GRUNDFOS **DATA BOOKLET**

Multilift

Lifting stations
50 Hz

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1. Product overview

Multilift, single-pump lifting stations

Multilift MSS	Description	Technical data	
	Compact lifting station for single-family houses **Features:** • basic controller with multiple functions • built-in non-return flap valve • 5 inlets, DN 100 • piezoresistive level sensor.	Tank capacity: H_{max}: Q_{max}: P1: Discharge connection: Main inlet levels:	44 l up to 11.8 m up to 35 m^3/h 1.8 kW DN 100 180 and 250 mm

Multilift M	Description	Technical data	
	Compact lifting station for single-family houses **Features:** • controller with interactive menu and multiple functions • built-in non-return flap valve • patented, eccentric inlet disk for stepless inlet level adjustment, DN 100, optional DN 150 • piezoresistive level sensor.	Tank capacity: H_{max}: Q_{max}: P1: Discharge connection: Main inlet levels:	92 l up to 20.5 m up to 60 m^3/h 1.9 - 4.6 kW DN 100 180-315 mm

Multilift MOG	Description	Technical data	
	Compact lifting station for single-family houses **Features:** • built-in SEG grinder pump • controller with interactive menu and multiple functions • built-in non-return flap valve • patented, eccentric inlet disk for stepless inlet level adjustment, DN 100, optional DN 150 • piezoresistive level sensor.	Tank capacity: H_{max}: Q_{max}: P1: Discharge connection: Main inlet levels:	93 l up to 46 m up to 17 m^3/h 1.4 - 5.2 kW DN 32 180-315 mm

Multilift, double-pump lifting stations

Multilift MD	Description	Technical data	
	Compact lifting station for multi-family houses **Features:** • controller with interactive menu and multiple functions • built-in non-return flap valve • patented, eccentric inlet disk for stepless inlet level adjustment, DN 100, optional DN 150 • piezoresistive level sensor.	Tank capacity: H_{max}: Q_{max}: P1: Discharge connection: Main inlet levels:	130 l up to 20.5 m up to 60 m^3/h 1.9 - 4.6 kW DN 100 180-315 mm

Multilift MLD	Description	Technical data	
	Compact lifting station for multi-family houses **Features:** • controller with interactive menu and multiple functions • built-in non-return flap valve. • large-volume collecting tank, 270 litres	Tank capacity: H_{max}: Q_{max}: P1: Discharge connection: Main inlet level: Inlet connection:	270 l up to 20.5 m up to 60m^3/h 1.9 - 4.6 kW DN 100 560 mm vertical

Multilift MDG	Description	Technical data	
	Compact lifting station for multi-family houses Features: • built-in double SEG grinder pumps • controller with interactive menu and multiple functions • built-in non-return flap valve • patented, eccentric inlet disk for stepless inlet level adjustment.	Tank capacity: H_{max}: Q_{max}: P1: Discharge connection: Main inlet levels:	93 l up to 46 m up to 17 m^3/h 1.4 - 5.2 kW DN 32 180-315 mm

Multilift, large lifting stations

Multilift MD1, MDV		Technical data	
	Compact lifting station for large buildings **Features:** • highly reliable SE or SL pumps • controller with interactive menu and multiple functions • large-volume collecting capacity, up to 3 x 450 litres.	Tank capacity: H_{max}: Q_{max}: P1: Discharge connection: Main inlet level:	up to 3 x 450 l up to 45 m up to 230 m^3/h 2.8 / 12 / 12.6 kW DN 80, DN 100, DN 150 700 mm

Applications

Description

Multilift lifting stations are all-in-one solutions designed for the collection and pumping of domestic wastewater from selected sanitary appliances. These appliances may be in a single room, a complete floor or an entire building of any size, from a single-family house up to a huge shopping mall. Multilift lifting stations come in many versions of different size and performance.

Most versions come complete and pre-assembled, which enables quick and low-cost installation.

Lifting stations are designed to be placed inside a building, and their discharge pipes are to be connected to the wastewater collecting lines of the building.

The Multilift unit consist of these main components:
Gas-, odour- and pressure-tight tank, wastewater pump in service friendly, dry installation outside the tank, level sensor, controller and non-return valve.

In spite of the compact design and the dry installed pumps, lifting stations are able to handle a large amount of domestic wastewater.

Multilift lifting stations are mainly installed in basements situated below the municipal sewer system outside the building. In those cases, the wastewater must be pumped up above the backflow level. Depending on local regulations, this is normally the street level.

Lifting stations are the only safe system to ensure uninterrupted, sustained discharge of wastewater from basements into sewer lines which may be overloaded, e.g. by heavy rainfall.

The application overview below shows typical installation sites for Multilift lifting stations.

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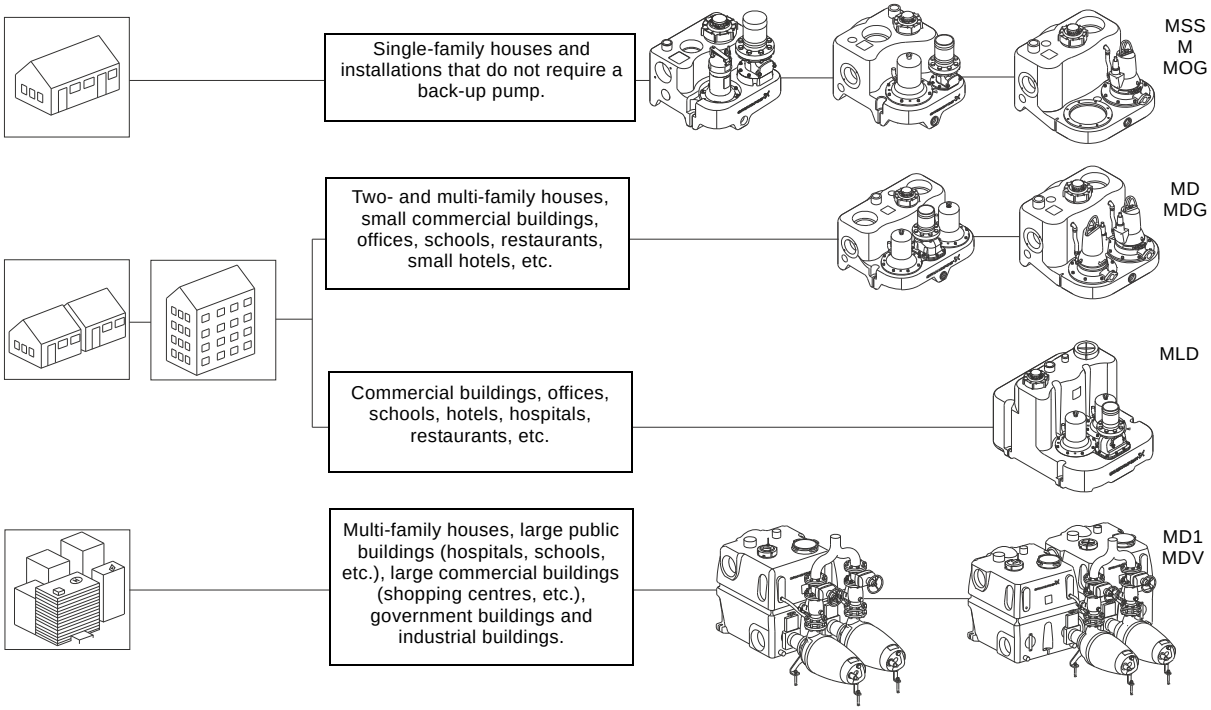
Application overview



Approvals

Description	Marking
The Multilift products are CE-marked and have obtained the following approvals: • VDE • EMV • TÜV/LGA • GOST (AR56). • CB	

Functions

Description

Multilift lifting stations collect wastewater in a tank to discharge it up to the sewer system. The liquid level in the tank is measured continuously and is controlled and monitored by specially designed controllers. The pumps are started and stopped according to the liquid level in the tank.

In double-pump lifting stations, the pumps start alternately to achieve even distribution of operating hours. Automatic pump changeover ensures uninterrupted wastewater transport in case of fault in one pump. In case the inflow exceeds the performance of one pump, the second pump will also be started, and the two pumps will run in parallel to lower the liquid level in the tank.

The motor protection is provided by a thermal switch in the motor winding, a current measurement, a motor circuit breaker (depending on type) and a runtime protection. Under normal conditions and depending on duty point and tank size, the runtime of a Multilift lifting station is 3-60 seconds.

The discharge pipe is either DN 80 or DN 100.

Grundfos high quality requirements ensure high robustness and long and trouble-free operation. The production is inspected by an external institute according to EN 12050-1.

The individual Multilift products are described on the following pages:

- Multilift MSS, page 11
- Multilift M, page 20
- Multilift MOG, page 29
- Multilift MD, page 38
- Multilift MLD page 47
- Multilift MDG page 55
- Multilift MD1, MDV page 64

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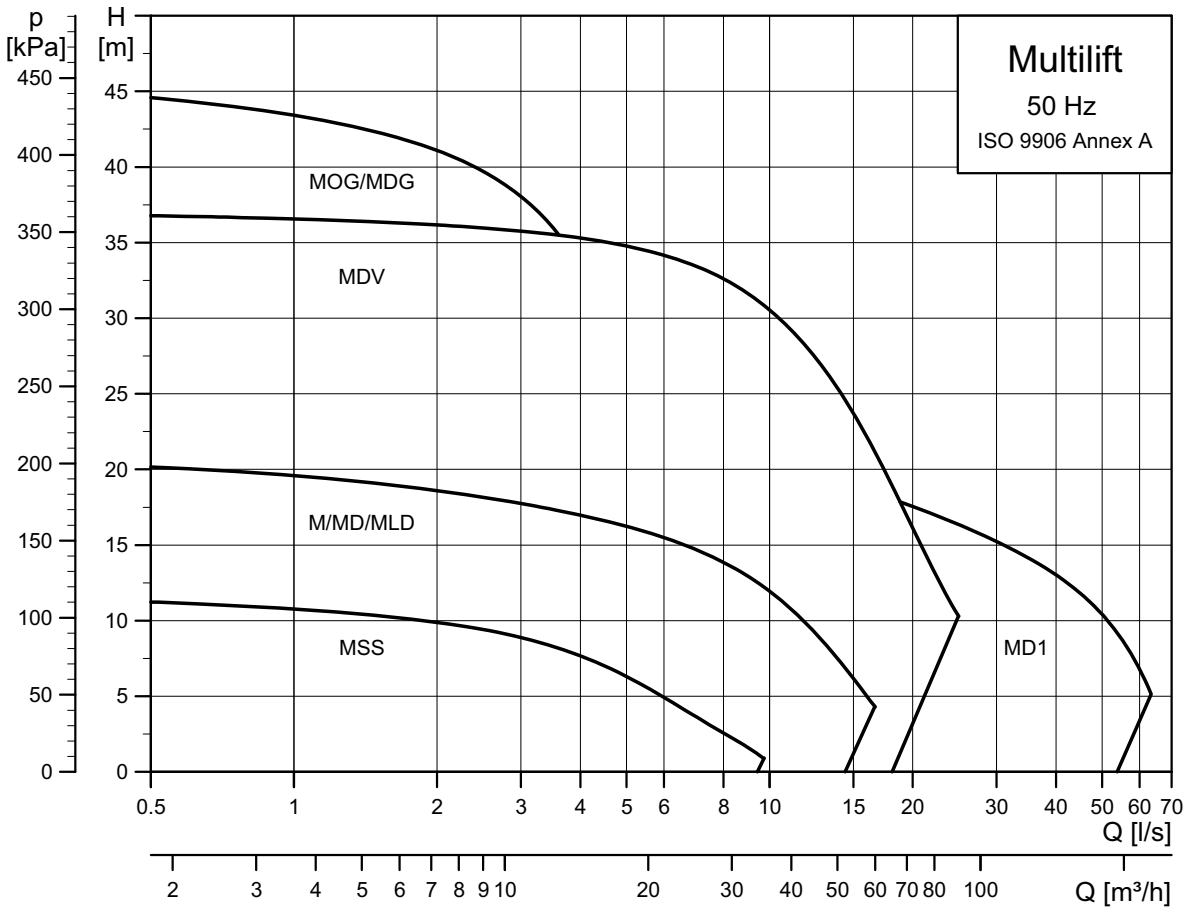
Performance range



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2. Installation

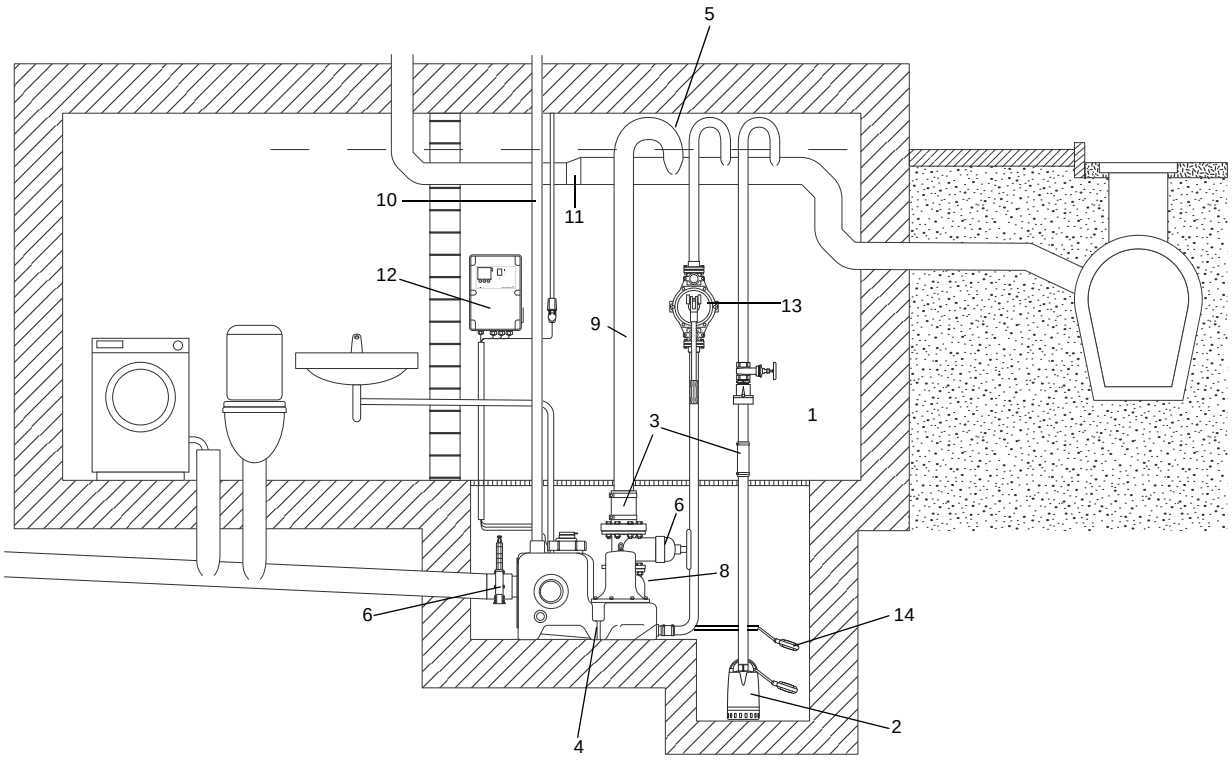

Fig. 1 Installation example of a Multilift lifting station

Correct installation of a lifting station according to EN 12056-4 requires compliance with the following instructions: (Figures refer to position numbers in fig. 1).

1. Installation in a properly illuminated and vented room with 60 cm free space for all parts to be serviced and operated.
2. A pump pit must be provided for the drainage of the room. If a lifting station is installed in a basement with the risk of penetrating groundwater, it is advisable (in certain countries required) to install a drainage pump in a separate pump sump below floor level.
3. All pipe connections must be flexible and reduce resonance.
4. Lifting stations must be secured against uplift and twist.
5. All discharge pipes (lifting station, diaphragm pump and drainage pump) must have a bend above the local backwater level. The highest point of the goose neck/reversed water seal must be above street level.
6. For discharge pipes, DN 80 and upwards, install an isolating valve in the discharge pipe. Also provide an isolating valve in the inlet line.
7. Surface water must not be discharged into the lifting station inside the building. It should have its own pumping station outside the building. (Not shown in drawing)
8. Lifting stations must be provided with an approved non-return valve according to EN 12050-4.
9. The volume of the discharge pipe above the non-return valve up to the backwater level must be smaller than the effective tank volume.
10. In general, a lifting station for black wastewater should be vented above roof level. It is permitted to lead the ventilation, as a secondary ventilation, into the main ventilation. Special venting valves (accessory) should be placed outside the building.
11. If the wastewater is discharged into a collecting line, this collecting line must have a filling ratio of at least h/d = 0.7. The collecting line must be at least one nominal diameter bigger after the discharge pipe connection.
12. The controller of the lifting station must be placed in a flood safe place and be equipped with an alarm.
13. Use a diaphragm pump for simple, manual draining of the collecting tank in case of pump failure (not obligatory).
14. An additional float switch can be connected to the alarm input for extra safety.

Please check and follow local and regional regulations and standards.

3. Drain capacity

General operating information

The flow of wastewater is uneven when seen over a period of time, for instance an hour or a day. See fig. 2.

