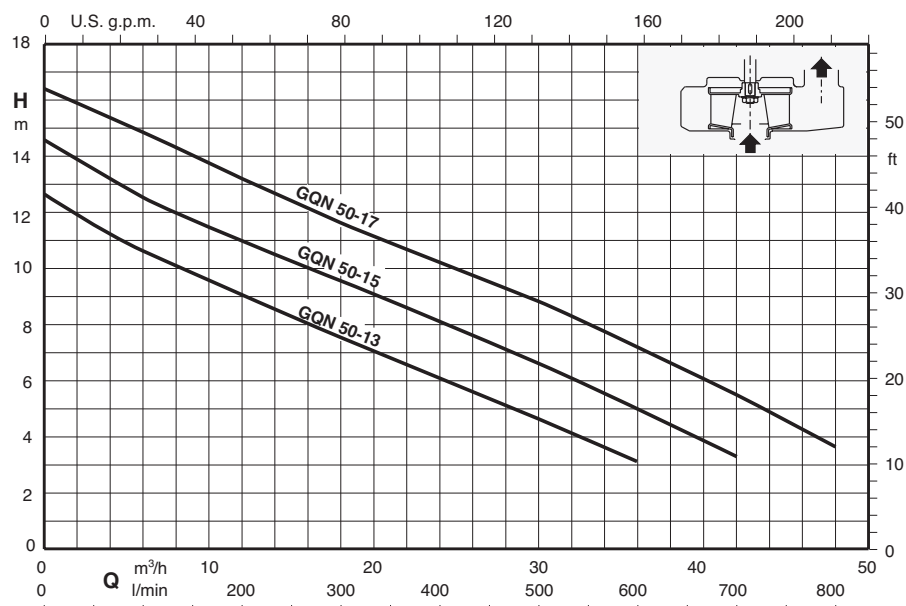
GQN:three-phase 400 V $\pm 10\%$;

GQNM:Single-phase 230 V $\pm 10\%$ with float switch and thermal protector.

Incorporated capacitor.

Cable length 10 m.

Liquid temperature up to 35° C.

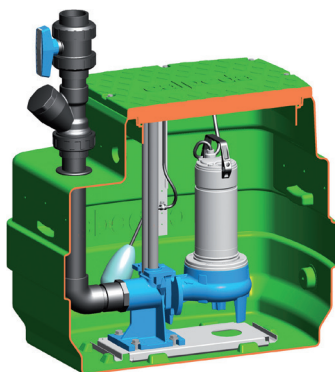


GEO 230



Pumps characteristics

GEO 230-GQV



Characteristics

Dirty water collection and lifting station with GQV series pumps.

It includes:

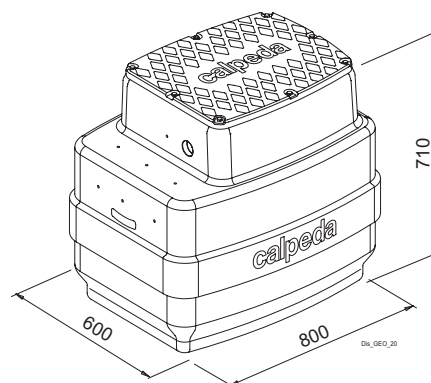
- 1 tank capacity 230 l
- 1 pump
 - single-phase with 10 m cable without float switch
 - - three-phase with 10 m cable
- 1 support kit with float switch
- 1 control box
- 1 duck foot coupling kit
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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

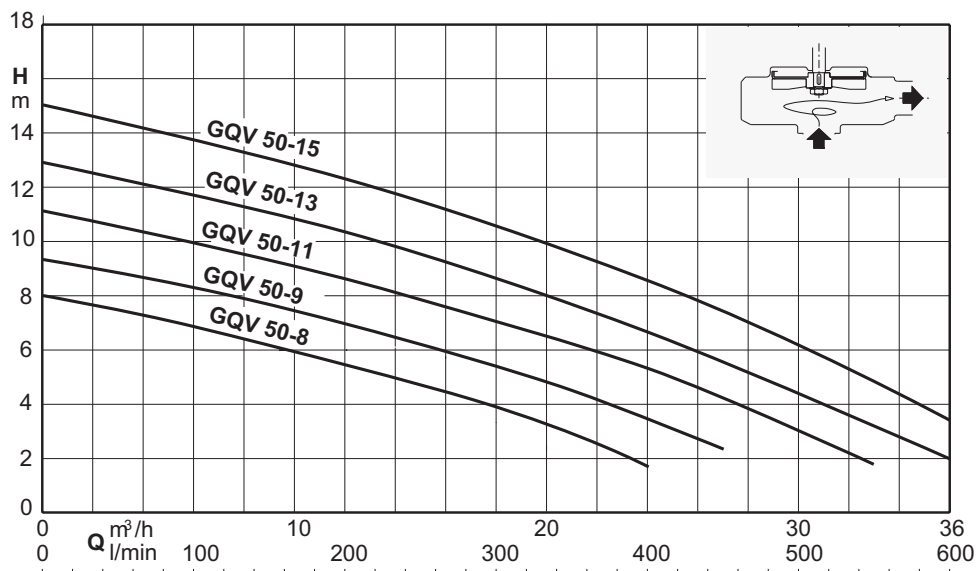
2-pole induction motor, 50 Hz ($n \approx 2900$ rpm).

GQV: three-phase 400 V $\pm 10\%$;

GQVM: single-phase 230 V $\pm 10\%$, with thermal protector, with built-in capacitor (without float switch).

Cable length 10 m.

Liquid temperature up to 35° C.

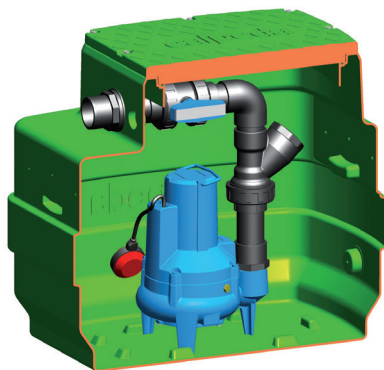


GEO 230



Pumps characteristics

GEO 230-GM..



Characteristics

Dirty water collection and lifting station with GMV GMC series pumps.

It includes:

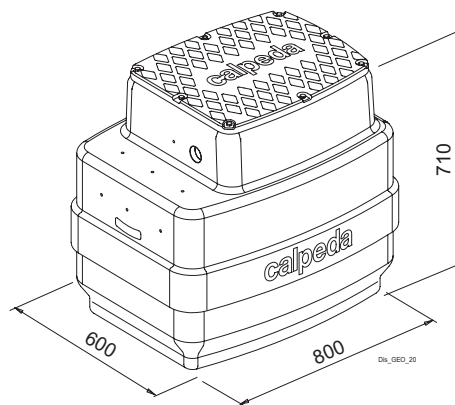
- 1 tank capacity 230 l
- 1 pump
 - single-phase with 10 m cable and float switch
 - three-phase with 10 m cable with rod kit and float
- 1 control box for three-phase version
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
GEO 230-GMCM 50CE	0,75	4,5	36	9,5
GEO 230-GMCM 50BE	1,1	6,5	42	12,5
GEO 230-GMVM50CE	0,75	4,5	31	8
GEO 230-GMVM 50BE	1,1	6,5	35	9,5

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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

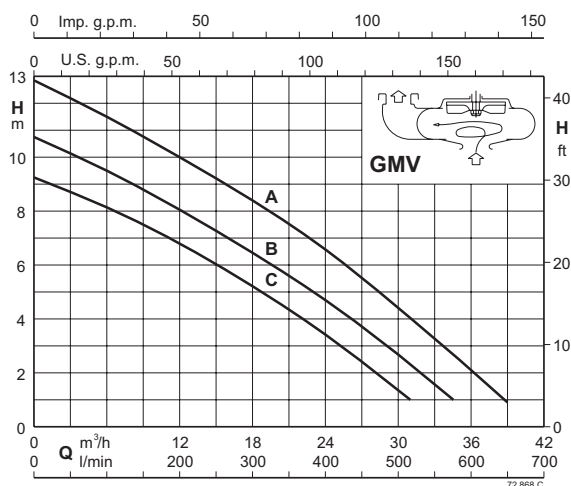
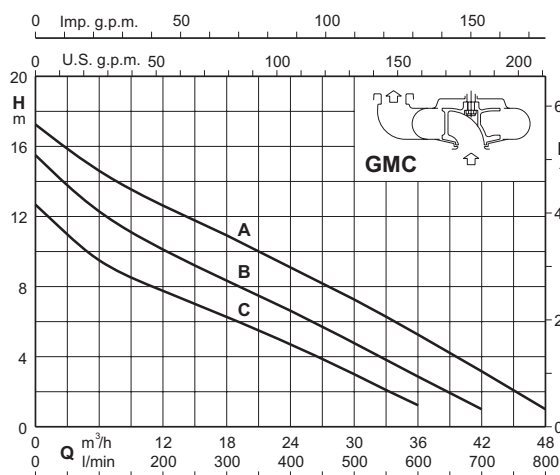
2-pole induction motor, 50 Hz (n ≈ 2900 rpm).

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

GMCM, 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.

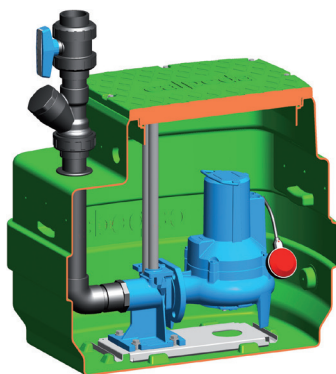


GEO 230



Pumps characteristics

GEO 230-GM..



Characteristics

Dirty water collection and lifting station with GMV GMC series pumps.

It includes:

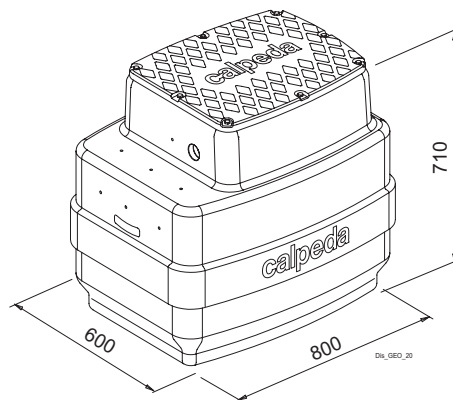
- 1 tank capacity 230 l
- 1 pump
 - single-phase with 10 m cable and float
 - three-phase with 10 m cable with rod kit and float
- 1 control box for three-phase version
- 1 duck foot coupling kit
- 1 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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 50-65C	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

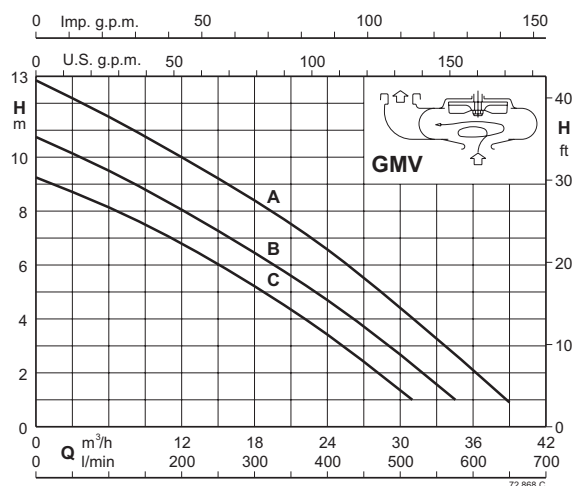
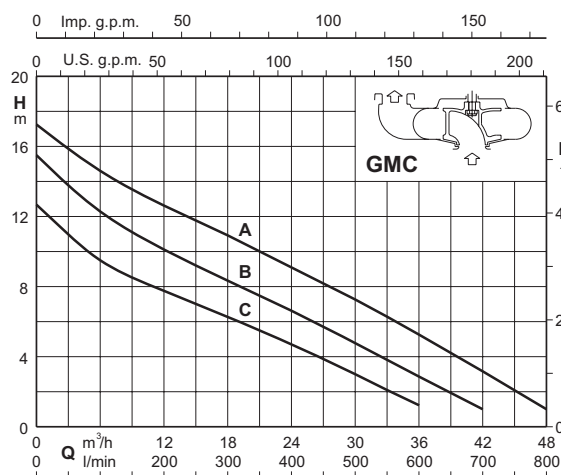
2-pole induction motor, 50 Hz ($n \approx 2900$ rpm).

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

GMCM, GMVM: single-phase 230 V $\pm 10\%$, built-in thermal protector and built-in capacitor. Float switch for automatic operation.

Cable length 10 m.

Liquid temperature up to 35° C.

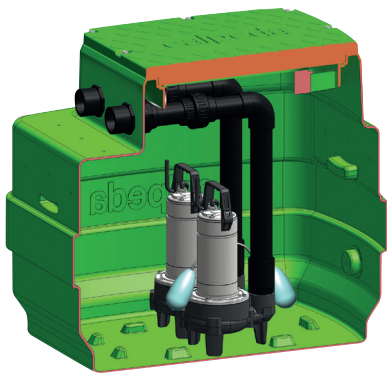


GEO 230



Pumps characteristics

GEO 230-GQS 40



Characteristics

Dirty water collection and lifting station with GQS 40-9 series pumps.

It includes:

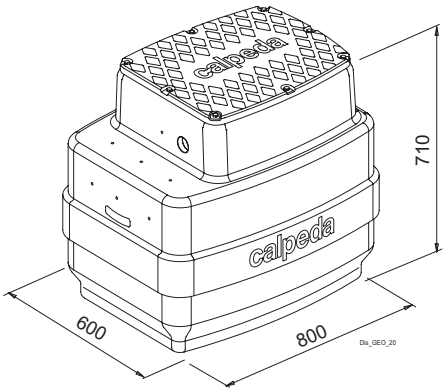
- 1 tank capacity 230 l
- 2 pump
 - single-phase with 10 m cable without float switch
 - - three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 control box
- 4 x Ø 50 mm PVC drainage pipe kit

On request:

- 4 x Ø 50 mm PVC drainage pipe kit with ball valve and ball non-return valves
- 1 safety float switch (with support for single-phase version) and autosupplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m3/h	m
GEO 230-2GQSM 40-9	0,45x2	4,5x2	21x2	8.8

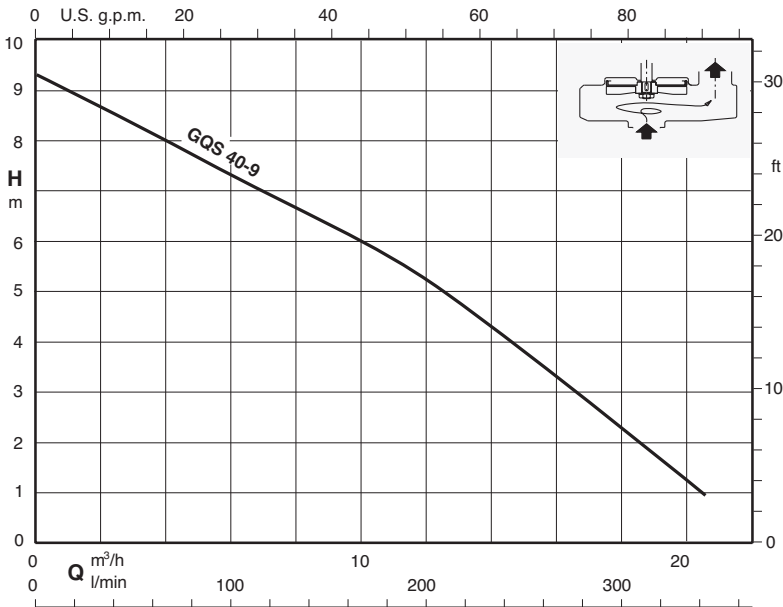
Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m3/h	m
GEO 230-2GQS 40-9	0,45x2	1,6x2	21x2	8.8



GQS

Single-impeller submersible pumps, with vertical delivery port.

- GQS:**with free-flow (vortex) impeller
- 2-pole induction motor, 50 Hz (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).
- Cable length 10 m.
- Liquid temperature up to 35° C.

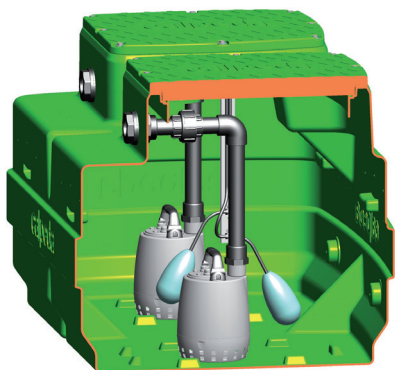


GEO 500



Pumps characteristics

GEO 500-GX..



Characteristics

Automatic collecting and lifting station

- for clean water with GXR pump series
- - for waste water with GXV pump series.

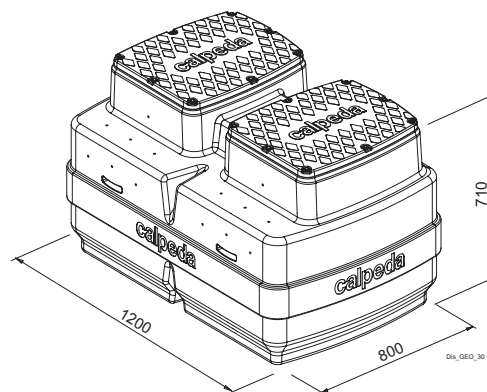
It includes:

- 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 request:

- 2 single-phase pumps with 10 m cable, without floats
- 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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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 500-2GXVM 13	0.45x2	4,5x2	13,2x2	11,7



GXRM, GXVM

Submersible drainage pumps made of chrome-nickel stainless steel, with vertical delivery port.