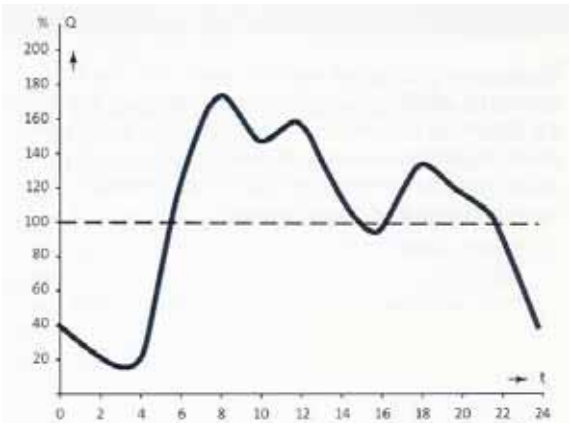

Fig. 2 Uneven wastewater inflow

The above diagram shows the typical wastewater flow from a building over a day.

In the morning, around lunch time and in the evening, the water consumption and accordingly the wastewater flow is higher than average.

The pump(s) must be able to handle the peak flow for a certain, rather short, period when several sanitary appliances are used same time.

To be able to select the right tank size, it is important to know the wastewater flow from all connected sanitary appliances over one hour [l/h].

Intermittent operation of the unit and the pump(s) caused by the uneven inflow and the motor design must be taken into consideration.

The motors used for Multilift lifting stations are designed for intermittent duty. This means they can run for a certain period and then need a pause for a certain period in order to avoid overheating and switch off by the motor protection.

Most of the Multilift pumps are designed for intermittent duty (S3) with the designation S3 50 % - 1 minute. This means that an operating cycle is 1 minute and within this cycle the pumps can operate 50 % = 30 seconds and then need 30 seconds pause.

This can be repeated 60 times per hour, meaning that one pump can empty the lifting station tank up to 60 times per hour.

This, and not the performance of the individual pump, determines the total drain capacity of a lifting station. See tables below.

The tables below illustrate that the maximum drain capacity over one hour depends on the effective tank volume and the selected inlet level.

Lifting station	Peak flow performance***			Max. effective tank volume [l]	Max. drain capacity* [l/h] = Max. inflow	
	DN 40 [l/s]	DN 80 [l/s]	DN 100 [l/s]		1 pump**	with 2 pumps running
Multilift MSS	n/a	3.5 - 8	5.6 - 8	28	1,680	n/a
Multilift M	n/a	3.5 - 16	5.6 - 16	62	3,720	n/a
Multilift MOG	0.5 - 4.5	n/a	n/a	50	3,000	n/a
Multilift MD	n/a	3.5 - 16	5.6 - 16	86	5,160	10,320
Multilift MLD	n/a	3.5 - 16	5.6 - 16	190	11,400	22,800
Multilift MDG	0.5 - 4.5	n/a	n/a	50	3,000	6,000
Multilift MD1/MDV	n/a	3.5 - 18	5.6 - 28	240 - 720	14,400	28,800

* Conditions: uneven inflow, values are independent of the duty point and valid for the highest starting level
** Recommended values for sizing of double-pump stations to secure 100 % backup
*** Depending on the duty point with one-pump operation.

Lifting station	Max. number of pump starts per hour	Effective tank volume [l] depending on inlet pipe level and related pump start level				Max. drain capacity* [l/h] = max. inflow [l/h] depending on inlet pipe level and related pump start level			
		180 mm	250 mm	315 mm	560/750 mm	180 mm	250 mm	315 mm	560/750 mm
Multilift MSS	60	20	28	n/a	n/a	1,200	1,680	n/a	n/a
Multilift M	60	34	49	62	n/a	2,040	2,940	3,720	n/a
Multilift MOG	60	23	37	50	n/a	1,380	2,220	3,000	n/a
Multilift MD	60	49	69	86	n/a	2,940	4,140	5,160	n/a
Multilift MDG	60	23	37	50	n/a	1,380	2,220	3,000	n/a
Multilift MLD	60	n/a	n/a	n/a	190	n/a	n/a	n/a	11,400
Multilift MD1/MDV, 1 tank	60	n/a	n/a	n/a	240	n/a	n/a	n/a	14,400
Multilift MD1/MDV, 2 tanks	60	n/a	n/a	n/a	480	n/a	n/a	n/a	28,800
Multilift MD1/MDV, 3 tanks	60	n/a	n/a	n/a	720	n/a	n/a	n/a	43,200

* Uneven inflow, values are independent of duty point, for double-pump stations, only one pump included to secure backup.

Note: The values in the tables above always represent the maximum performance of one pump. This even applies to double-pump lifting stations as pump 2 is provided as backup and replacement in case of malfunction in pump 1.

Rainwater drain pipes must not be connected to lifting stations. Only Multilift MD1/MDV equipped with Grundfos SE pumps designed for continuous operation in dry installation is able to handle uncontrollable wastewater inflow.

Sizing

Sizing of a Multilift lifting station is done in two steps:

1. In step 1, determine the required pump performance to make sure the pump can handle the peak flow when several sanitary appliances connected are used the same time and drained into the lifting station. Knowledge of the required pump performance enables selection of pump size as all Multilift lifting stations, except Multilift MSS, come with a range of six or more motor sizes, making it possible to select a Multilift tailored to the specific need of the building.
2. In step 2, determine the required tank size. The Multilift range includes different tank sizes to enable best possible adaptation of the lifting station to the individual need. As appears from the tables above, the tank size with related effective tank volume determines how much wastewater can be handled in one hour or in one day.

For both sizing steps it is essential to know which and how many sanitary appliances are connected to the lifting station and if perhaps further devices, as for instance a grease separator, are also connected to the lifting station.

The calculation of the inflow parameters must take the different regulations and standards in each country into consideration. For assistance, please ask your Grundfos sales representative.

4. Multilift MSS

Multilift MSS is designed according to EN 12050-1 and approved by an external institute. It is supplied complete and ready to install with non-return valve or without non-return valve if use of an external valve is desired.

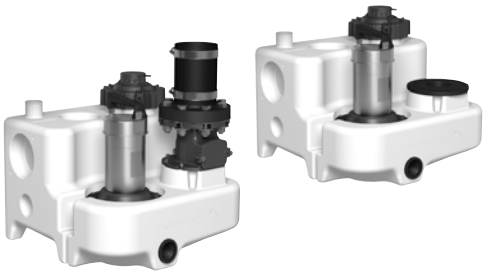

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Fig. 3 Multilift MSS without non-return valve

Applications

Multilift MSS is an extremely compact and reliable lifting station with easy-to-operate controller for pumping of domestic wastewater (with faeces) in single-family houses or holiday cottages.

Multilift MSS is typically used for

- basement installation below sewer level
- renovation or modernisation of existing buildings, e.g. developing basements with fitness room, sauna, bath, washroom, etc.
  - direct connection of wall-hung or floor-standing toilets with horizontal outlet according to EN33/EN37.

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Fig. 4 Example of installation of Multilift MSS behind a floor-standing toilet

Selection guide

Max. pipe length

7 m	-	-	-	-	-		DN 100	MSS.12.3.4
	113	-	-	-	-		DN 80	
	-	-	-	-	-		DN 100	MSS.12.1.4
	53	-	-	-	-		DN 80	
6 m	-	-	-	-	-		DN 100	MSS.12.3.4
	225	135	-	-	-		DN 80	
	-	-	-	-	-		DN 100	MSS.12.1.4
	175	95	-	-	-		DN 80	
5 m	-	-	45	-	-		DN 100	MSS.12.3.4
	335	115	5	-	-		DN 80	
	-	-	-	-	-		DN 100	MSS.12.1.4
	275	80	-	-	-		DN 80	
4 m	-	-	175	75	-	-	DN 100	MSS.12.3.4
	275	185	45	15	-	-	DN 80	
	-	-	105	5	-	-	DN 100	MSS.12.1.4
	245	145	25	-	-	-	DN 80	
3 m	-	-	335	195	35	-	DN 100	MSS.12.3.4
	345	255	95	55	4	-	DN 80	
	-	-	255	125	-	-	DN 100	MSS.12.1.4
	305	215	75	32	-	-	DN 80	
2 m	-	-	480	330	125	-	DN 100	MSS.12.3.4
	650	320	140	95	33	-	DN 80	
	-	-	380	260	70	-	DN 100	MSS.12.1.4
	600	280	120	75	18	-	DN 80	
1 m	-	-	600	500	210	50	DN 100	MSS.12.3.4
	750	390	320	150	60	10	DN 80	
	-	-	550	400	150	10	DN 100	MSS.12.1.4
	680	350	280	120	45	0	DN 80	

Q [l/s]	3.5	4.5	5.5	6	7	8.5

Required min. flow for v = 0.7 m/s at DN 100

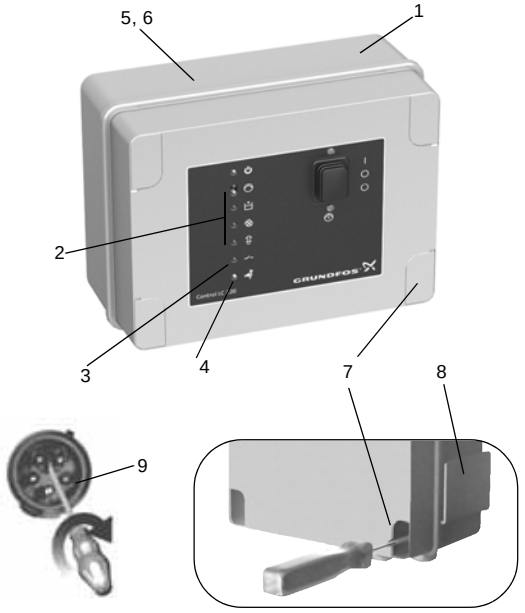
Required min. flow for v = 0.7 m/s at DN 80

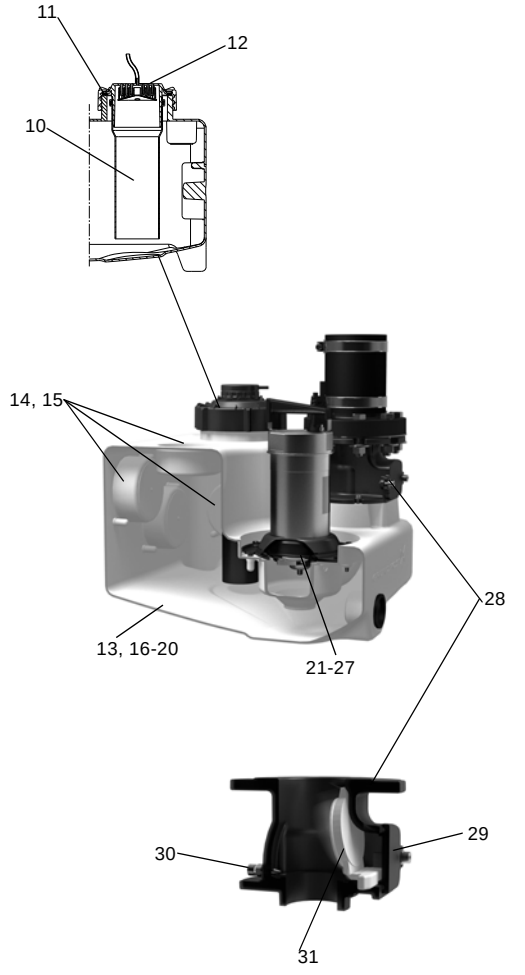
Fig. 5 Maximum length of vertical and horizontal discharge pipes

Figure 5 shows the sizing guide with maximum length of vertical and horizontal pipes depending on the internal pipe diameter and the duty point. The non-return valve, an isolating valve and four bends have been taken into account. The limit of use is based on the self cleaning velocity of 0.7 m/s. Normal length of pipework in single-family houses or similar buildings is approx. 5-15 m.

Constructional features

Multilift MSS





Description

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Pos.	Controller
1	Pre-assembled and ready to operate with all necessary presettings – only the inlet level needs to be set
2	Operating, pump status and fault indications, such as high water level, phase sequence fault and wrong sensor signal
3	External level alarm can be used e.g. to monitor the installation room or well around the lifting station with separate float switch outside the tank to detect groundwater intake, water pipe burst or other flooding accidents; no extra alarm device needed
4	Maintenance/ service reminder (once a year).
5	Potential-free contact for common alarm (inside)
6	Connection of PC Tool for further information and adjustments (inside) - operating hours and start frequency of pump, failure log, etc.
7	Quick and easy installation of the controller to the wall without the need of opening the cabinet
8	Holder for quick guide
9	Phase inverter for easy changing of phases (only three-phase versions)

TM05 1778 3711 - TM05 3455 1412 - TM05 2055 4311

Pos.	Sensor
10	No moving parts in pumped liquid. Blockage-free pressure tube, DN 100, connected via a pressure hose to piezoresistive pressure sensor in the controller
11	Screw cap serving as pressure tube fixation and tank inspection cover enabling easy maintenance of pressure tube and inspection of collecting tank
12	Condensate trap prevents condensation in pressure hose in case of hot-water inflow

TM05 0332 0911

Pos.	Collecting tank
13	Design and volume adapted to single-family house applications
14	Possible to connect inlets from all directions and to connect floor-standing and wall-hung toilets; ideal for replacement and new installation
15	Footprint of only 0.26 m^2 and recessed sockets for space saving installation
16	Wastewater-resistant and odour-free polyethylene (PE) tank with strong walls
17	Sedimentation-free tank bottom with chamfers, leading the wastewater to the pump to reduce the need for cleaning the tank
18	Pressure-tight design up to 5 m water column according to EN 12050-1
19	Suitable for liquid temperature up to 50 °C
20	Easy handling during transportation and installation

TM05 1780 3711

Pos.	Pump
21	Submersible stainless steel pump design – well-proven for wastewater applications over a decade
22	Vortex impeller made of stainless steel, for trouble-free operation and unchanged performance throughout the entire life of the pump
23	Steep pump curve; one motor size for high and low pump heads
24	Double motor protection with built-in thermal switch and thermal motor circuit breaker
25	Quick and easy maintenance and service due to clamp fixation
26	Mechanical shaft seal (SIC/SIC) and a chamber filled with non toxic oil to ensure reliable, long service life
27	Self-venting pump housing due to hydraulic design

TM05 1781 3711

Pos.	Non-return valve
28	Designed and approved according to EN 12050-4
29	Compact design with large and well accessible inspection cover for taking out foreign bodies, if necessary
30	Lifting device to drain discharge pipe in case of service or maintenance
31	Smooth and silent flap valve

Product description

Features

- Complete, pre-assembled and ready to install
- easy to handle, light-weight, 28 kg
- easy-to-operate LC 220 controller with setting of inlet level, safety functions and separate alarm indications for easy fault diagnostics.
  See *LC 220 controller* on page 78
- reliable blockage-free level detection with no contact to the pumped liquid
- easy and smart maintenance and service features for sensor tube, collecting tank and controller
- seven different inlet connections on all sides offer maximum installation flexibility.

See details on page 12.

Scope of delivery

Grundfos Multilift MSS lifting stations are supplied complete with collecting tank, one single- or three-phase pump, level sensor, non-return valve (depending on type) and LC 220 controller. Both sensor and pump are connected to the controller with 4 or 10 m cable and hose.

An accessories bag containing the following items is also included:

- 1 x installation and operating instructions
- 1 x discharge adapter flange, DN 80, with connection piece, DN 100 (outer diameter, 110 mm)
- 1 x flexible hose, DN 100, and two clamps to connect the discharge pipe
- 1 x flexible hose, DN 50, and two clamps to connect the venting pipe
- 2 x screw and expansion anchor for tank fixation
- 1 x socket seal, DN 100
- 1 x socket seal, DN 50, for diaphragm pump, 1 1/2" connection or inlet, DN 50
- 1 x gasket kit, DN 80, 8 bolts M16x65, nuts and washers (galvanized).

Type key

Example	M	SS	.11	.3	.2
Multilift lifting station					
SS = one pump					
Output power, P_2 / 100 [W]					
1 = single-phase motor 3 = three-phase motor					
2 = 2-pole motor 4 = 4-pole motor					

Collecting tank

The gas-, odour- and pressure-tight collecting tank is made of wastewater resistant polyethylene (PE) and has all necessary ports for the connection of inlet pipes, discharge pipe, venting pipe and a manually operated diaphragm pump (accessory).

The tank volume and effective volume (volume between start and stop) of the collecting tank appear from the following table:

Inlet level [mm]	180	250
Total tank volume [l]	44	44
Effective tank volume [l]	20	28

Setting to the relevant inlet level can be made via a DIP switch on the control panel of the controller. The factory-set inlet level is 250 mm above the floor.

Pump

The impeller of the submersible stainless steel pump is designed as a free-flow Vortex impeller, ensuring almost unchanged performance throughout the entire life of the pump. All parts in contact with the pumped liquid are made of stainless steel. The pump has a mechanical shaft seal and an oil chamber in between.

Single-phase motors have run capacitors.

Single- and three-phase motors are protected by a thermal switch in the windings and an additional thermal circuit breaker to cut out the motor in case of overload. If the motor is overloaded, it will stop automatically. When it has cooled to normal operating temperature, it will restart automatically when automatic reset is set in the controller (factory setting).