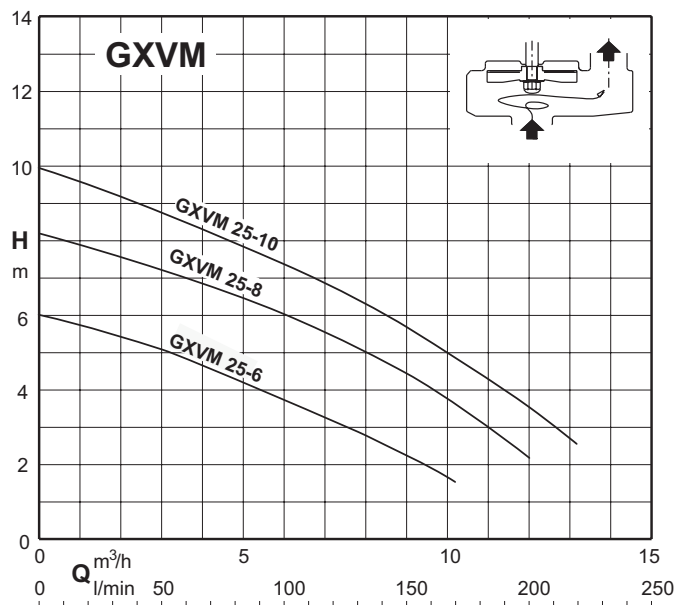
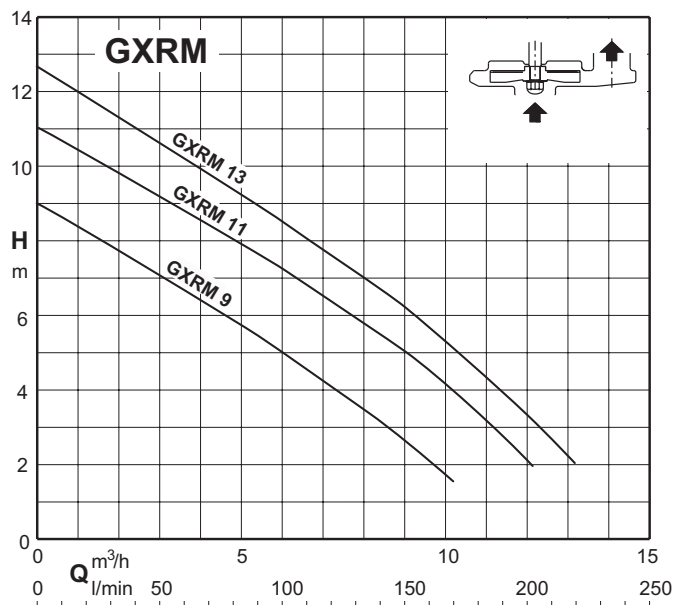
GXRM: with open impeller.

GXVM: with free-flow (vortex) impeller

2-pole induction motor, 50 Hz ($n \approx 2900$ 1/min), single-phase 230V $\pm 10\%$ with thermal protector and built-in capacitor (without float).

5 m cable and control box with capacitor.

Liquid temperature up to 35° C.

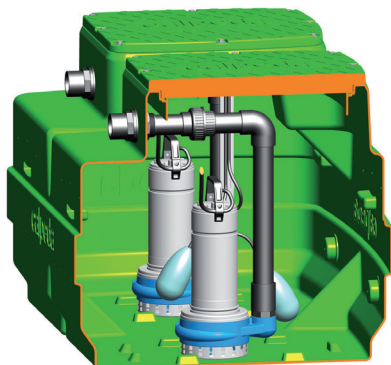


GEO 500



Pumps characteristics

GEO 500-GQR



Characteristics

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

It includes:

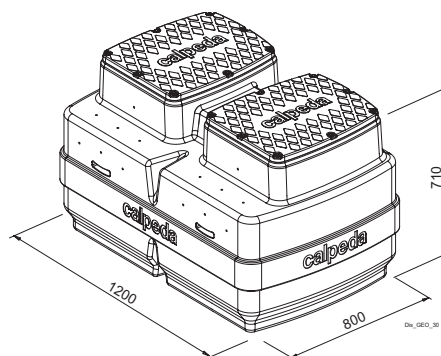
- 1 tank capacity 500 l
- 2 pump
 - single-phase with 10 m cable without float switch
 - - three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 control box
- 2 x 50 mm diameter PVC drainage pipe kits

On request:

- 2 x 50 mm diameter PVC drainage pipe kits with ball valves and ball non-return valves
- 1 safety float switch and auto-supplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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	13x2	30x2	19,5

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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.

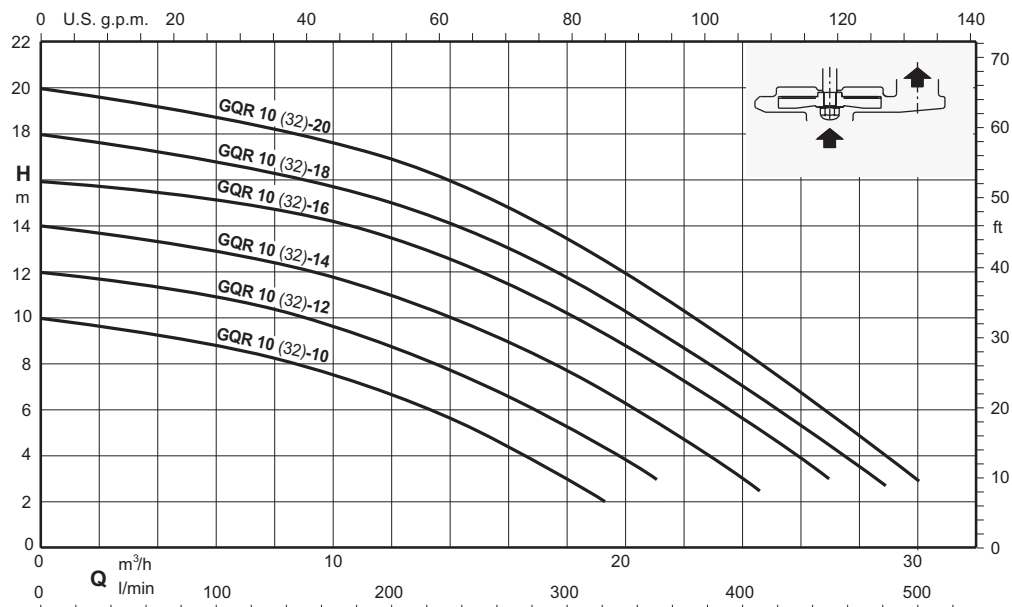
2-pole induction motor, 50 Hz ($n \approx 2900$ 1/min)

GQR: three-phase 400 V $\pm 10\%$;

GQRM: single-phase 230 V $\pm 10\%$, with thermal protector, with built-in capacitor (without float switch).

Cable length 10 m.

Liquid temperature up to 35° C.

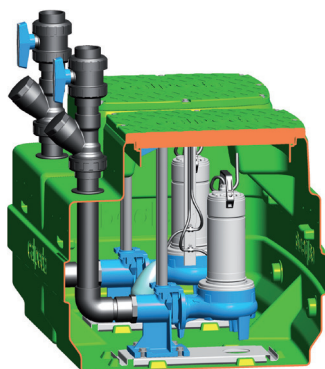


GEO 500



Pumps characteristics

GEO 500-GQR



Characteristics

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

It includes:

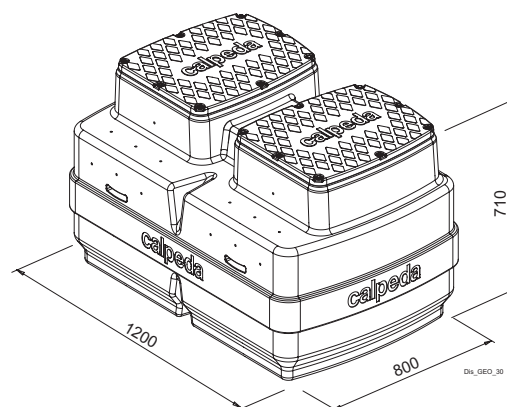
- 1 tank capacity 500 l
- 2 pump
 - single-phase with 10 m cable without float switch
 - - three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 control box
- 2 duck foot coupling kit
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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

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

GQR:with open impeller.