Incase of high inflow, the pump can start 60 times per hour. The start and stop sequence must correspond to intermittent duty S3-10 %, 1 minute
(see *Electrical data* on page 14).

Controller

See section *LC 220 controller*.

Technical data

General data

Parameter	Value
Free passage	50 mm
Liquid temperature	max. 40 °C For short periods up to 60 °C (max. 5 minutes per hour)
Ambient temperature	0-40 °C
pH-value	4-10
Max. density of pump liquid	1,100 kg/m^3
Flood conditions	Max. 2 m for 7 days
Enclosure class (lifting station and motor)	IP68
Enclosure class (controller)	IP56
Insulation class (motor)	F (155 °C)
Voltage (motor)	1 x 230 V 3 x 400 V
Frequency (motor)	50 Hz
Potential-free contact	NO/NC, max. 250 VAC / 2 A
Voltage (sensor)	12 V
Signal output (sensor)	0-5 V
Power consumption (controller)	2 W
Number of starts per hour	Max. 60
Sound pressure level	< 70 dB(A)
Dimensions (lifting station)	See section *Dimensional drawings*
Dimensions (controller)	Height = 390 mm Width = 262 mm Depth = 142 mm

Material specification

Component	Material
Collecting tank	Polyethylene (PE)
Pump housing	Stainless steel 1.4301
Impeller	Stainless steel 1.4301
Pump shaft	Stainless steel 1.4301
Mechanical shaft seal	Silicon carbide/silicon carbide, NBR rubber, stainless steel 1.4301
Motor	Stainless steel 1.4401
Control cabinet	Acrylonitrile butadiene styrene (ABS)
Screws	Stainless steel 1.4301
O-rings	NBR rubber
Cable	Neoprene

Mechanical data and order data

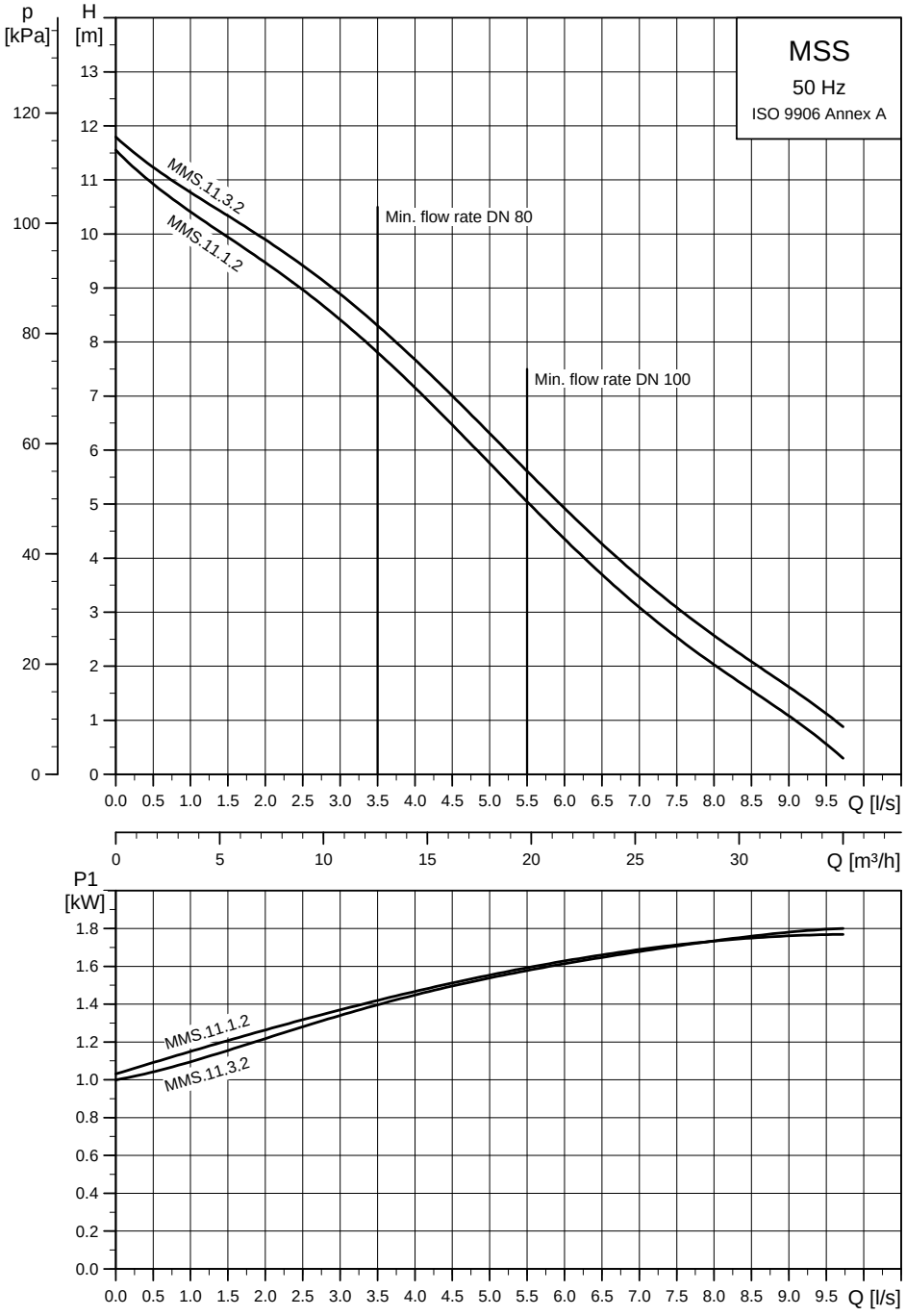
Multilift	Non-return valve	Inlet level [mm]	Tank volume [l]	Effective tank volume [l]	Weight [kg]	Plug type	Length of power supply cable [m]	Cable length between controller and motor/sensor [m]	Product number
MSS.11.1.2	Yes	180 / 250	44	20 / 28	28	Schuko	1.5	4	97901037
MSS.11.3.2	Yes					CEE 3P+N+E, 16A		4	97901027
MSS.11.1.2	Yes					Schuko		10	97901028
MSS.11.3.2	Yes					CEE 3P+N+E, 16A		10	97901029
MSS.11.1.2	No	180 / 250	44	20 / 28		Schuko	1.5	4	97901030
MSS.11.3.2	No					CEE 3P+N+E, 16A		4	97901061
MSS.11.1.2	No					Schuko		10	97901062
MSS.11.3.2	No					CEE 3P+N+E, 16A		10	97901063

Electrical data

Multilift	Duty	Voltage [V]*	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	RPM [min^{-1}]	Number of poles	Starting method
MSS.11.1.2	S3-10 %, 1 min.	1 x 230 V	1.8 / 1.1	8 / 22.5	2760	2	DOL
MSS.11.3.2		3 x 400 V		3.2 / 16	2785		

* Tolerance: - 15 %/ + 10 %

Performance curves



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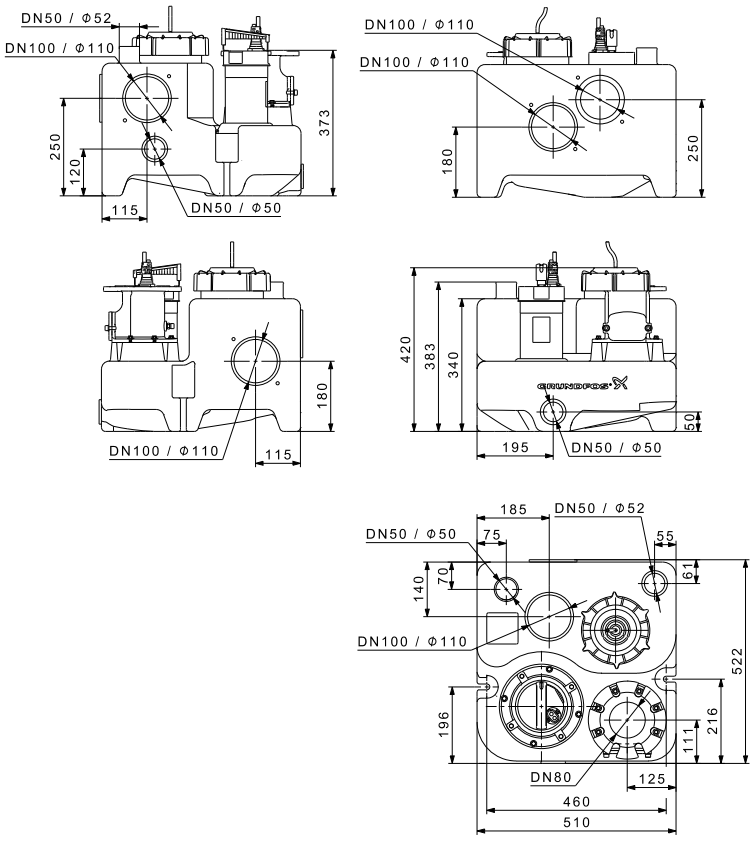
Dimensional drawings

Multilift MSS, with non-return valve



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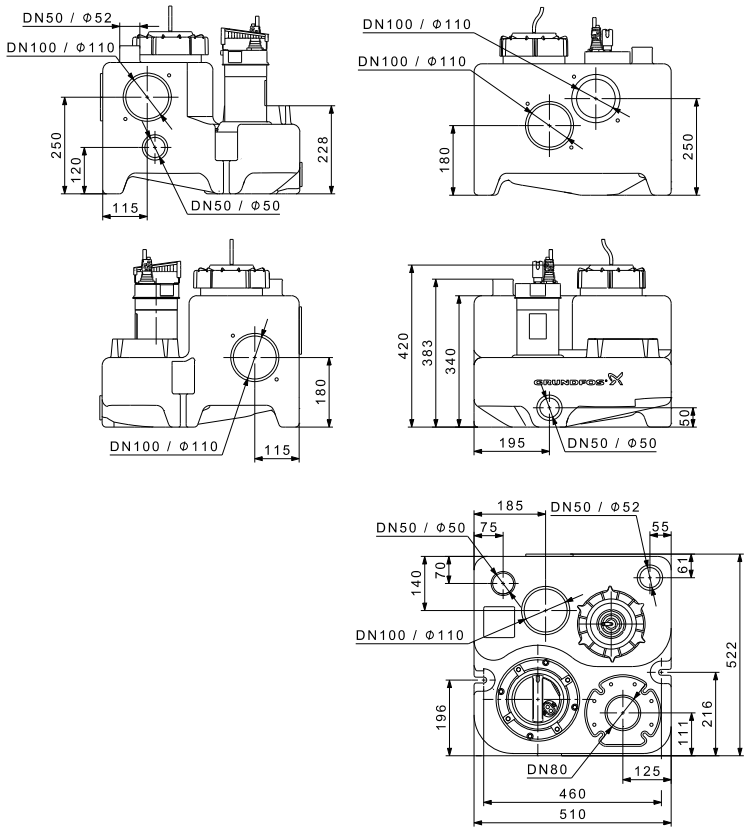
Multilift MSS, without non-return valve



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Accessories

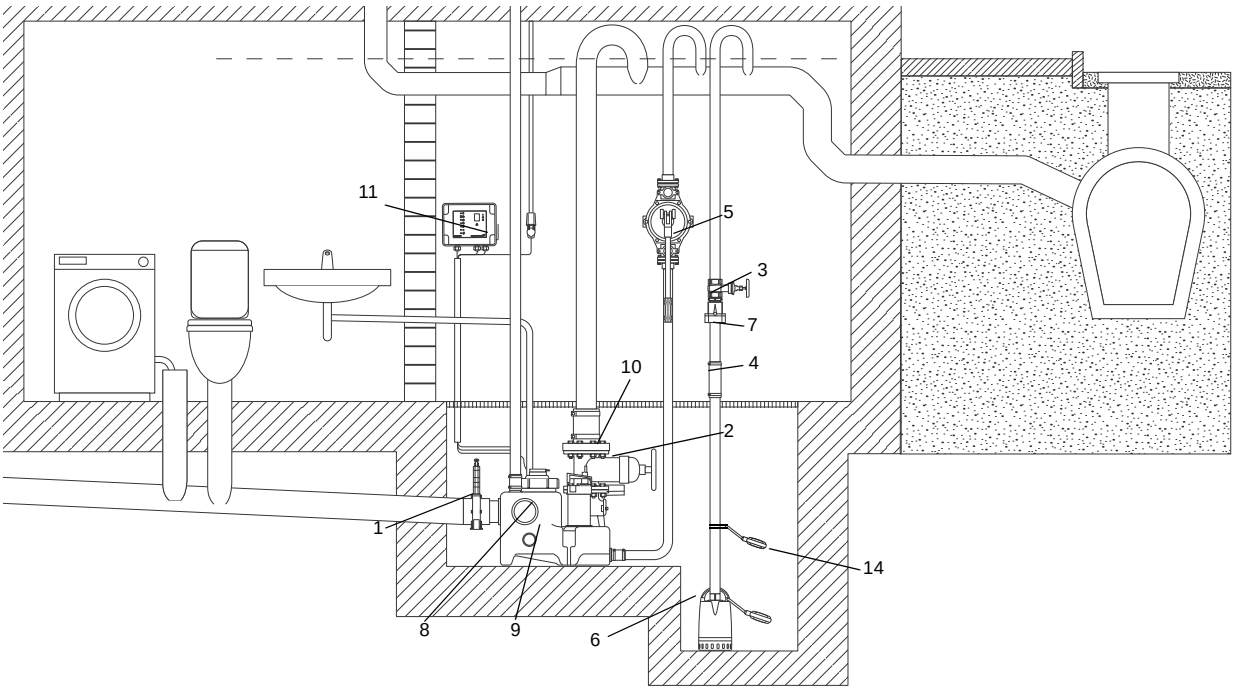

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Fig. 6 Accessories for Multilift MSS

No.	Figure	Description	Dimensions	Product number
1		Isolating valve, PVC	DN 100 Installation length: 130 mm Height: 375 mm Connection piece: Ø110	96615831
2		Isolating valve, epoxy-coated cast iron	DN 80 Installation length: 180 mm Height: 300 mm Connection: flange PN 10	96002011
3		Isolating valve, brass	DN 32 Installation length: 76 mm Connection: Rp 1 1/4"	00ID0918
4		Flexible connection with clamps for additional connections and inlets	DN 32 Length: 150 mm Internal Ø42	91071645
5		Manually operated diaphragm pump	Installation length: 423 mm Width: 215 mm Connection: Rp 1 1/2"	96003721
6	For wastewater pump, e.g. Unilift CC and KP, please see data booklet for the pump or WebCAPS.			
7		Non-return flap valve, composite	Length: 90 mm Height: 90 mm Connection: Rp 1 1/4"	96005308
8		Socket seal for additional standard inlet	DN 100, internal ∅110	97726942
9		Socket seal for additional inlet	DN 50, internal ∅48-50	98079669
10		Bolts, nuts, 8 of each, (galvanised) Gasket	16 x 65 mm DN 80	96001999
11		Battery buffer for alarm in case of mains failure (battery is not included). Replace the battery once a year.	Use a commercially available 9.6 V battery.	98079684
12		Signal lamp for wall mounting	1 x 230 V, 50 Hz	91077209
13		Signal horn	Indoors, 1 x 230 V, 50 Hz	62500021
			Outdoors, 1 x 230 V, 50 Hz	62500022
14		Level switch type SAS	Cable length 5 m, 250 V	00ID7805
15		External main switch for supply cable	Up to 25 A	96002511
16		Venting valve (with filter)	DN 70/80/100	98059596
17		Filter kit for venting valve	DN 70/80/100	98059594

No.	Figure	Description	Dimensions	Product number
18		Wall installation box for venting valve	204 x 204 x 130 mm	98059598
19		PC Tool link USB		96705378

5. Multilift M

Multilift M is designed according to EN 12050-1 and approved by an external institute. It is supplied complete and ready to install with non-return valve.

TM05 1366 3911

Fig. 7 Multilift M

Applications

Multilift M is a compact and reliable lifting station with easy-to-operate controller for pumping of domestic wastewater (with faeces) in single-family houses or light commercial applications.

Multilift M is typically used for

- basement installation below sewer level
- renovation or modernisation of existing buildings, e.g. developing basements with fitness room, sauna, bath, washroom, etc.
  - direct connection of wall-hung or floor-standing toilets with horizontal outlet according to EN33/EN37.