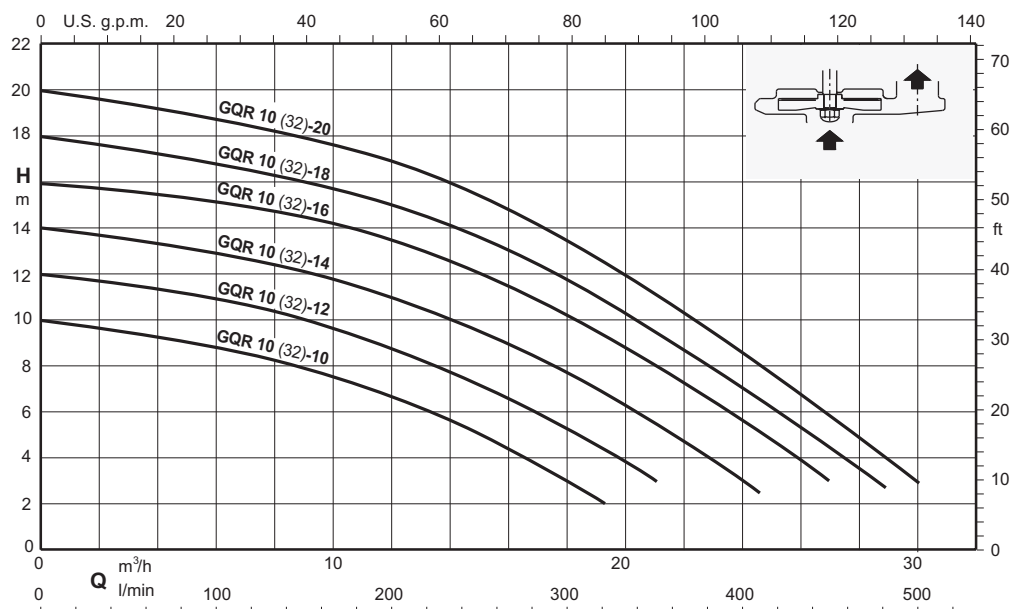
2-pole induction motor, 50 Hz ($n \approx 2900$ 1/min)

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

GQRM: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.

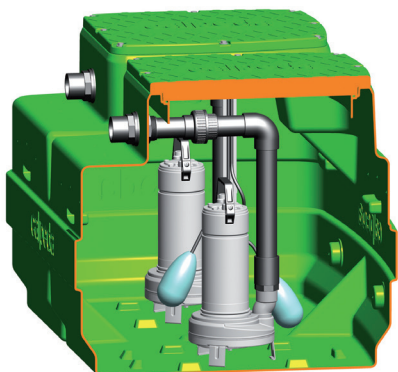


GEO 500



Pumps characteristics

GEO 500-GX..



Characteristics

Clear water collection and lifting station with GX 40 series pumps.

It includes:

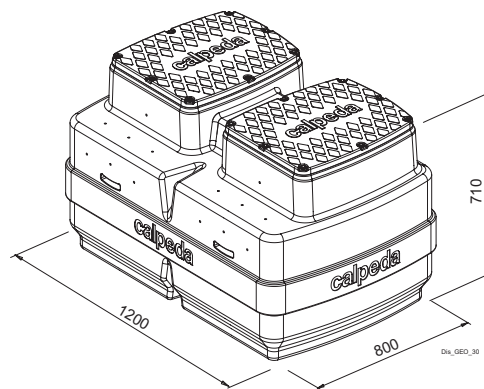
- 1 tank capacity 500 l
- 2 pump
 - single-phase with 10 m cable without float switch
 - - three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 control box
- 2 x 50 mm diameter PVC drainage pipe kits

On request:

- 2 x 50 mm diameter PVC drainage pipe kits with ball valves and ball non-return valves
- 1 safety float switch (with support for single-phase version) and autosupplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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 40-9	0,9x2	6x2	21x2	8,1

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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 two-pass impeller.

GXV: with free-flow (vortex) impeller

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

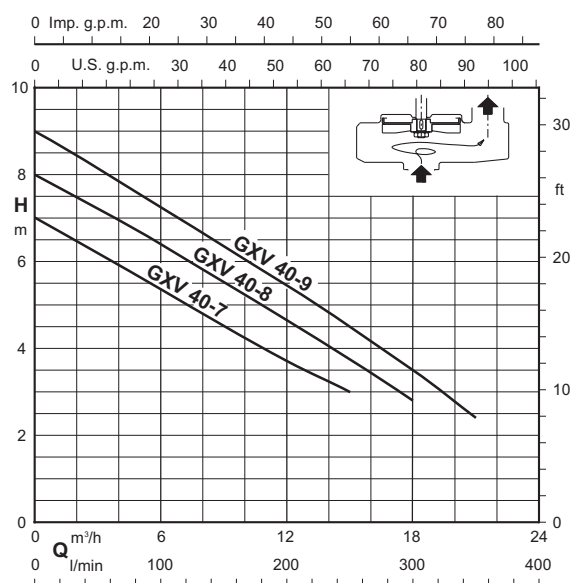
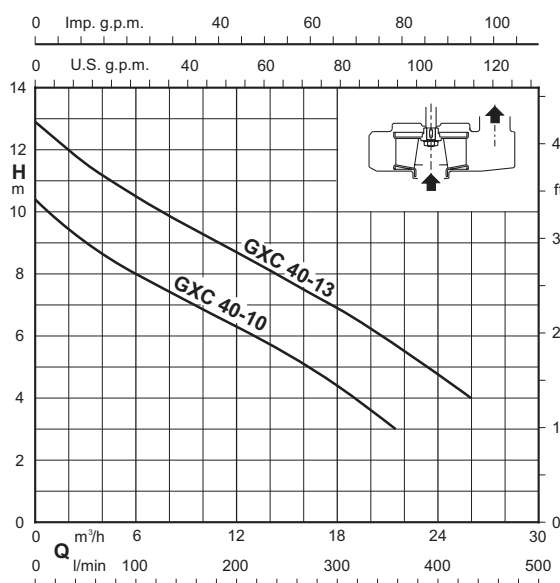
GXC, GXV: three-phase 400 V $\pm 10\%$;

GXCM, GXVM: single-phase 230V $\pm 10\%$ with built-in thermal protector and capacitor (without float).

Float switch for automatic start and stop.

Cable length 10 m.

Liquid temperature up to 35° C.

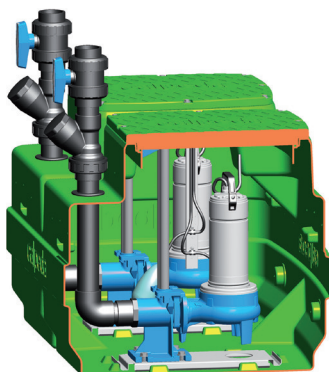


GEO 500



Pumps characteristics

GEO 500-GQG



Characteristics

Sewage collection and lifting station with GQG series grinder pumps.

It includes:

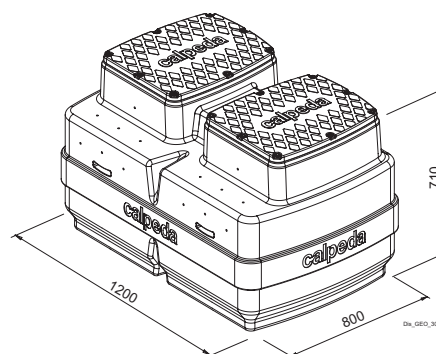
- 1 tank capacity 500 l
- 2 pump
 - single-phase with 10 m cable without float switch
 - - three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 control box (with capacitor for single-phase motors)
- 2 duck foot coupling kit
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return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

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
GEO 500-2GQGM 6-18	0,9x2	7x2	13,2x2	16,5
GEO 500-2GQGM 6-21	1,1x2	7,5x2	15x2	19,2
GEO 500-GQGM 6-25	1,5x2	9,5x2	16,8x2	23

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



GQG

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

GQG:with grinding system.

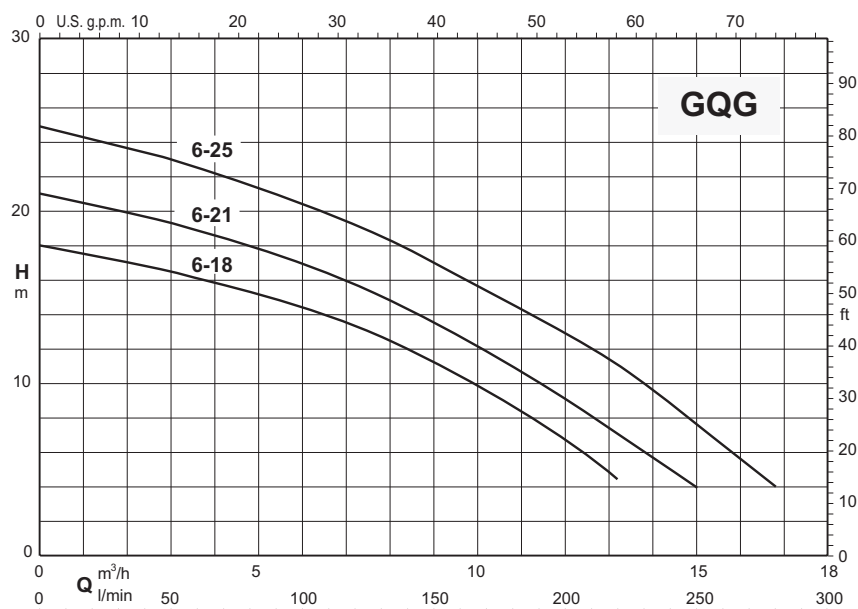
2-pole induction motor, 50 Hz ($n \approx 2900$ rpm).