TM05 1772 3611

Fig. 8 Example of installation of Multilift M in a pit in the building's basement

Selection guide

Max. pipe length

15 m	85	-	-	-	-	-	-	DN 100	M.38
13 m	385	200	42	-	-	-	-	DN 100	M.38
	115	-	-	-	-	-	-	DN 100	M.32
11 m	680	415	180	94	30	-	-	DN 100	M.38
	415	210	34	-	-	-	-	DN 100	M.32
9 m	980	630	330	209	120	13	-	DN 100	M.38
	710	425	178	88	20	-	-	DN 100	M.32
	175	60	-	-	-	-	-	DN 100	M.24
7 m	1280	850	475	325	215	75	-	DN 100	M.38
	1010	640	325	198	115	-	-	DN 100	M.32
	475	275	56	-	-	-	-	DN 100	M.24
	220	110	49	-	-	-	-	DN 100	M.22
5 m	1575	1075	620	440	310	140	40	DN 100	M.38
	1310	860	470	320	205	70	-	DN 100	M.32
	770	490	208	100	28	-	-	DN 100	M.24
	520	330	194	135	90	35	5	DN 100	M.22
	265	155	63	30	-	-	-	DN 100	M.15
	160	70	-	-	-	-	-	DN 100	M.12
3 m	1875	1280	765	495	405	200	92	DN 100	M.38
	1605	1075	615	435	300	135	42	DN 100	M.32
	1070	705	345	215	122	15	-	DN 100	M.24
	815	545	338	250	183	105	57	DN 100	M.22
	565	370	208	145	98	30	-	DN 100	M.15
	460	285	143	88	51	-	-	DN 100	M.12
2 m	2025	1390	837	610	450	235	118	DN 100	M.38
	1755	1180	685	490	348	170	68	DN 100	M.32
	965	650	410	275	168	50	-	DN 100	M.24
	710	480	280	208	145	65	18	DN 100	M.22
	605	395	215	145	98	30	-	DN 100	M.15

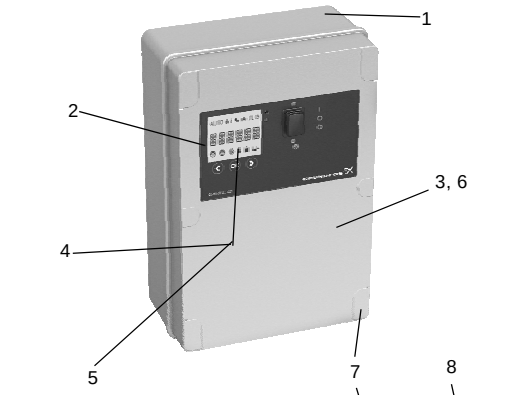
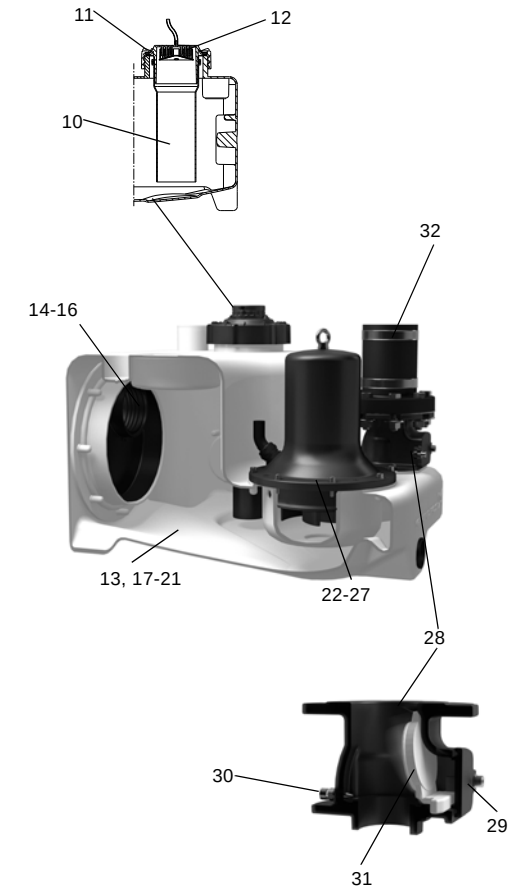
Q [l/s]	5.5	6.5	8	9	10	12	14

Required min. flow for v = 0.7 m/s at DN 100

Fig. 9 Maximum length of vertical and horizontal discharge pipes

Figure 9 shows the sizing guide with maximum length of vertical and horizontal pipes depending on the internal pipe diameter and the duty point. The non-return valve, an isolating valve and four bends have been taken into account. The limit of use is based on the self cleaning velocity of 0.7 m/s. Normal length of pipework in single-family houses or similar buildings is approx. 5-15 m.

Constructional features

Multilift M	Description	
	**Pos.**	**Controller**
	1	Pre-assembled and ready to operate with all necessary presettings – only the inlet level needs to be set
	2	Controller with LCD display, interactive menu, multiple motor protection features and further safety options
	3	Potential-free contact for common alarm (inside)
	4	External alarm can be used e.g. to monitor the installation room or well around the lifting station with separate float switch outside the tank to detect groundwater intake, water pipe burst or other flooding accidents; no extra alarm device needed
	5	Maintenance/service reminder (0, 3, 6 or 12 months)
	6	Connection of PC Tool for further information and adjustments (inside)
TM05 3455 1412 - TM05 2055 4311 - TM05 1804 3811	7	Quick and easy installation of the controller to the wall without the need of opening the cabinet
	8	Holder for a quick guide
	9	Phase inverter for easy changing of phases (only three-phase versions)
	Pos.	**Level sensor**
	10	No moving parts in pumped liquid. Blockage-free pressure tube, DN 100, connected via a pressure hose to piezoresistive pressure sensor in the controller
	11	Screw cap serving as pressure tube fixation and tank inspection cover enabling easy maintenance of pressure tube and inspection of collecting tank
	12	Condensate trap prevents condensation in pressure hose in case of hot-water inflow
	**Pos.**	**Collecting tank**
	13	Design and volume adapted to single-family house applications
	14	Possible to connect inlets from all directions and to connect floor-standing and wall-hung toilets; ideal for replacement and new installation
	15	Unique, patented inlet disk, DN 100 (DN 150 as accessory), for stepless adjustment to inlet levels from 180 to 315 mm
	16	Socket sealing for space saving installation
TM05 0332 0911	17	Wastewater-resistant and odour-free, seamless collecting tank made of polyethylene (PE) with strong walls
	18	Sedimentation-free tank bottom with chamfers, leading the wastewater to the pump to reduce the need of cleaning the tank
	19	Pressure-tight design up to 5 m water column according to EN 12050-1
	20	Suitable for liquid temperature up to 50 °C
	21	Easy handling during transportation and installation
	Pos.	**Pump**
	22	Six motor sizes adapted to all application needs, up to 21 m discharge head and 50 m^3 discharge flow
	23	Vortex impeller with large free passage for trouble-free operation and unchanged performance throughout the entire life of the pump
	24	Motor protection with built-in thermal switch
TM05 2070 4311	25	Highly reliable motor design with up to 60 starts an hour for handling peak inflow conditions
	26	Tripple shaft seal and a chamber filled with non-toxic oil to ensure reliable, long service life
	27	Self-venting pump housing due to hydraulic design
	Pos.	**Non-return valve DN 80**
	28	Designed and approved according to EN 12050-4
	29	Compact design with large and well accessible inspection cover for taking out foreign bodies, if necessary
	30	Lifting device to drain discharge pipe in case of service or maintenance
	31	Smooth and silent flap valve
TM05 1781 3711	**Pos.**	**Discharge**
	32	Flexible and sound absorbing discharge connection DN 100

Product description

Features

- Complete pre-assembled and ready to install
- patented, turnable inlet disk enabling flexible connections from 180 to 315 mm inlet levels - ideal for new installations and replacements
- seven different inlet connections on all sides offer maximum installation flexibility
- six different motor sizes for perfect adaptation to the required draining performance
- easy-to-operate LC 221 controller with outstanding motor protection and additional safety and service functions. See *LC 221 controller* on page 79
- reliable blockage-free level detection with no direct contact to the pumped liquid
- easy and smart maintenance and service features for sensor tube, collecting tank and controller

See details on page 21.

Scope of delivery

Grundfos Multilift M lifting stations are supplied complete with collecting tank, one single- or three-phase pump, level sensor, non-return valve and LC 221 controller. Both sensor and pump are connected to the controller with 4 or 10 m cable and hose.

An accessories bag containing the following items is also included:

- 1 x installation and operating instructions
- 1 x quick guide for controller menu
- 1 x discharge adapter flange, DN 80, with connection piece, DN 100 (outer diameter, 110 mm)
- 1 x flexible hose, DN 100, and two clamps to connect the discharge pipe
- 1 x flexible hose, DN 70, and two clamps to connect vent pipe
- 2 x screw and expansion anchor for tank fixation
- 3 x screw and washer for fastening a pipe plug in the inlet disk, if required
- 1 x socket seal, DN 100
- 1 x socket seal, DN 50, for diaphragm pump, 1 1/2" connection or inlet, DN 50
- 1 x gasket kit, DN 80, 8 bolts M16 x 65, nuts and washers (galvanized).

Type key

Example	M	.22	.3	.4

M: Multilift lifting station

.22: Output power, P_2 / 100 [W]

.3: 1 = single-phase motor; 3 = three-phase motor

.4: 2 = 2-pole motor; 4 = 4-pole motor

Collecting tank

The gas-, odour- and pressure-tight collecting tank is made of wastewater resistant polyethylene (PE) and has all necessary ports for the connection of inlet pipes, discharge pipe, venting pipe and a manually operated diaphragm pump (accessory).

The main inlet on the rear side of the collecting tank is designed as a turnable disk, DN 100 (optional DN 150), adjustable to any inlet level between 180 and 315 mm.

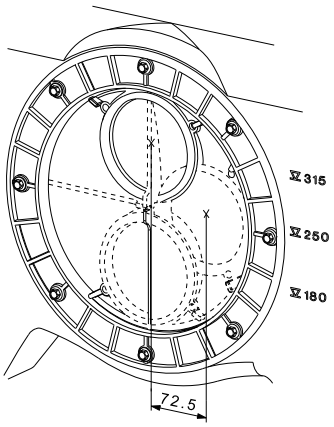


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Fig. 10 Main inlet with eccentric disk

The tank volume and effective volume (volume between start and stop) of the collecting tank appear from the following table:

Inlet level [mm]	180	250	315
Total tank volume [l]		92	
Effective tank volume [l]	34	49	62

Setting to the relevant start inlet level must be made via the control panel of the controller during the start-up phase.

Pump

The composite impeller of the submersible cast iron pump is designed as a free-flow Vortex impeller, ensuring almost unchanged performance throughout the entire life of the pump. The pump has three shaft seals with an oil chamber filled for life with non-toxic oil.

Single-phase motors are protected by a thermal switch in the windings and run via a capacitor inside the controller cabinet. Three-phase motors are protected by a thermal switch in the windings and an additional thermal circuit breaker in the controller cabinet.

If the motor is overloaded, it will stop automatically. When it has cooled to normal operating temperature, it will restart automatically when automatic reset is set in the controller (factory setting).

Incase of high inflow, the pump can start 60 times per hour. The start and stop sequence must correspond to intermittent duty (see *Electrical data* on page 24).

Controller

See section *LC 221 controller*.

Technical data

General data

Parameter	Value
Free passage	50 mm
Liquid temperature	Max. 40 °C For short periods up to 60 °C (max. 5 minutes per hour)
Ambient temperature	0-40 °C
pH-value	4-10
Max. density of pumped liquid	1,100 kg/m^3
Enclosure class (lifting station and motor)	IP68 (2 m water column for 7 days)
Enclosure class (controller)	IP56
Insulation class (motor)	F (155 °C)
Voltage (motor)	1 x 230 V 3 x 230 V 3 x 400 V
Frequency (motor)	50 Hz
Potential-free contacts	NO/NC, max. 250 VAC / 2 A
Voltage (sensor)	12 V
Signal output (sensor)	0-5 V
Power consumption (controller)	2 W

Parameter	Value
Number of starts per hour	Max. 60
Sound pressure level	< 70 dB(A)
Dimensions (lifting station)	See section *Dimensional drawings*
Dimensions (controller)	Height = 390 mm Width = 262 mm Depth = 142 mm

Material specification

Component	Material
Collecting tank	Polyethylene (PE)
Pump housing	Cast iron
Impeller	Luranyl
Shaft	Stainless steel 1.4301
Control cabinet	Acrylonitrile butadiene styrene (ABS)
Screws	Stainless steel 1.4301
O-rings	NBR rubber
Cable	Neoprene

Mechanical data and order data

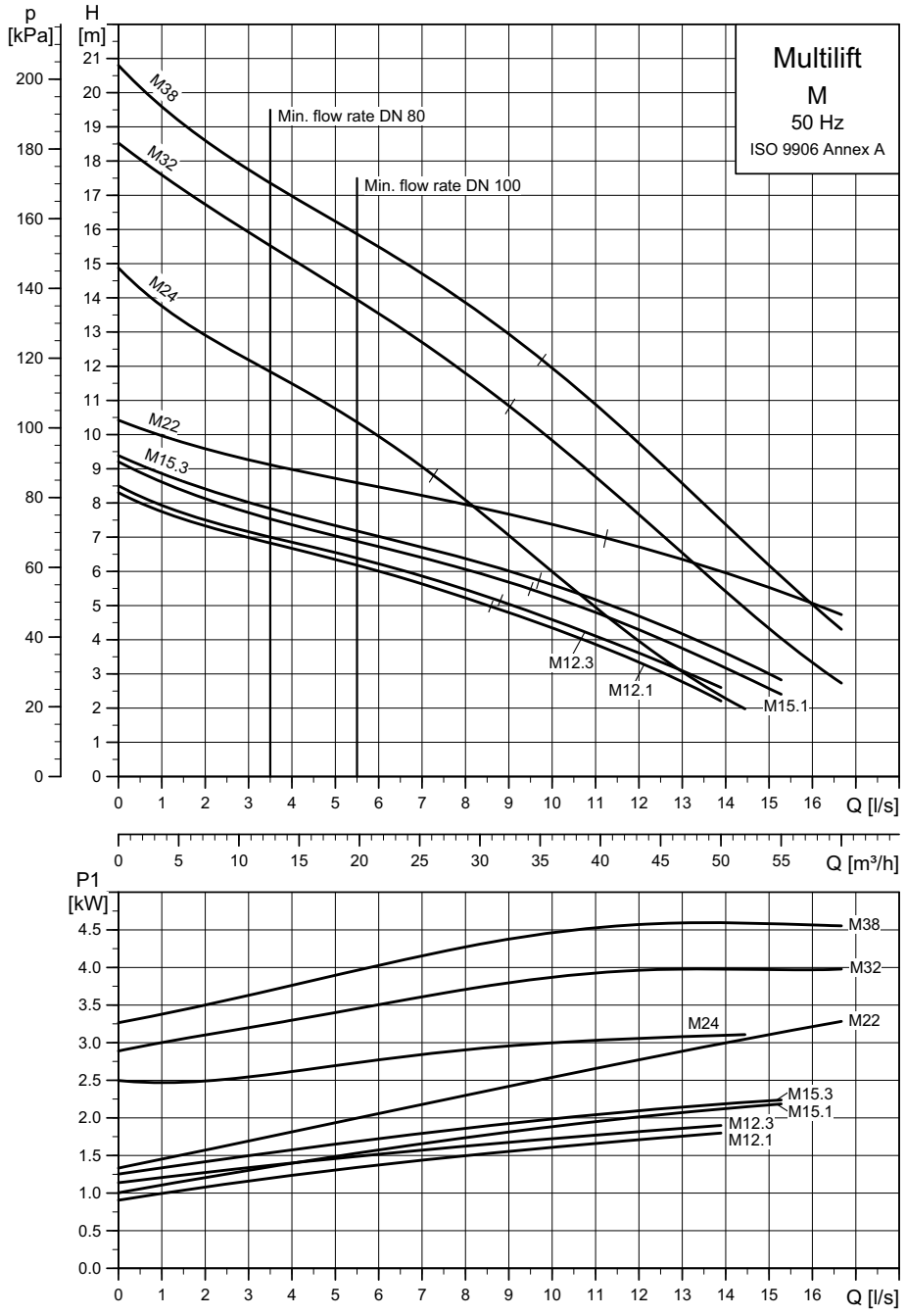
Multilift	Inlet level [mm]	Tank volume [l]	Effective tank volume [l]	Weight [kg]	Plug type	Cable length between plug and controller [m]	Cable length between motor and controller [m]	Product number
M.12.1.4	180/250/315	92	34/49/62	69	Schuko	1.5	4	97901064
M.12.3.4				69	CEE 3P+N+E, 16A			97901065
M.15.1.4				69	Schuko			97901066
M.15.3.4				69	CEE 3P+N+E, 16A			97901067
M.22.3.4				70.5	CEE 3P+E 16A			97901069
M.22.3.4				70.5	CEE 3P+N+E, 16A			97901068
M.24.3.2				72	CEE 3P+E 16A			97901071
M.24.3.2				72	CEE 3P+N+E, 16A			97901070
M.32.3.2				72	CEE 3P+E 16A			97901073
M.32.3.2				72	CEE 3P+N+E, 16A			97901072
M.38.3.2				72	CEE 3P+E 16A			97901075
M.38.3.2				72	CEE 3P+N+E, 16A			97901074
M.12.1.4	180/250/315	92	34/49/62	69	Schuko	1.5	10	97901076
M.12.3.4				69	CEE 3P+N+E, 16A			97901077
M.15.1.4				69	Schuko			97901078
M.15.3.4				69	CEE 3P+N+E, 16A			97901079
M.22.3.4				70.5	CEE 3P+N+E, 16A			97901080
M.24.3.2				72	CEE 3P+N+E, 16A			97901081
M.32.3.2				72	CEE 3P+N+E, 16A			97901082
M.38.3.2				72	CEE 3P+N+E, 16A			97901083