GQG:three-phase 400 V $\pm 10\%$;

GQGM:single-phase 230V $\pm 10\%$ complete with control panel with thermal protection and starting capacitors (without float).

Cable length 10 m.

Liquid temperature up to 35° C.

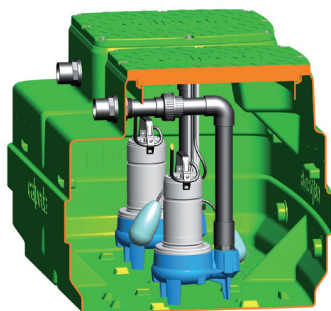


GEO 500

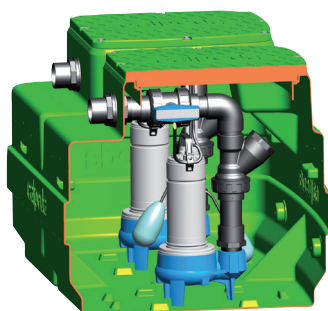


Pumps characteristics

GEO 500-GQS 40



GEO 500-GQS 50



Characteristics

Dirty water collection and lifting station with GQS series pumps.

It includes:

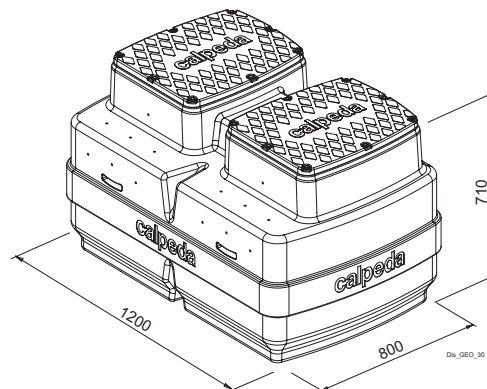
- 1 tank capacity 500 l
- 2 pump
 - single-phase with 10 m cable without float switch
 - - three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 control box
 - For GQS 40: 2 x Ø 50 mm PVC drainage pipe kit
 - For GQS 50: 2 x Ø 63 mm PVC drainage pipe kit with ball valve and ball non-return valves

On request:

- For GQS 40: 2 x Ø 50 mm PVC drainage pipe kit with ball valve and ball non-return valves
- 1 safety float switch (with support for single-phase version) and autosupplied control panel for remote alarm with horn and flashing light
- extension 300 mm

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
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

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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.

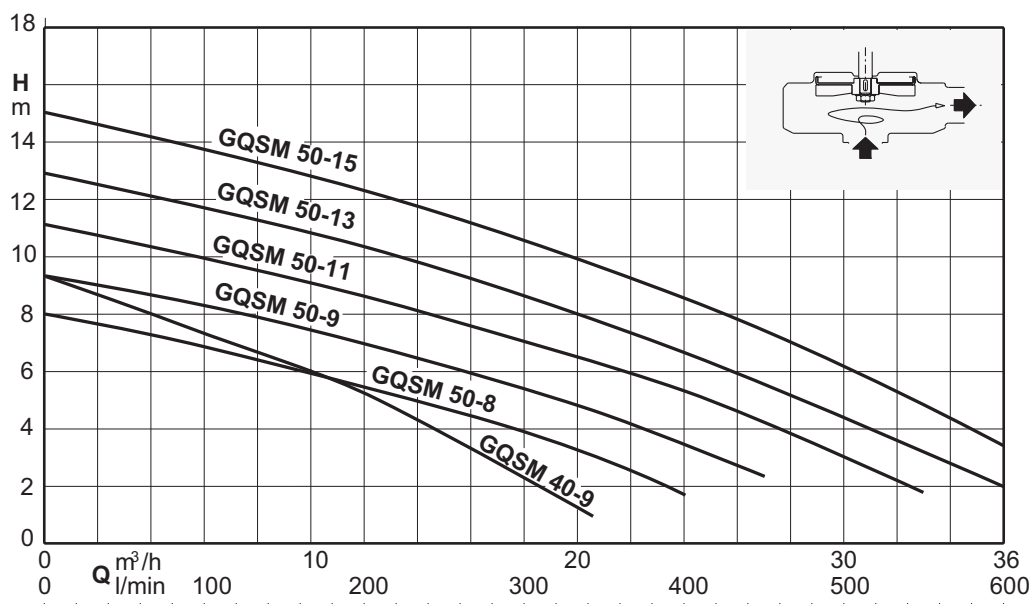
GQS: with free-flow (vortex) impeller
2-pole induction motor, 50 Hz (n ≈ 2900 rpm).

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

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

Cable length 10 m.

Liquid temperature up to 35° C.

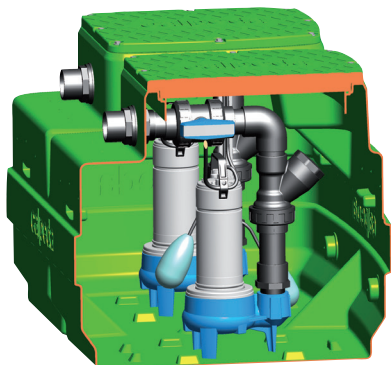


GEO 500



Pumps characteristics

GEO 500-GQN



Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
GEO 500-2GQNM 50-13	0,9x2	6,6x2	36x2	11,6
GEO 500-2GQNM 50-15	1,1x2	8,4x2	42x2	13,5
GEO 500-2GQNM 50-17	1,5x2	12x2	48x2	15,7

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

Characteristics

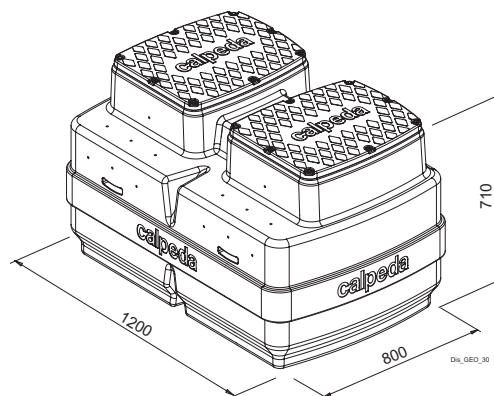
Dirty water collection and lifting station with GQN series pumps.

It includes:

- 1 tank capacity 500 l
- 2 pump
 - 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 63 mm in PVC with a ball valve and non-return ball valve

On request:

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



GQN

Single-impeller submersible pumps, with vertical delivery port.

GQN: with two-passage impeller.

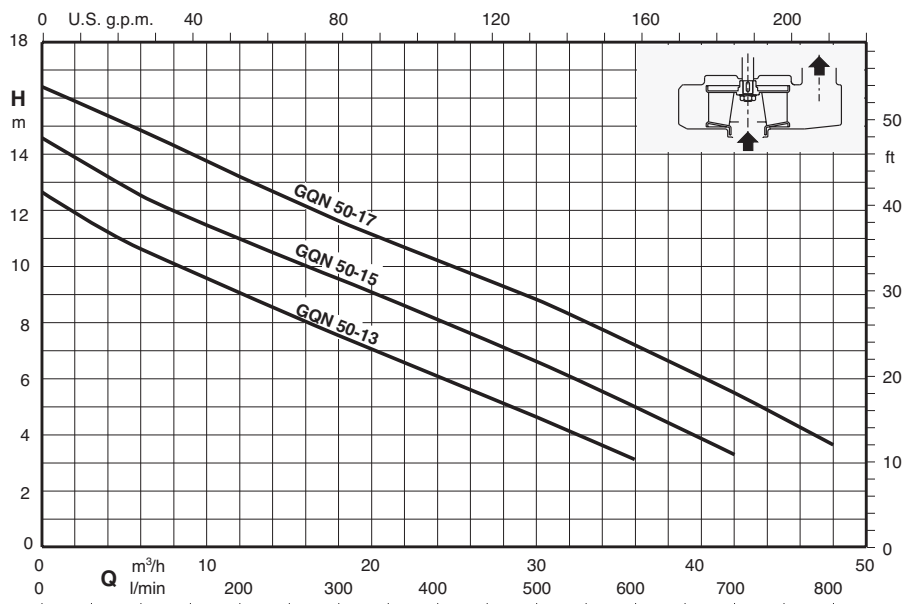
2-pole induction motor, 50Hz (n ≈ 2900 rpm)

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

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

Cable length 10 m.

Liquid temperature up to 35° C.