Electrical data

Multilift	Duty	Voltage [V]*	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	RPM [min^{-1}]	Number of poles	Starting method
M.12.1.4	S3-40 %, 1 min.	1 x 230 V	1.9 / 1.4	9 / 39	1430	4	DOL
M.12.3.4		3 x 400 V	1.8 / 1.5	3.6 / 19			
M.15.1.4		1 x 230 V	2.2 / 1.6	10.1 / 39	1410	4	
M.15.3.4		3 x 400 V	2.1 / 1.7	4.0 / 19			
M.22.3.4	S3-50 %, 1 min.	3 x 230 V	3.0 / 2.5	10.2 / 51.5	1430	4	
M.22.3.4		3 x 400 V		5.5 / 29.7			
M.24.3.2		3 x 230 V	3.1 / 2.7	9.7 / 88.7	2920	2	
M.24.3.2		3 x 400 V		5.5 / 39			
M.32.3.2		3 x 230 V	4.0 / 3.4	88.7	2920	2	
M.32.3.2		3 x 400 V		6.7 / 39			
M.38.3.2	S3-40 %, 1 min.	3 x 230 V	4.6 / 3.8	13 / 88.7	2880	2	
M.38.3.2		3 x 400 V		7.5 / 39			

* Tolerance: - 10 %/ 6 %

Performance curves



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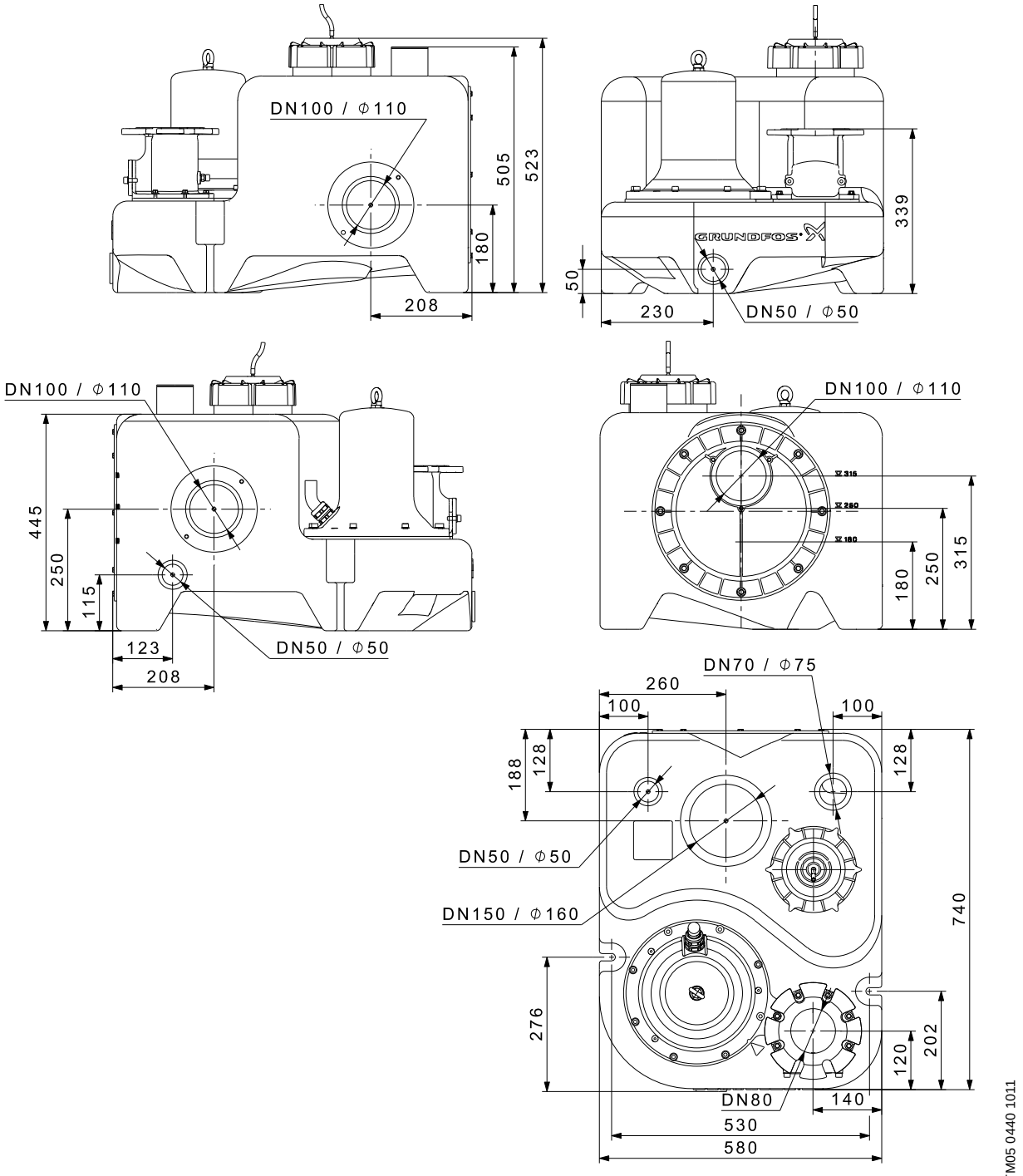
Dimensional drawings



Accessories

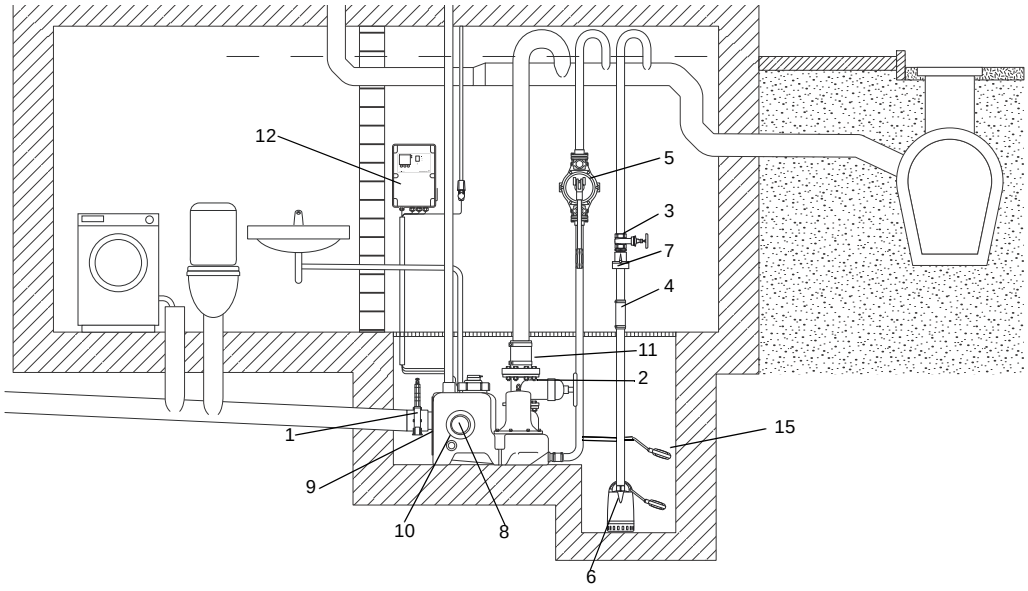


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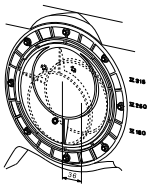
Fig. 11 Accessories for Multilift M

No.	Figure	Description	Dimensions	Product number
1		Isolating valve, PVC	DN 100 Installation length: 130 mm Height: 375 mm Connection piece: Ø110	96615831
2		Isolating valve, epoxy-coated cast iron	DN 80 Installation length: 180 mm Height: 300 mm Connection: flange PN 10	96002011
3		Isolating valve, brass	DN 32 Installation length: 76 mm Connection: Rp 1 1/4"	00ID0918
4		Flexible connection with clamps for additional connections and inlets	DN 32 Length: 150 mm Internal Ø42	91071645
5		Manually operated diaphragm pump	Installation length: 423 mm Width: 215 mm Connection: Rp 1 1/2"	96003721
6	For wastewater pump, e.g. Unilift CC and KP, please see data booklet for the pump or WebCAPS.			
7		Non-return flap valve, composite	Length: 90 mm Height: 90 mm Connection: Rp 1 1/4"	96005308
8		Socket seal for additional standard inlet	DN 100, internal ∅110	97726942
		Socket seal for additional inlet (vertical inlet on top)	DN 150, internal Ø160	96636544

No.	Figure	Description	Dimensions	Product number
9		Turnable inlet disk with socket seal for adjustable inlet level	DN 150, internal ∅160	98079681
10		Socket seal for additional inlet	DN 50, internal ∅48-50	98079669
11		Bolts, nuts, 8 of each (galvanised) Gasket	16 x 65 mm DN 80	96001999
12		Battery buffer for alarm in case of mains failure (battery is not included). Replace the battery once a year	Use a commercially available 9.6 V battery	
13		Signal lamp for wall mounting	1 x 230 V, 50 Hz	91077209
14		Signal horn	Indoors, 1 x 230 V, 50 Hz	62500021
			Outdoors, 1 x 230 V, 50 Hz	62500022
15		Level switch type SAS	Cable length 5 m, 250 V	00ID7805
16		External main switch for supply cable	Up to 25 A	96002511
17		Venting valve (with filter)	DN 70/80/100	98059596
18		Filter kit for venting valve	DN 70/80/100	98059594
19		Wall installation box for venting valve	204 x 204 x 130 mm	98059598
20		PC Tool link USB		96705378

6. Multilift MOG

Multilift MOG is designed according to EN 12050-1 and approved by an external institute. It is supplied complete and ready to install.

Multilift MOG is equipped with a grinder pump (SEG) which is necessary when high discharge heads are required or long distances through a building must be overcome with small pipes.

TM05 0434 1011

Fig. 12 Multilift MOG

Applications

Multilift MOG is a compact and reliable lifting station with easy-to-operate controller for pumping of domestic wastewater (with faeces) in single-family houses, holiday cottages or light commercial applications.

Multilift MOG is typically used for

- basement installation below sewer level
- renovation or modernisation of existing buildings, e.g. developing basements with fitness room, sauna, bath, washroom, etc.
  - direct connection of wall-hung or floor-standing toilets with horizontal outlet according to EN33/EN37.

TM05 1772 3611

Fig. 13 Example of installation of Multilift MOG in a pit in the building's basement

Selection guide

Max. pipe length

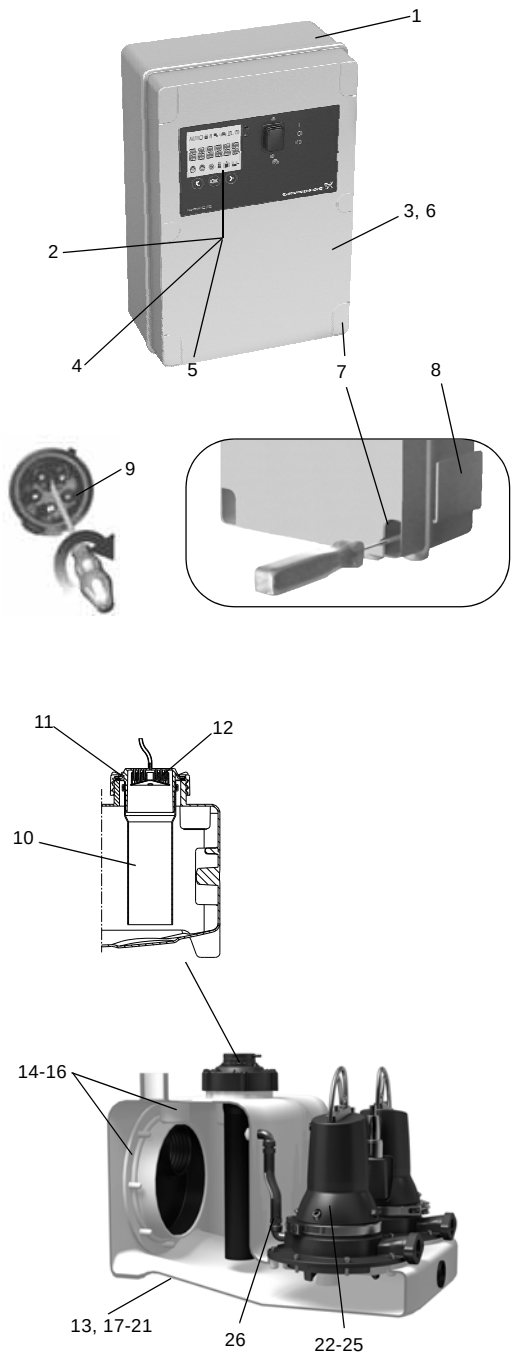
40 m	70	-	-	-	DN 40	MOG.40
30 m	520	70	3	-	DN 40	MOG.40
	150	-	-	-	DN 40	MOG.31
	5	-	-	-	DN 40	MOG.26
20 m	980	170	50	50	DN 40	MOG.40
	580	80	7	10	DN 40	MOG.31
	430	50	-	-	DN 40	MOG.26
	130	-	-	-	DN 40	MOG.15
	-	-	-	-	DN 40	MOG.12
	-	-	-	-	DN 40	MOG.09
15 m	1095	215	75	28	DN 40	MOG.40
	785	135	35	1	DN 40	MOG.31
	685	100	20	-	DN 40	MOG.26
	345	35	2	-	DN 40	MOG.15
	85	-	-	-	DN 40	MOG.12
		-	-	-	DN 40	MOG.09
10 m	1390	270	100	42	DN 40	MOG.40
	1040	180	60	17	DN 40	MOG.31
	890	130	45	5	DN 40	MOG.26
	540	80	18	-	DN 40	MOG.15
	340	35	-	-	DN 40	MOG.12
	90	-	-	-	DN 40	MOG.09
5 m	1600	320	145	67	DN 40	MOG.40
	1250	235	110	52	DN 40	MOG.31
	1100	205	75	29	DN 40	MOG.26
	700	135	45	17	DN 40	MOG.15
	400	85	20	5	DN 40	MOG.12
	120	20	-	-	DN 40	MOG.09
Q [l/s]	0.9	2	3	4		

Required min. flow for v = 0.7 m/s at DN 40

Fig. 14 Maximum length of vertical and horizontal discharge pipes

Figure 14 shows the sizing guide with maximum length of vertical and horizontal pipes depending on the internal pipe diameter and the duty point.
The non-return valve, an isolating valve and four bends have been taken into account. The limit of use is based on the self cleaning velocity of 0.7 m/s.
Normal length of pipework in single-family houses or similar buildings is approx. 5-15 m.

Constructional features

Multilift MOG	Description	
		
	Pos.	**Controller**
	1	Pre-assembled and ready to operate with all necessary presettings – only the inlet level needs to be set
	2	Controller with LCD display, interactive menu, multiple motor protection features and further safety options
	3	Potential-free contact for common alarm (inside)
	4	External alarm can be used e.g. to monitor the installation room or well around the lifting station with separate float switch outside the tank detect to groundwater intake, water pipe burst or other flooding accidents; no extra alarm device needed
	5	Maintenance/service reminder (0, 3, 6 or 12 months)
	6	Connection of PC Tool for further information and adjustments (inside)
TM05 3455 1412	7	Quick and easy installation of the controller to the wall without the need of opening the cabinet
	8	Holder for a quick guide
	9	Phase inverter for easy changing of phases (only three-phase versions)
	Pos.	**Level sensor**
TM05 4311 - TM05 2055	10	No moving parts in pumped liquid. Blockage-free pressure tube, DN 100, connected via a pressure hose to piezoresistive pressure sensor in the controller.
	11	Screw cap serving as pressure tube fixation and tank inspection cover enabling easy maintenance of pressure tube and inspection of collecting tank
TM05 1804 3811	12	Condensate trap prevents condensation in pressure hose incase of hot-water inflow
	Pos.	**Collecting tank**
	13	Design and volume adapted to single-family house applications
	14	Possible to connect inlets from all directions and to connect floor-standing and wall-hung toilets; ideal for replacement and new installation
	15	Unique, patented inlet disk, DN 100 (DN 150 as accessory), for stepless adjustment to inlet levels from 180 to 315 mm
	16	Socket sealing for space saving installation
	17	Wastewater-resistant and odour-free, seamless collecting tank made of polyethylene (PE) with strong walls
TM05 0332 0911	18	Sedimentation-free tank bottom with chamfers, leading the wastewater to the pump to reduce the need of cleaning the tank
	19	Pressure-tight design up to 5 m water column according to EN 12050-1
	20	Suitable for liquid temperature up to 50 °C
	21	Easy handling during transportation and installation
	Pos.	**Pump**
	22	Submersible stainless steel pump with highly reliable grinder system and adjustable, semi-open, radial impeller
	23	Clamp solution as a quick-release fastener makesit easy to separate motor from pump housing in case of service or maintenance.
	24	Motor protection with built-in thermal switch
TM05 2072 4311	25	Mechanical shaft seal in a cartridge for safe and quick replacement and a chamber filled with non-toxic oil to ensure reliable, long service life
	26	Self-venting pump housing due to hydraulic design

Product description

Features

- Complete, pre-assembled and ready to install
- patented, turnable inlet disk enabling flexible connections from 180 to 315 mm inlet levels - ideal for new installations and replacements
- seven different inlet connections on all sides offer maximum installation flexibility
- six different motor sizes for perfect adjustment to the required draining performance
- easy-to-operate LC 221 controller with outstanding motor protection and additional safety and service functions. See *LC 221 controller* on page 79
- highly reliable grinder pump for pressurised operation
- reliable, blockage-free level detection with no direct contact to the pumped liquid
- Easy and smart maintenance and service features for pump, sensor tube, collecting tank and controller

See details on page 30.