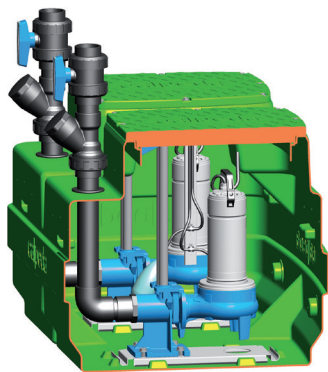


GEO 500



Pumps characteristics

GEO 500-GQV



Characteristics

Dirty water collection and lifting station with GQV series pumps.

It includes:

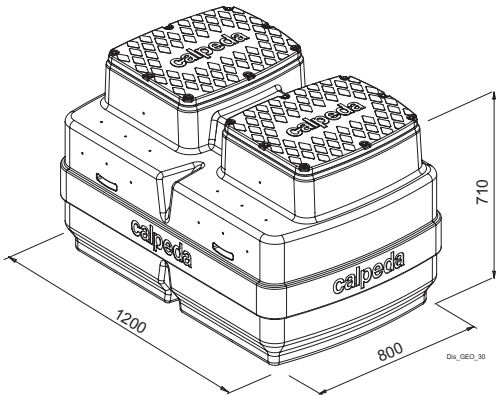
- 1 tank capacity 500 l
- 2 pump
 - single-phase with 10 m cable without float switch
 - - three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 control box
- 2 duck foot coupling kit
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m3/h	m
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	1,5x2	13x2	36x2	14,4

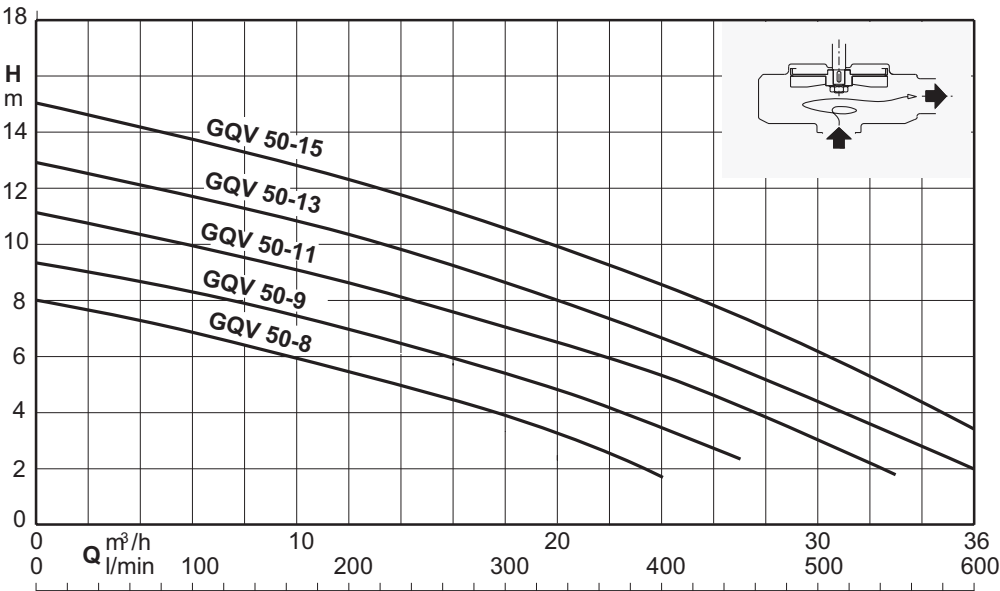
Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m3/h	m
GEO 500-2GQV 50-8	0,55x2	1,5x2	24x2	7,4
GEO 500-2GQV 50-9	0,75x2	1,8x2	27x2	8,8
GEO 500-2GQV 50-11	0,9x2	2,3x2	33x2	10,5
GEO 500-2GQV 50-13	1,1x2	3x2	36x2	12,5
GEO 500-2GQV 50-15	1,5x2	4x2	36x2	14,4



GQV

Single-impeller submersible pumps, with horizontal delivery port.

- GQV:**with free-flow (vortex) impeller
- 2-pole induction motor, 50 Hz (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.

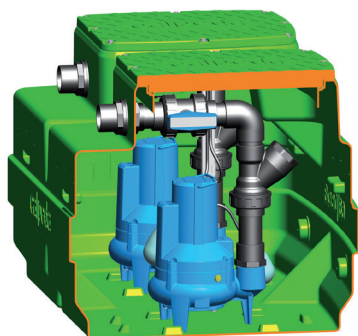


GEO 500



Pumps characteristics

GEO 500-GM..



Characteristics

Dirty water collection and lifting station with GMV, GMC series pumps.

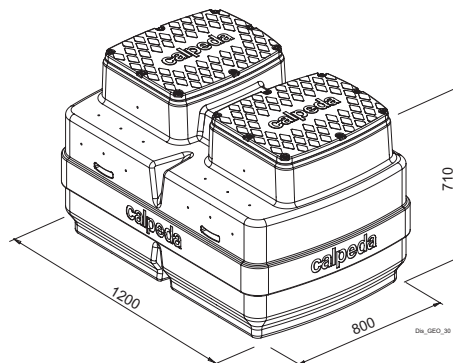
It includes:

- 1 tank capacity 500 l
- 2 pump
 - 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 63 mm in PVC with a ball valve and non-return ball valve

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
GEO 500-2GMCM 50CE	0,75x2	4,5x2	36x2	9,5
GEO 500-2GMCM 50BE	1,1x2	6,5x2	42x2	12,5
GEO 500-2GMVM50CE	0,75x2	4,5x2	31x2	8
GEO 500-2GMVM 50BE	1,1x2	6,5x2	35x2	9,5



Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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

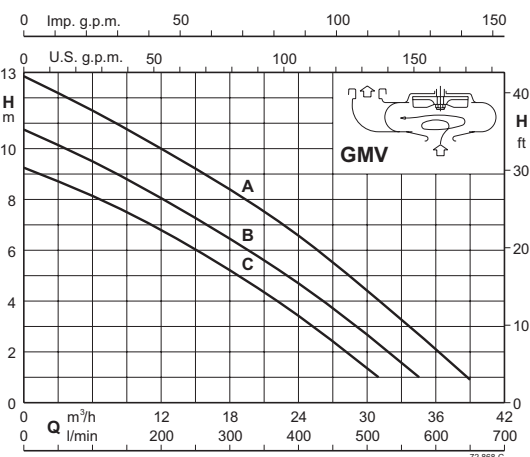
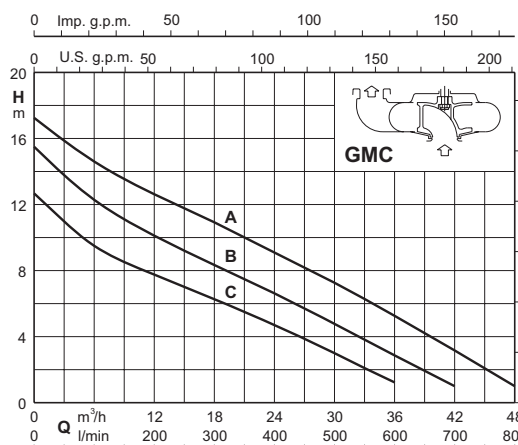
2-pole induction motor, 50 Hz (n ≈ 2900 rpm).

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

GMCM, GMVM: single-phase 230V ± 10% with thermal protector in the winding and built-in capacitor (without float).

Cable length 10 m.

Liquid temperature up to 35° C.

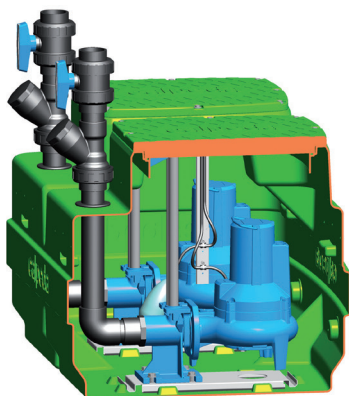


GEO 500



Pumps characteristics

GEO 500-GM..



Characteristics

Dirty water collection and lifting station with GMV, GMC series pumps.