Scope of delivery

Grundfos Multilift MOG lifting stations are supplied complete with collecting tank, one single- or three-phase grinder pump, level sensor, non-return valve and LC 221 controller. Both sensor and pump are connected to the controller with 10 m cable.

An accessories bag containing the following items is also included:

- 1 x installation and operating instructions
- 1 x quick guide
- 1 x oval discharge flange, 1 1/4"
- 1 x flexible hose, DN 70, and two clamps to connect venting pipe
- 2 x screw and expansion anchor for tank fixation
- 3 x screw and washer for fastening a pipe plug in the inlet disk, if required
- 1 x socket seal, DN 100
- 1 x socket seal, DN 50, for diaphragm pump connection or inlet, DN 50.

Type key

Example	M	OG	.22	.3	.4

Multilift lifting station

OG = one grinder pump
DG = two grinder pumps

Output power, P_2 / 100 [W]

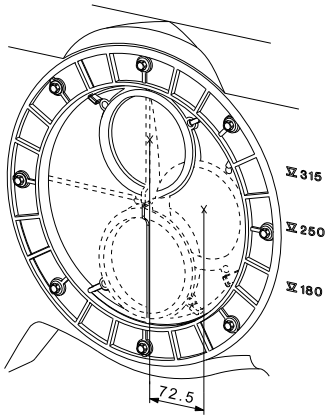
1 = single-phase motor
3 = three-phase motor

2 = 2-pole motor
4 = 4-pole motor

Collecting tank

The gas-, odour- and pressure-tight collecting tank is made of wastewater-resistant polyethylene (PE) and has all necessary ports for the connection of inlet pipes, discharge pipe, venting pipe and a manually operated diaphragm pump (accessory).

The main inlet on the rear side of the collecting tank is designed as a turnable disk, DN 100 (optional DN 150), adjustable to any inlet level between 180 and 315 mm.



TM05 0351 0911

Fig. 15 Main inlet with eccentric disk

The tank volume and effective volume (volume between start and stop) of the collecting tank appear from the following table:

Inlet level [mm]	180	250	315
Total tank volume [l]		93	
Effective tank volume [l]	23	37	50

Setting to the relevant inlet level must be made via the control panel of the controller. The factory-set inlet level is 250 mm above the floor.

Pump

The submersible cast iron pumps are equipped with a grinder system made of stainless steel.
The semi-open, cast iron, radial impeller is used in applications requiring a relatively high pressure.
The impeller can be adjusted to the pump housing to keep the optimum efficiency.

The pump has a mechanical shaft seal with an oil chamber, filled for life with non-toxic oil. The shaft seal is of the cartridge type, making it possible to replace the shaft seal in the field without using special tools.
The clamp securing the motor to the pump housing is made of stainless steel and enables easy dismantling of the motor for service and maintenance.

Single-phase motors are protected by a thermal switch in the windings and run via a capacitor inside the controller cabinet. Three-phase motors are protected by a thermal switch in the windings and an additional thermal circuit breaker in the controller cabinet.

If the motor is overloaded, it will stop automatically. When it has cooled to normal operating temperature, it will restart automatically when automatic reset is set at the controller (factory setting).

The cable connection is a plug solution made of stainless steel.

In case of high inflow, the pump can start 60 times per hour. The start and stop sequence must correspond to intermittent duty (see *Electrical data* on page 34).

Controller

See section *LC 221 controller*.

Technical data

General data

Parameter	Value
Free passage	50 mm
Liquid temperature	Max. 40 °C For short periods up to 60 °C (max. 5 minutes per hour)
Ambient temperature	0-40 °C
pH-value	4-10
Max. density of pump liquid	1,100 kg/m^3
Enclosure class (lifting station and motor)	IP68
Enclosure class (controller)	IP56
Insulation class (motor)	F (155 °C)
Voltage (motor)	1 x 230 V 3 x 230 V 3 x 400 V
Frequency (motor)	50 Hz
Potential-free contacts	NO/NC, max. 250 VAC / 2 A
Voltage (sensor)	12 V
Signal output (sensor)	0-5 V
Power consumption (controller)	2 W
Number of starts per hour	Max. 60
Sound pressure level	76 dB(A)
Dimensions (lifting station)	See section *Dimensional drawings*
Dimensions (controller)	Height = 390 mm Width = 262 mm Depth = 142 mm

Material specification

Component	Material
Collecting tank	Polyethylene (PE)
Pump housing	Cast iron
Clamp	Stainless steel
Impeller	Cast iron
Shaft	Stainless steel 1.4301
Shaft seal	Primary seal (0.9 - 1.5 kW): SiC/SiC Secondary seal (0.9 - 1.5 kW): Lip seal, NBR Primary seal (2.6 - 4.0 kW): SiC/SiC Secondary seal (2.6 - 4.0 kW): Carbon/aluminium oxide Other components: NBR rubber, stainless steel
Control cabinet	Acrylonitrile butadiene styrene (ABS)
Screws	Stainless steel 1.4301
O-rings	NBR rubber
Cable	H07RN-F

Mechanical data

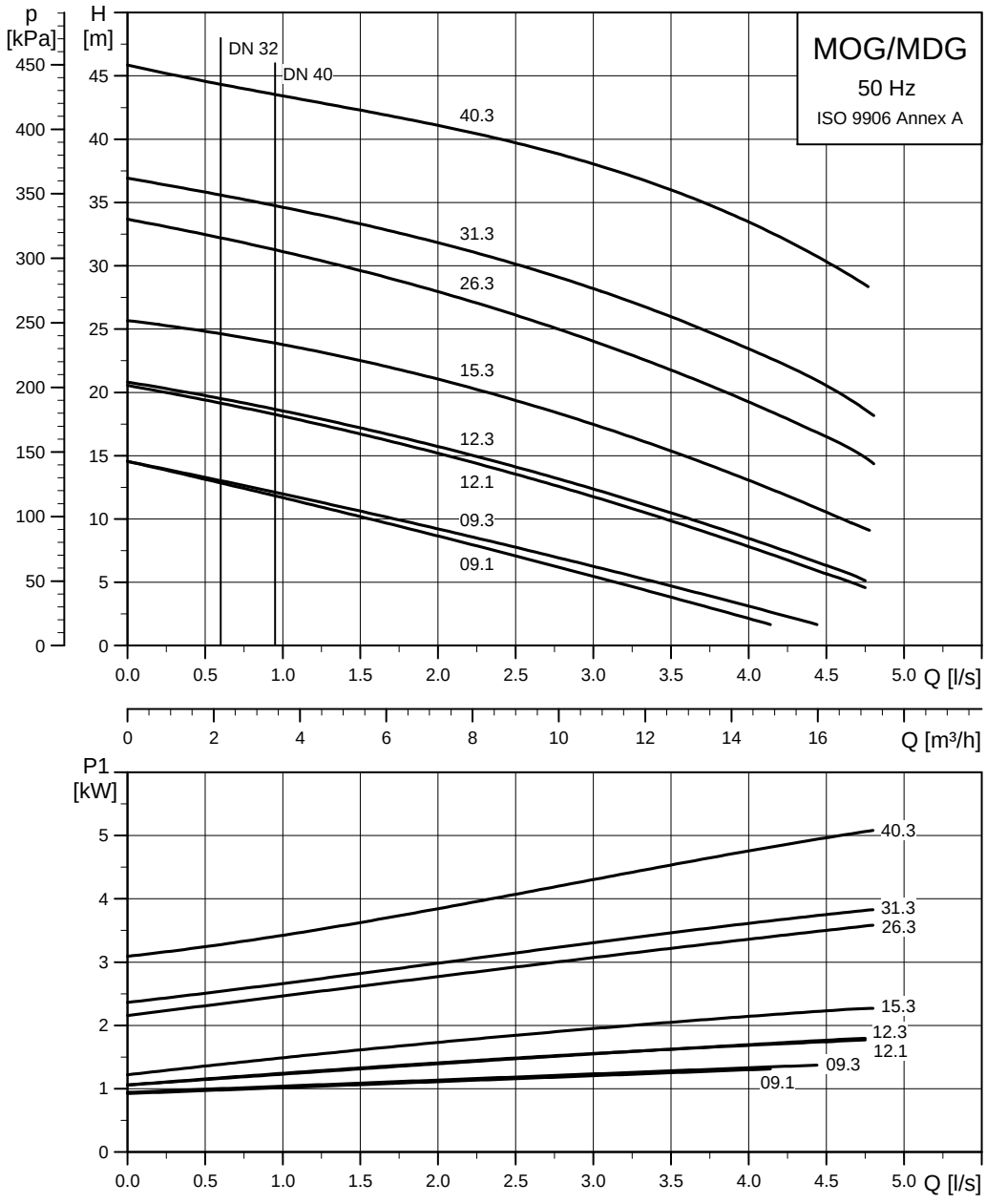
Multilift	Inlet level [mm]	Tank volume [l]	Effective tank volume [l]	Weight [kg]	Plug type	Cable length between plug and controller [m]	Cable length between motor and controller [m]	Product number
MOG.09.1.2	180 / 250 / 315	93	23 / 37 / 50	62	Schuko	1.5	10	97901124
MOG.09.3.2				62	CEE 3P+N+E, 16A			97901125
MOG.12.1.2				62	Schuko			97901126
MOG.12.3.2				62	CEE 3P+N+E, 16A			97901127
MOG.15.3.2				64	CEE 3P+E 16A			97901129
MOG.15.3.2				64	CEE 3P+N+E, 16A			97901128
MOG.26.3.2				85	CEE 3P+E 16A			97901131
MOG.26.3.2				85	CEE 3P+N+E, 16A			97901130
MOG.31.3.2				93	CEE 3P+E 16A			97901133
MOG.31.3.2				93	CEE 3P+N+E, 16A			97901132
MOG.40.3.2				93	CEE 3P+E 16A			97901135
MOG.40.3.2				93	CEE 3P+N+E, 16A			97901134

Electrical data

Multilift	Duty	Voltage [V] *	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	RPM [min^{-1}]	Number of poles	Starting method
MOG.09.1.2	S3-35 %	1 x 230 V	1.4 / 0.9	6.3 / 38	2890	2	DOL
MOG09.3.2		3 x 400 V		2.6 / 21	2860		
MOG.12.1.2		1 x 230 V	1.8 / 1.2	8.2 / 38	2820		
MOG.12.3.2		3 x 400 V		3.1 / 21	2750		
MOG.15.3.2		3 x 230 V	2.3 / 1.5	6.6 / 36	2700		
MOG.15.3.2		3 x 400 V		3.8 / 21	2700		
MOG.26.3.2		3 x 230 V	3.7 / 2.6	9.2 / 57	2870		
MOG.26.3.2		3 x 400 V		5.3 / 33	2870		
MOG.31.3.2	S3-30 %	3 x 230 V	3.9 / 3.1	10.9 / 74	2900		
MOG.31.3.2		3 x 400 V		6.3 / 43	2900		
MOG.40.3.2		3 x 230 V	5.2 / 4.0	14.2 / 74	2830		
MOG.40.3.2		3 x 400 V		8.2 / 43	2830		

* Tolerance: - 10 %/ 6 %

Performance curves



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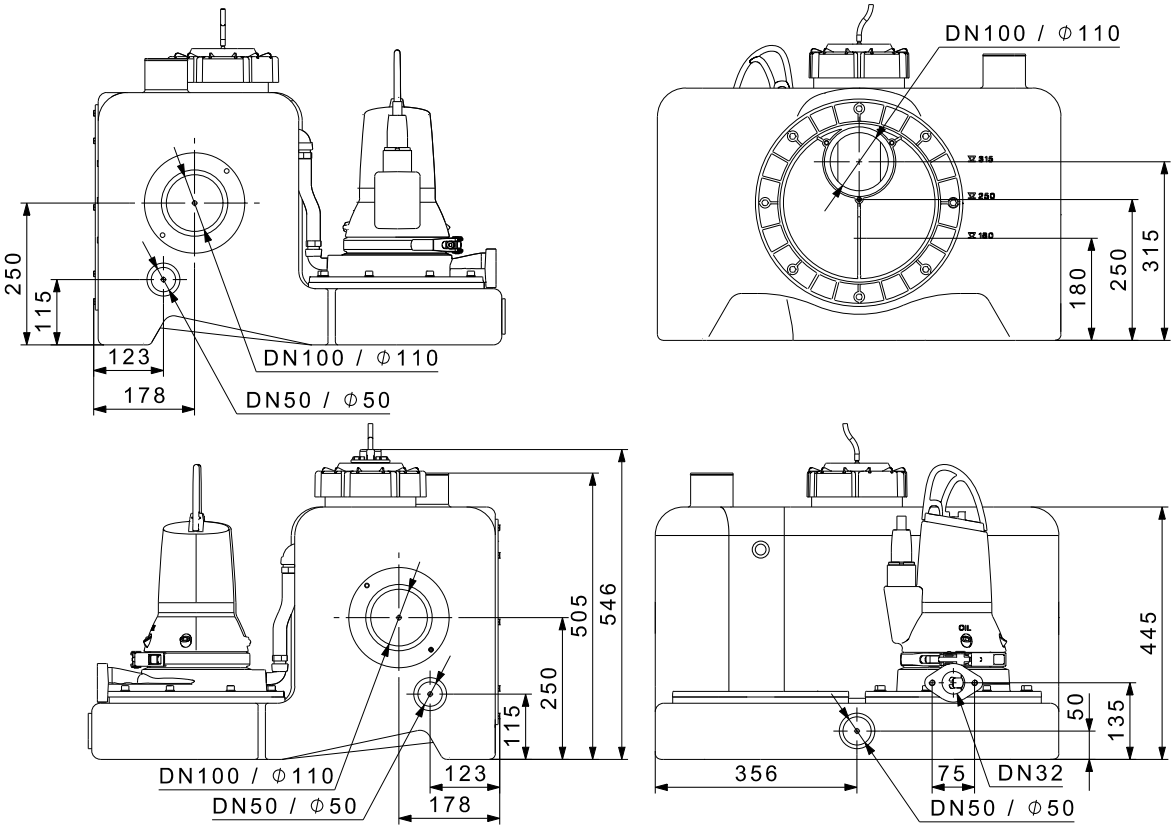
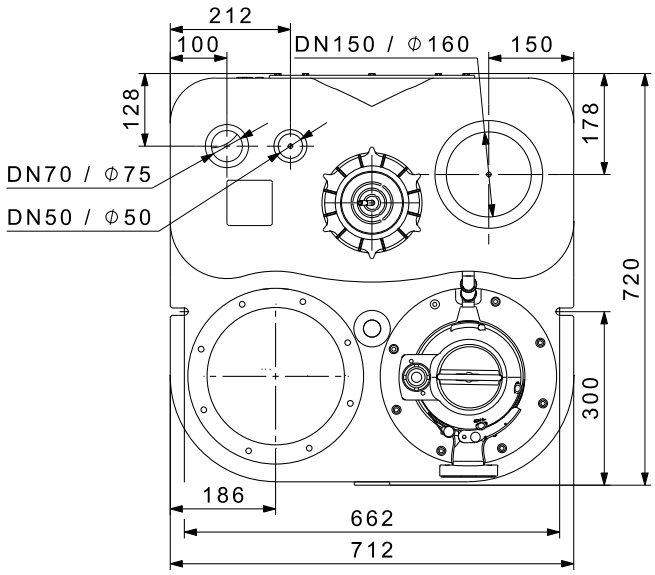
Dimensional drawings