It includes:

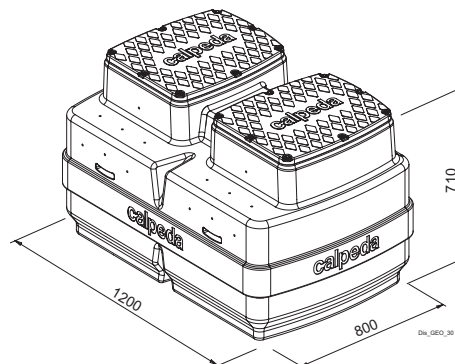
- 1 tank capacity 500 l
- 2 pump
 - single-phase with 10 m cable without float switch
 - - three-phase with 10 m cable
- 1 support kit with 2 float switch
- 1 control box
- 2 duck foot coupling kit
- 2 discharge pipe kit Ø 63 mm in PVC with a ball valve and non-return ball valve

On request:

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

Type single-phase	1 ~ 230 V	1 ~ 230 V	Q max	H max
	kW	A	m ³ /h	m
GEO 500-2GMCM 50-65CE	0,75x2	4,5x2	36x2	9,5
GEO 500-2GMCM 50-65BE	1,1x2	6,5x2	42x2	12,5
GEO 500-2GMVM50-65CE	0,75x2	4,5x2	31x2	8
GEO 500-2GMVM 50-65BE	1,1x2	6,5x2	35	9,5

Type three-phase	3 ~ 400 V	3 ~ 400 V	Q max	H max
	kW	A	m ³ /h	m
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 50-65C	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

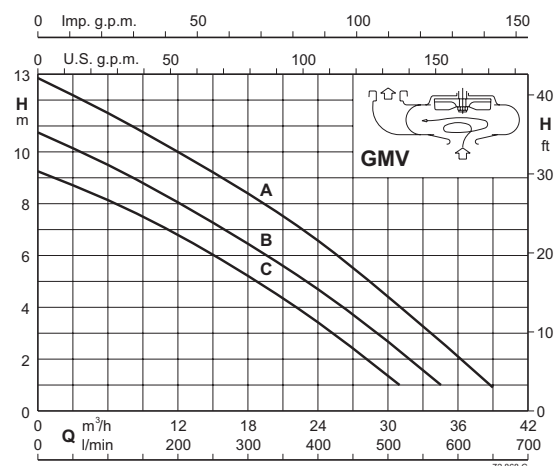
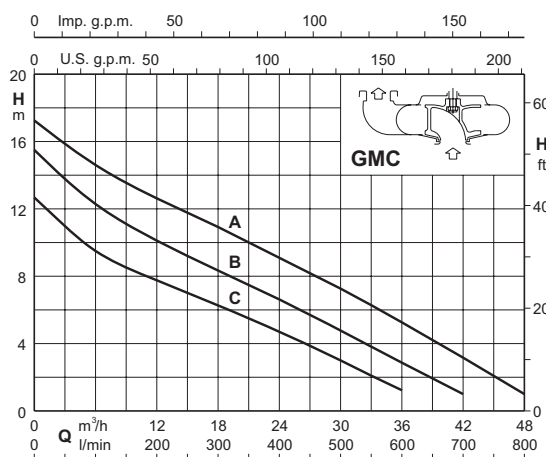
2-pole induction motor, 50 Hz (n ≈ 2900 rpm).

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

GMCM, GMVM:single-phase 230V ± 10% with thermal protector in the winding and built-in capacitor (without float).

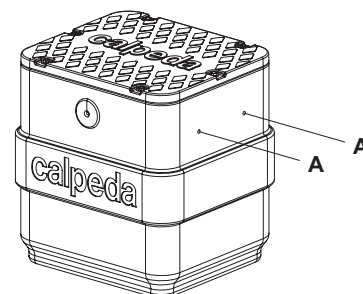
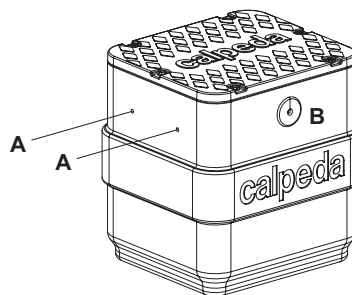
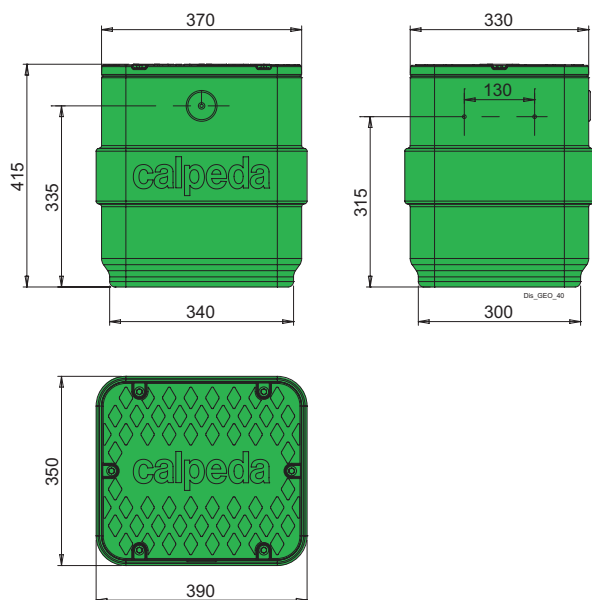
Cable length 10 m.

Liquid temperature up to 35° C.



Dimensions and weights

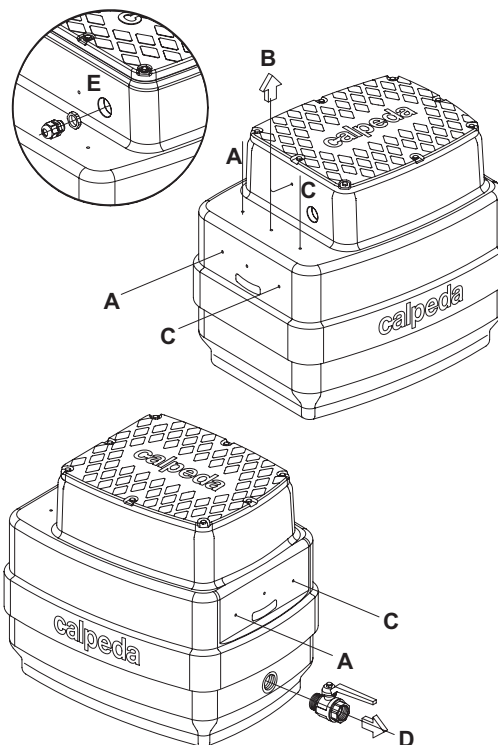
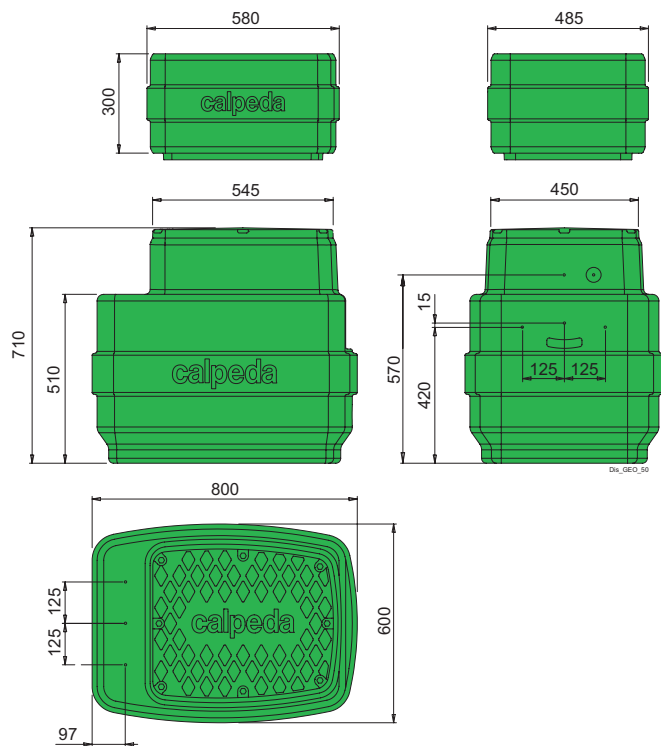
GEO 40