TM05 0672 1011

Accessories

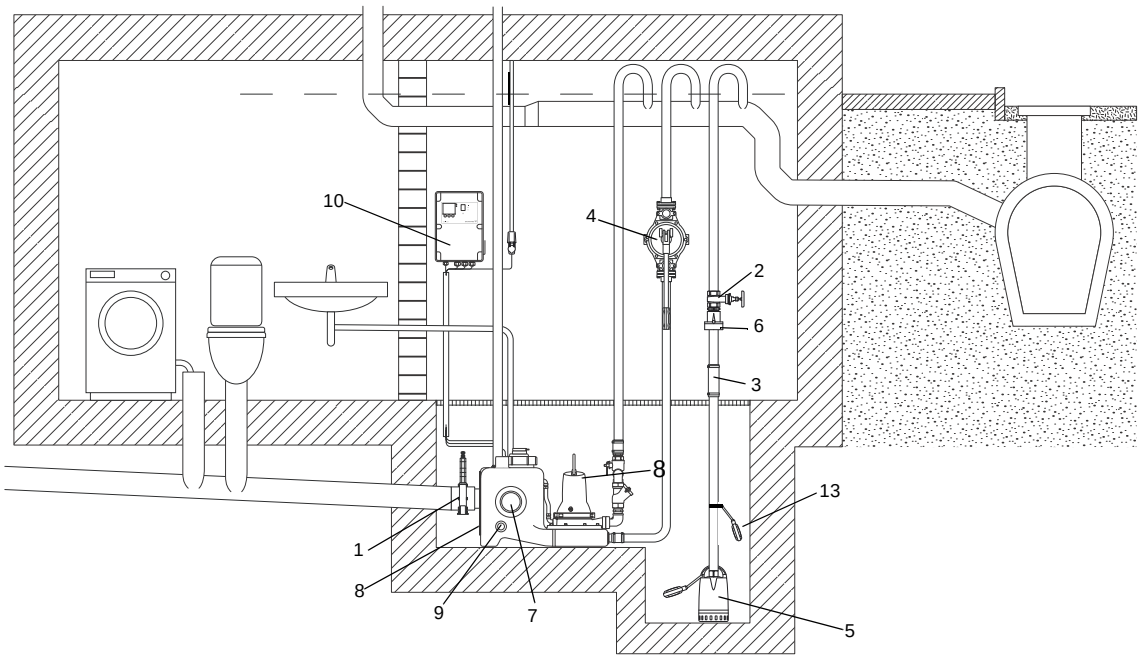
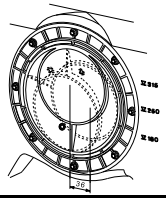
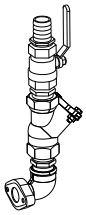
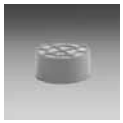


Fig. 16 Accessories for Multilift MOG

No.	Figure	Description	Dimensions	Product number
1		Isolating valve, PVC	DN 100 Installation length: 130 mm Height: 375 mm Connection piece: Ø110	96615831
2		Isolating valve, brass	DN 32 Installation length: 76 mm Connection: Rp 1 1/4"	00ID0918
3		Flexible connection with clamps for additional connections and inlets	DN 32 Length: 150 mm Internal Ø42	91071645
4		Manually operated diaphragm pump	Installation length: 423 mm Width: 215 mm Connection: Rp 1 1/2"	96003721
5	For wastewater pump, e.g. Unilift CC and KP, please see data booklet for the pump or WebCAPS.			
6		Non-return flap valve, composite	Length: 90 mm Height: 90 mm Connection: Rp 1 1/4"	96005308
7		Socket seal for additional standard inlet	DN 100, internal ∅110	97726942
		Socket seal for additional inlet (vertical inlet on top)	DN 150, internal Ø160	96636544
8		Turnable inlet disk with socket seal for adjustable inlet level	DN 150 Internal ∅160	98079681

No.	Figure	Description	Dimensions	Product number
9		Socket seal for additional inlet	DN 50 Internal ∅48-50	98079669
10		Battery buffer for alarm in case of mains failure (battery is not included). Replace the battery once a year	Use a commercially available 9.6 V battery	
11		Signal lamp for wall mounting	1 x 230 V, 50 Hz	91077209
12		Signal horn	Indoors, 1 x 230 V, 50 Hz	62500021
			Outdoors, 1 x 230 V, 50 Hz	62500022
13		Level switch type SAS	Cable length 5 m, 250 V	00ID7805
14		External main switch for supply cable	Up to 25 A	96002511
15		1 1/2" complete, pre-assembled discharge pipework incl.: - 1 x flexible connecting piece with 2 clamps, DN 40 (not shown, see Pos. 6a) - 1 x hose nozzle, Rp 1 1/2 / DN 40 - 1 x isolating valve (ball), R 1 1/2 - 2 x double nipple, Rp 1 1/2 - 1 x non-return ball valve, R 1 1/2 - 1 x bend, 90 ° Rp 1 1/2 / R 1 1/2 (Pipework can be set up in 1 1/4" / DN 32 locally)		98085356
16		Non-return ball valve, Rp 1 1/4, made of cast iron with epoxy coating, to be mounted on installation site	Length: 140 mm Width: 83 mm	96116550
		Non-return ball valve, Rp 1 1/2, made of cast iron with epoxy coating	Length: 140 mm Width: 83 mm	91076761
17		Venting valve (with filter)	DN 70/80/100	98059596
18		Filter kit for venting valve	DN 70/80/100	98059594
19		Wall installation box for venting valve	204 x 204 x 130 mm	98059598
20		PC Tool link USB		96705378

7. Multilift MD

Multilift MD is designed according to EN 12050-1 and approved by an external institute. It is supplied complete and ready to install with butterfly non-return valve.

TM05 0430 1011

Fig. 17 Multilift MD

Applications

Multilift MD is a compact and reliable lifting station with easy-to-operate controller for pumping of domestic wastewater (with faeces) in multi-family houses as well as in public and commercial buildings, such as offices, schools, hotels and restaurants.

Multilift MD is typically used for

- basement installation below sewer level
- renovation or modernisation of existing buildings, e.g. developing basements with fitness room, sauna, bath, washroom, etc.
  - direct connection of wall-hung and floor-standing toilets with horizontal outlet according to EN33/EN37.

TM05 1772 3611

Fig. 18 Example of application installation of Multilift MD in a pit in the building's basement

Selection guide

Max. pipe length

15 m	85	-	-			-	-	DN 100	MD.38
13 m	385	200	42	-	-	-	-	DN 100	MD.38
	115	-	-	-	-	-	-	DN 100	MD.32
11 m	680	415	180	94	30	-	-	DN 100	MD.38
	415	210	34	-	-	-	-	DN 100	MD.32
9 m	980	630	330	209	120	13	-	DN 100	MD.38
	710	425	178	88	20	-	-	DN 100	MD.32
	175	60	-	-	-	-	-	DN 100	MD.24
7 m	1280	850	475	325	215	75	-	DN 100	MD.38
	1010	640	325	198	115	-	-	DN 100	MD.32
	475	275	56	-	-	-	-	DN 100	MD.24
	220	110	49	-	-	-	-	DN 100	MD.22
5 m	1575	1075	620	440	3100	140	40	DN 100	MD.38
	1310	860	470	320	205	70	-	DN 100	MD.32
	770	490	208	100	28	-	-	DN 100	MD.24
	520	3300	194	135	90	35	5	DN 100	MD.22
	265	155	63	30	-	-	-	DN 100	MD.15
	160	70	-	-	-	-	-	DN 100	MD.12
3 m	1875	1280	765	495	405	200	92	DN 100	MD.38
	1605	1075	615	435	300	135	42	DN 100	MD.32
	1070	705	345	215	122	15	-	DN 100	MD.24
	815	545	338	250	183	105	57	DN 100	MD.22
	565	370	208	145	98	30	-	DN 100	MD.15
	460	285	143	88	51	-	-	DN 100	MD.12
2 m	2025	1390	837	610	450	235	118	DN 100	MD.38
	1755	1180	685	490	348	170	68	DN 100	MD.32
	1220	815	418	275	168	50	-	DN 100	MD.24
	965	650	410	307	230	140	83	DN 100	MD.22
	710	480	280	204	1145	65	18	DN 100	MD.15
	605	395	215	145	98	30	-	DN 100	MD.12

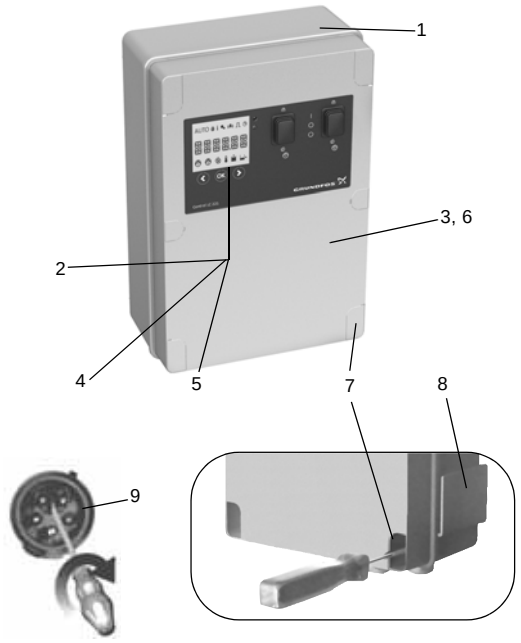
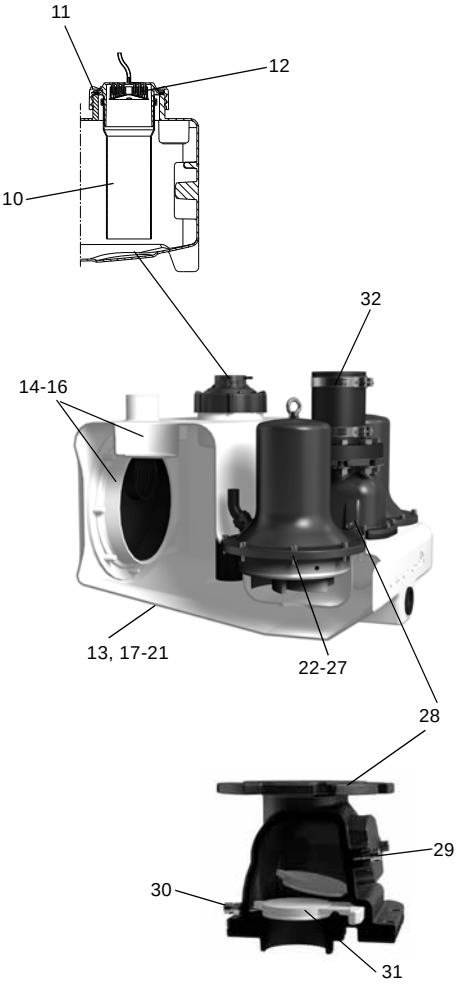
Q [l/s]	5/5	6.5	8	9	10	12	14

Required min. flow for v = 0.7 m/s at DN 100

Fig. 19 Maximum length of vertical and horizontal discharge pipes

Figure 19 shows the sizing guide with maximum length of vertical and horizontal pipes depending on the internal pipe diameter and the duty point.
The non-return valve, an isolating valve and four bends have been taken into account. The limit of use is based on the self cleaning velocity of 0.7 m/s.

Constructional features

Multilift MD	Description	
	**Pos.**	**Controller**
	1	Pre-assembled and ready to operate with all necessary presettings – only the inlet level needs to be set
	2	Controller with LCD display, interactive menu, multiple motor protection features and further safety options
	3	Potential-free contact for common alarm (inside)
	4	External alarm can be used e.g. to monitor the installation room or well around the lifting station with separate float switch outside the tank to detect groundwater intake, water pipe burst or other flooding accidents; no extra alarm device needed
	5	Maintenance/service reminder (0, 3, 6 or 12 months)
	6	Connection of PC Tool for further information and adjustments (inside)
	7	Quick and easy installation of the controller to the wall without the need of opening the cabinet
	8	Holder for a quick guide
	9	Phase inverter for easy changing of phases (only three-phase versions)
	Pos.	Level sensor
	10	No moving parts in pumped liquid. Blockage-free pressure tube, DN 100, connected via a pressure hose to piezoresistive pressure sensor in the controller.
	11	Screw cap for pressure tube fixation and tank inspection cover enabling easy maintenance of pressure tube and inspection of collecting tank
	12	Condensate trap prevents condensation in pressure hose in case of hot-water inflow
	Pos.	**Collecting tank**
	13	Design and volume adapted to multi-family house and commercial applications
	14	Possible to connect inlets from all directions and to connect floor-standing and wall-hung toilets; ideal for replacement and new installation
	15	Unique, patented inlet disk, DN 100 (DN 150 as accessory), for stepless adjustment to inlet levels from 180 to 315 mm
	16	Socket sealing for space saving installation
	17	Wastewater-resistant and odour-free, seamless collecting tank made of polyethylene (PE) with strong walls
	18	Sedimentation-free tank bottom with chamfers, leading the wastewater to the pump to reduce the need of cleaning the tank
	19	Pressure tight design up to 5 m water column according to EN 12050-1
	20	Suitable for liquid temperature up to 50 °C
	21	Easy handling during transportation and installation
	Pos.	**Pump**
	22	Six motor sizes adapted to all application needs, up to 21 m discharge head and 50 m^3 discharge flow
	23	Vortex impeller with large free passage for trouble-free operation and unchanged performance throughout the entire life of the pump
	24	Motor protection with built-in thermal switch
	25	Highly reliable motor design with up to 60 starts per hour for handling peak inflow conditions
	26	Tripple shaft seal and a chamber filled with non-toxic oil to ensure reliable, long service life
	27	Self-venting pump housing due to hydraulic design
	Pos.	**Non-return valve DN 80**
	28	Designed and approved according to EN 12050-4
	29	Compact design with large and well accessible inspection cover for taking out foreign bodies, if necessary
	30	Lifting device to drain discharge pipe in case of service or maintenance
	31	Smooth and silent flap valve
	Pos.	**Discharge**
	32	Flexible and sound absorbing discharge connection

Product description

Features

- Complete, pre-assembled and ready to install
- patented, turnable inlet disk enabling flexible connections from 180 to 315 mm inlet levels - ideal for new installations and replacements
- seven different inlet connections on all sides offer maximum installation flexibility
- six different motor sizes for perfect adjustment to the required draining performance
- easy-to-operate LC 221 controller with outstanding motor protection and additional safety and service functions. See *LC 221 controller* on page 79
- reliable, blockage-free level detection with no direct contact to the pumped liquid
- one back-up pump for high operating safety
- easy and smart maintenance and service features for sensor tube, collecting tank and controller.

See details on page 39.

Scope of delivery

Grundfos Multilift MD lifting stations are supplied complete with collecting tank, two single- or three-phase pumps, level sensor, butterfly non-return valve and LC 221 controller. Both sensor and pumps are connected to the controller with 4 or 10 m cable and hose.

An accessories bag containing the following items is also included:

- 1 x installation and operating instructions
- 1 x Quick guide for controller menu
- 1 x discharge adapter flange, DN 80, with connection piece, DN 100 (outer diameter, 110 mm)
- 1 x flexible hose, DN 100, and two clamps to connect the discharge pipe
- 1 x flexible hose, DN 70, and two clamps to connect the venting pipe
- 2 x screw and expansion anchor for tank fixation
- 3 x screw and washer for fastening a pipe plug in the inlet disk, if required
- 1 x socket seal, DN 100
- 1 x socket seal, DN 50, for diaphragm pump connection or inlet, DN 50
- 1 x gasket kit, DN 80, 8 bolts M16 x 65, nuts and washers (galvanized).

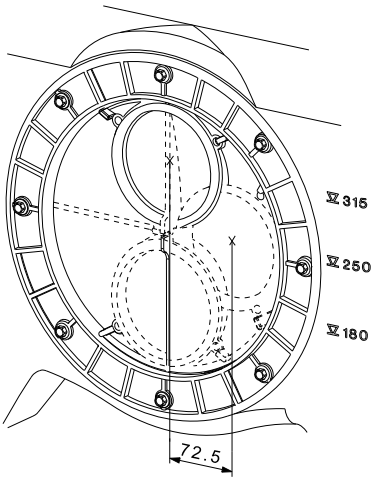
Type key

Example	M		D	.22	.3	.4
Multilift lifting station						
[ ] = normal-size tank						
D = 2 pumps						
Output power, P_2 / 100 [W]						
1 = single-phase motor 3 = three-phase motor						
2 = 2-pole motor 4 = 4-pole motor						

Collecting tank

The gas-, odour- and pressure-tight collecting tank is made of wastewater-resistant polyethylene (PE) and has all necessary ports for the connection of inlet pipes, discharge pipe, venting pipe and a manually operated diaphragm pump (accessory).

The main inlet on the rear side of the collecting tank is designed as a turnable disk, DN 100 (optional DN 150), adjustable to any inlet level between 180 and 315 mm.



TM05 0351 0911

Fig. 20 Main inlet with eccentric disk

The tank volume and effective volume (volume between start and stop) of the collecting tank appear from the following table:

Inlet level [mm]	180	250	315
Total tank volume [l]		130	
Effective tank volume [l]	49	69	86

Setting to the relevant inlet level must be made via the control panel of the controller. The factory-set inlet level is 250 mm above the floor.

Pump

The composite impeller of the submersible cast iron pump is designed as a free-flow, vortex impeller, ensuring almost unchanged performance throughout the entire life of the pump. The pump has three shaft seals with an oil chamber filled for life with non-toxic oil.

Single-phase motors are protected by a thermal switch in the windings and run via a capacitor inside the controller cabinet. Three-phase motors are protected by a thermal switch in the windings and an additional thermal circuit breaker in the controller cabinet.

If the motor is overloaded, it will stop automatically. When it has cooled to normal operating temperature, it will restart automatically when automatic reset is set at the controller (factory setting).

Incase of high inflow, the pump can start 60 times per hour. The start and stop sequence must correspond to intermittent duty (see *Electrical data* on page 42).

Controller

See section *LC 221 controller*.