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

Tank kg.6

GEO 230

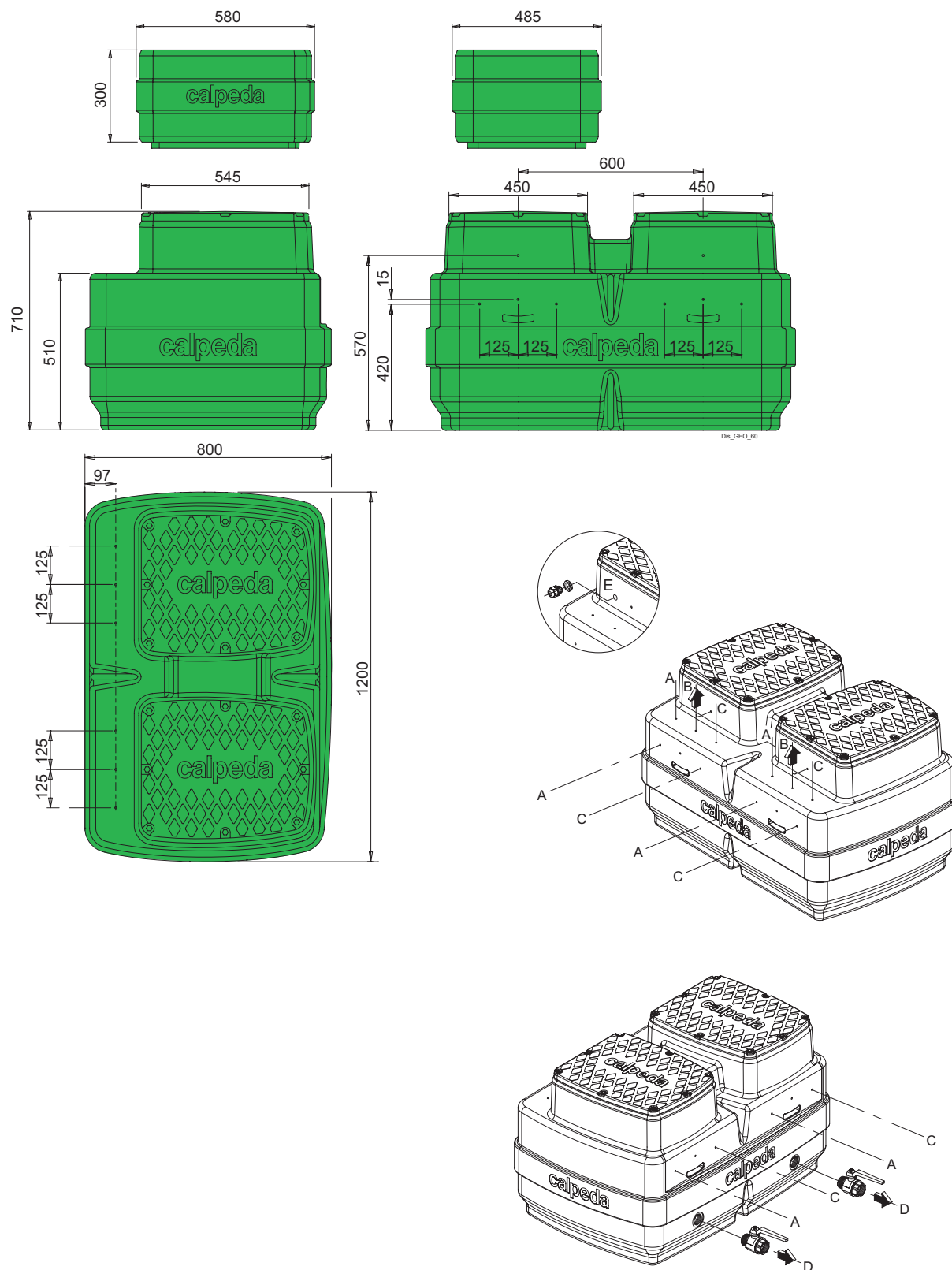


- A-C) inlet and relief
 B) Inlet for delivery
 D) G 1 1/2 draining outlet
 E) Cable outlet

Extension kg.4,5
 Tank kg.16

Dimensions and weights

GEO 500



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

Extension kg.4,5
 Tank kg.32

Technical appendix

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 value indicated is already appropriately increased by a coefficient that takes into account peak hours, when water consumption is highest.

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

The sum of the head losses DPC is:

$$\Delta p_c = H_d + \Sigma H_v + \Sigma H_c$$

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/m²

Table 1 Maximum flow rate of domestic waste water at peak hour

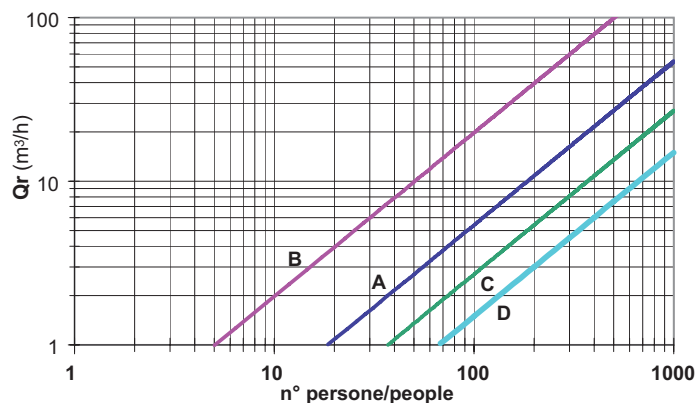


Table 2 Rainwater flow rate

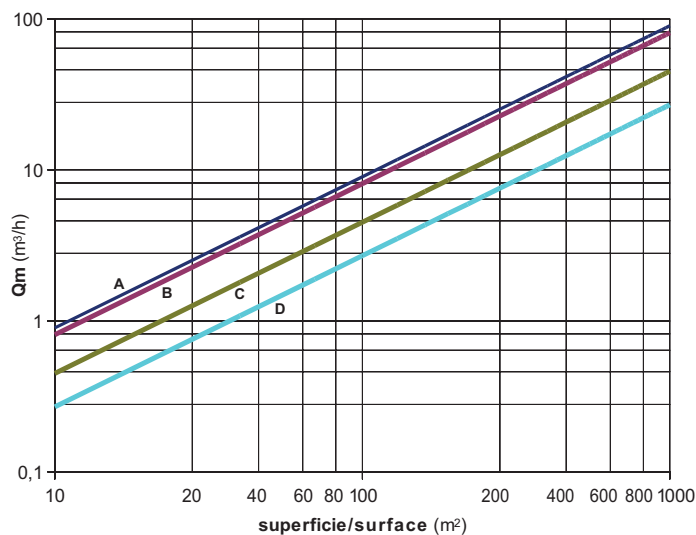
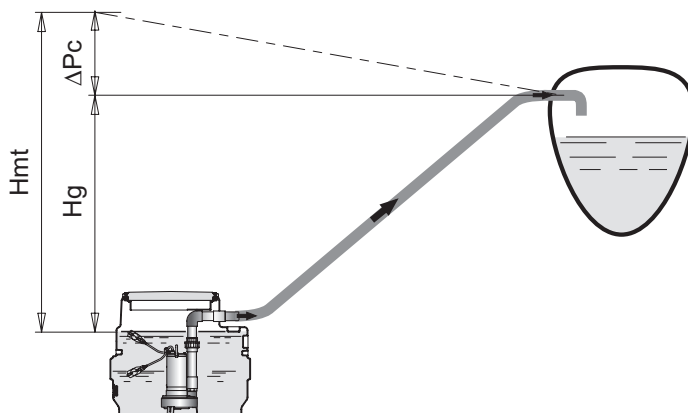


Figure 1



Technical appendix

General data

Table 5
Pressure drops in PVC pipes PN6 (m)

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

Table 6
Pressure drops in bends and gate valves (cm)

Velocità dell'acqua Water flow velocity m/sec.	Curve ad angolo arrotondato $\alpha = 90$ $\alpha = 90$ sweep elbow					Saracinesche Gate valves
	$\frac{d}{R} = 0,4$	$\frac{d}{R} = 0,6$	$\frac{d}{R} = 0,8$	$\frac{d}{R} = 1$	$\frac{d}{R} = 1,5$	
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

Technical appendix

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 70m.

In addition the station will receive rainwater from 400 m² of tarmac, roof surfaces and 120 m² from the garden.

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

It is possible to calculate the Q_r from the Table 1 which is 4 m³/h, while Q_m is obtained from the Table 2 and is 36 m³/h (roofs and tarmac) plus 2 m³/h from gardens, with this value Q_{tot} is 42 m³/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 m³/h => 1,4 m/s => Pipe DN 110 (with two pumps in parallel operation)

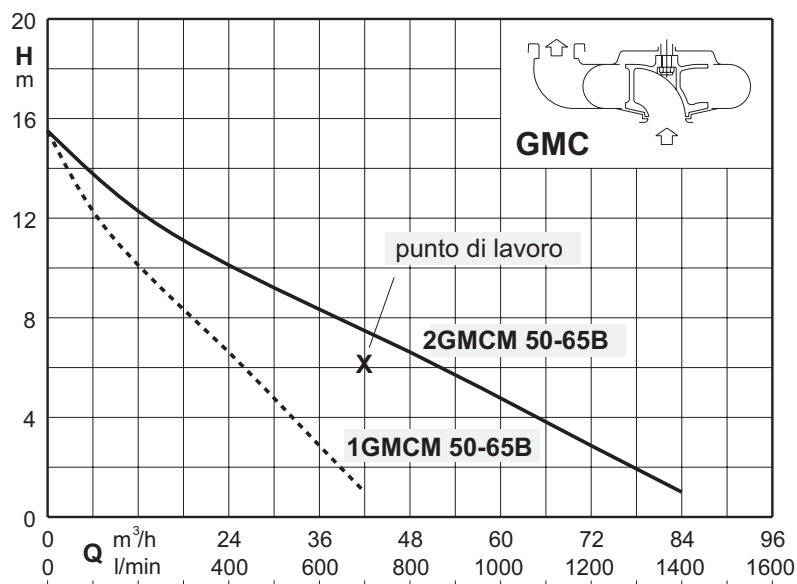
21 m³/h => 0,7 m/s => Pipe DN 110 (with one operating pump)

The distributed head loss in 70 m pipe with 720 l / min is 1.13 m (Table 3), then from the formula: $H_{mt} = H_g + \Delta p_c$

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

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

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



Examples of installations