Technical data

General data

Parameter	Value
Free passage	50 mm
Liquid temperature	Max. 40 °C For short periods up to 60 °C (max. 5 minutes per hour)
Ambient temperature	0-40 °C
pH-value	4-10
Max. density of pump liquid	1,100 kg/m^3
Enclosure class (lifting station and motor)	IP68 (2 m water column for 7 days)
Enclosure class (controller)	IP56
Insulation class (motor)	F (155 °C)
Voltage (motor)	1 x 230 V 3 x 230 V 3 x 400 V
Frequency (motor)	50 Hz
Potential-free contacts	NO/NC, max. 250 VAC / 2 A
Voltage (sensor)	12 V
Signal output (sensor)	0-5 V
Power consumption (controller)	2 W

Parameter	Value
Number of starts per hour	Max. 60
Sound pressure level	< 70 dB(A)
Dimensions (lifting station)	See section *Dimensional drawings*
Dimensions (controller)	Height = 390 mm Width = 262 mm Depth = 142 mm

Material specification

Component	Material
Collecting tank	Polyethylene (PE)
Pump housing	Cast iron
Impeller	Luranyl
Shaft	Stainless steel 1.4301
Control cabinet	Acrylonitrile butadiene styrene (ABS)
Screws	Stainless steel 1.4301
O-rings	NBR rubber
Cable	Neoprene

Mechanical data

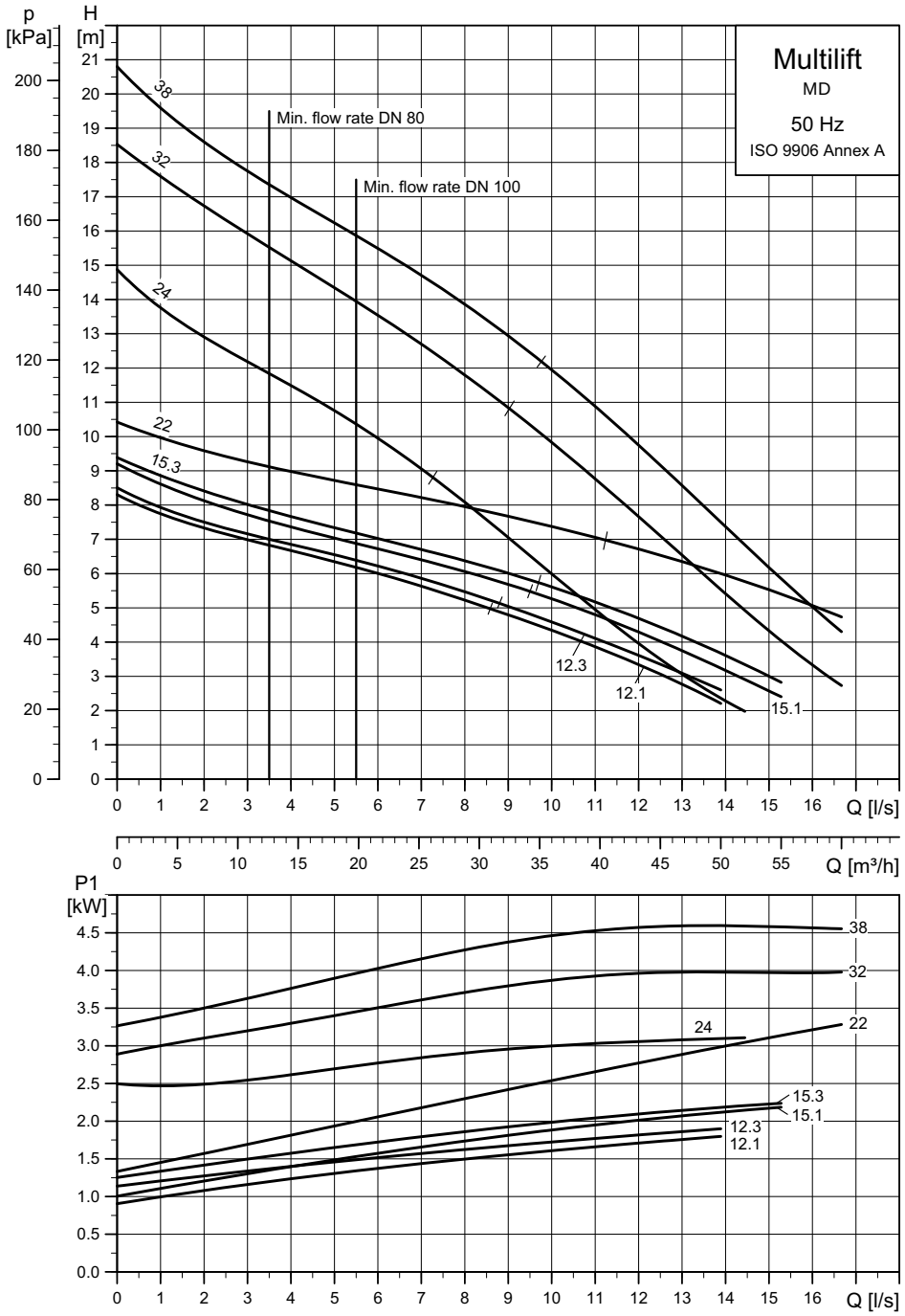
Multilift	Inlet level [mm]	Tank volume [l]	Effective tank volume [l]	Weight [kg]	Plug type	Cable length between plug and controller [m]	Cable length between motor and controller [m]	Product number
MD.12.1.4	180/250/315	139	49/69/86	119	CEE 2P+E 32A	1.5	4	97901084
MD.12.3.4				119	CEE 3P+N+E, 16A			97901085
MD.15.1.4				119	CEE 2P+E 32A			97901086
MD.15.3.4				119	CEE 3P+N+E, 16A			97901087
MD.22.3.4				121	CEE 3P+E 32A			97901089
MD.22.3.4				121	CEE 3P+N+E, 16A			97901088
MD.24.3.2				126	CEE 3P+E 32A			97901091
MD.24.3.2				126	CEE 3P+N+E, 16A			97901090
MD.32.3.2				126	CEE 3P+E 32A			97901093
MD.32.3.2				126	CEE 3P+N+E, 16A			97901092
MD.38.3.2				126	CEE 3P+E 32A			97901095
MD.38.3.2				126	CEE 3P+N+E, 16A			97901094
MD.12.1.4	180/250/315	130	49/69/86	119	CEE 2P+E 32A	1.5	10	97901096
MD.12.3.4				119	CEE 3P+N+E, 16A			97901097
MD.15.1.4				119	CEE 2P+E 32A			97901098
MD.15.3.4				119	CEE 3P+N+E, 16A			97901099
MD.22.3.4				121	CEE 3P+N+E, 16A			97901100
MD.24.3.2				126	CEE 3P+N+E, 16A			97901101
MD.32.3.2				126	CEE 3P+N+E, 16A			97901102
MD.38.3.2				126	CEE 3P+N+E, 16A			97901103

Electrical data

Multilift	Duty	Voltage [V]*	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	RPM [min^{-1}]	Number of poles	Starting method
MD.12.1.4	S3-40 %, 1 min.	1 x 230 V	1.9 / 1.4	9 / 39	1430	4	DOL
MD.12.3.4		3 x 400 V	1.8 / 1.5	3.6 / 19			
MD.15.1.4		1 x 230 V	2.2 / 1.6	10.1 / 39	1410	4	
MD.15.3.4		3 x 400 V	2.1 / 1.7	4.0 / 19			
MD.22.3.4	S3-50 %, 1 min.	3 x 230 V	3.0 / 2.5	10.2 / 51.5	1430	4	
MD.22.3.4		3 x 400 V		5.5 / 29.7			
MD.24.3.2		3 x 230 V	3.1 / 2.7	9.7 / 88.7	2920	2	
MD.24.3.2		3 x 400 V		5.5 / 39			
MD.32.3.2		3 x 230 V	4.0 / 3.4	88.7	2920	2	
MD.32.3.2		3 x 400 V		6.7 / 39			
MD.38.3.2	S3-40 %, 1 min.	3 x 230 V	4.6 / 3.8	13 / 88.7	2880	2	
MD.38.3.2		3 x 400 V		7.5 / 39			

* Tolerance: - 10 %/ 6 %

Performance curves



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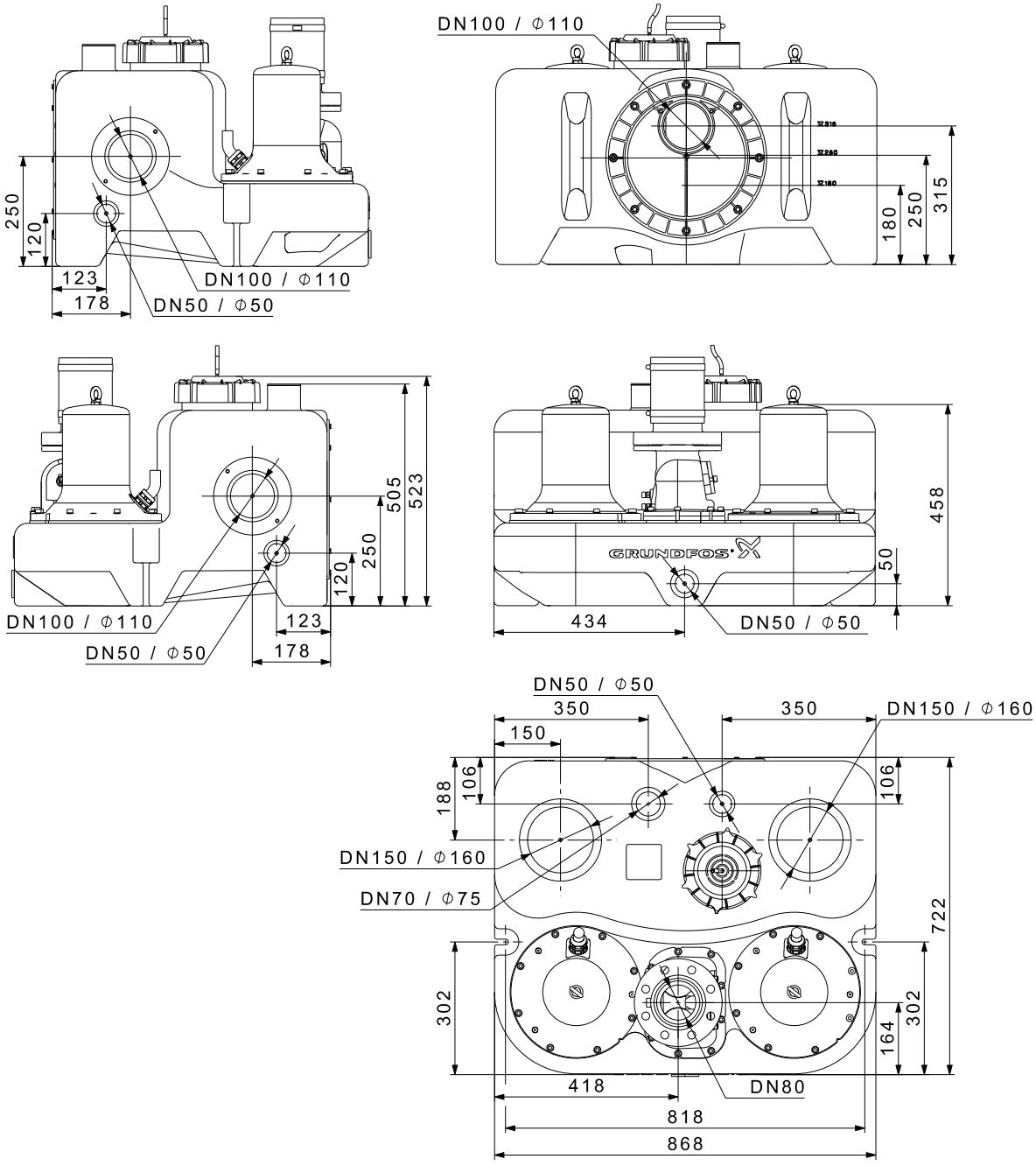
Dimensional drawings



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Accessories

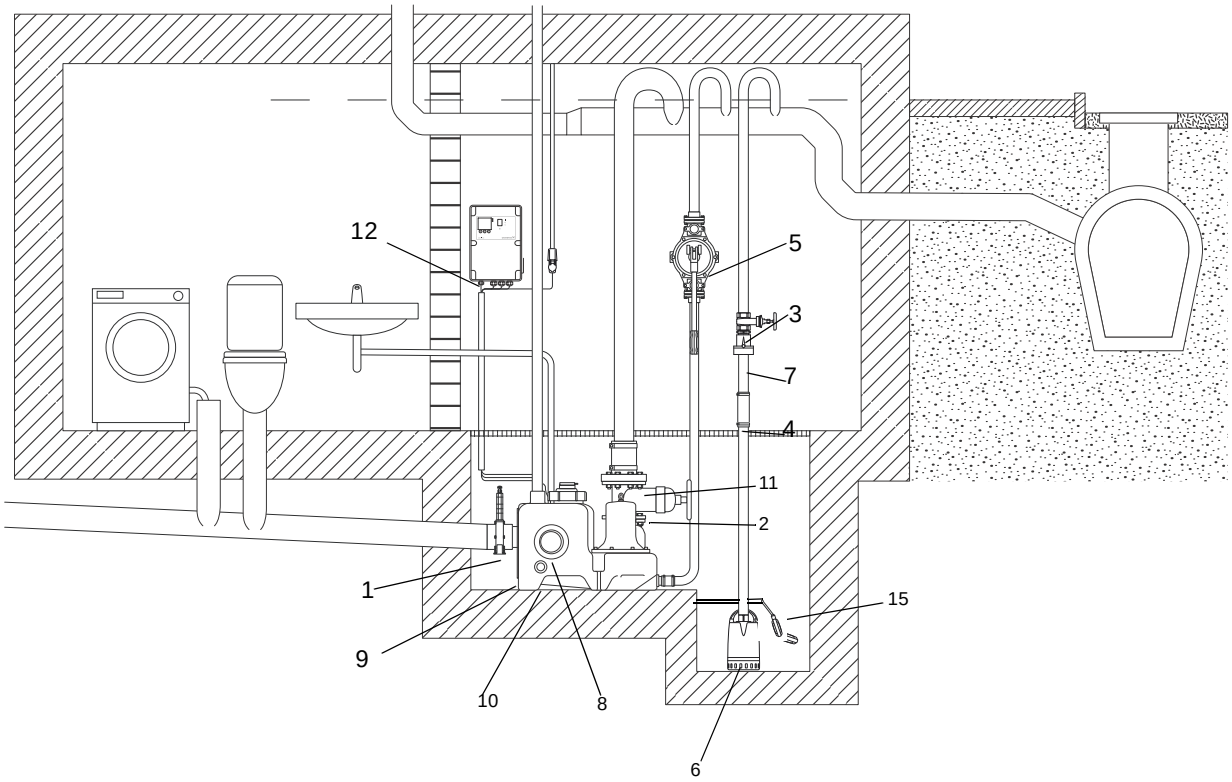

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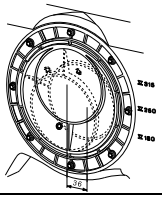
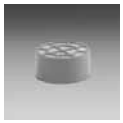
Fig. 21 Accessories for Multilift MD

No.	Figure	Description	Dimensions	Product number
1		Isolating valve, PVC	DN 100 Installation length: 130 mm Height: 375 mm Connection piece: Ø110	96615831
2		Isolating valve, epoxy-coated cast iron	DN 80 Installation length: 180 mm Height: 300 mm Connection: flange PN 10	96002011
3		Isolating valve, brass	DN 32 Length: 76 mm Connection: Rp 1 1/4"	00ID0918
4		Flexible connection with clamps for additional connections and inlets	DN 32 Length: 150 mm Internal Ø42	91071645
5		Manually operated diaphragm pump	Installation length: 423 mm Width: 215 mm Connection: Rp 1 1/2"	96003721
6	For wastewater pump, e.g. Unilift CC and KP, please see data booklet for the pump or WebCAPS.			
7		Non-return flap valve, composite	Length: 90 mm Height: 90 mm Connection: Rp 1 1/4"	96005308

No.	Figure	Description	Dimensions	Product number
8		Socket seal for additional standard inlet	DN 100 Internal ∅110	97726942
		Socket seal for additional inlet (vertical inlet on top)	DN 150, internal Ø160	96636544
9		Turnable inlet disk with socket seal for adjustable inlet level	DN 150 Internal ∅160	98079681
10		Socket seal for additional inlet	DN 50 Internal ∅48-50	98079669
11		Bolts, nuts, 8 of each, (galvanised) Gasket	16 x 65 mm DN 80	96001999
12		Battery buffer for alarm in case of mains failure (battery is not included). Replace the battery once a year	Use a commercially available 9.6 V battery	
13		Signal lamp for wall mounting	1 x 230 V, 50 Hz	91077209
14		Signal horn	Indoors, 1 x 230 V, 50 Hz	62500021
			Outdoors, 1 x 230 V, 50 Hz	62500022
15		Level switch type SAS	Cable length 5 m, 250 V	00ID7805
16		External main switch for supply cable	Up to 25 A	96002511
17		Venting valve (with filter)	DN 70/80/100	98059596
18		Filter kit for venting valve	DN 70/80/100	98059594
19		Wall installation box for venting valve	204 x 204 x 130 mm	98059598
20		PC Tool link USB		96705378

8. Multilift MLD

Multilift MLD is designed according to EN 12050-1 and approved by an external institute. It is supplied complete and ready to install with butterfly non-return valve.

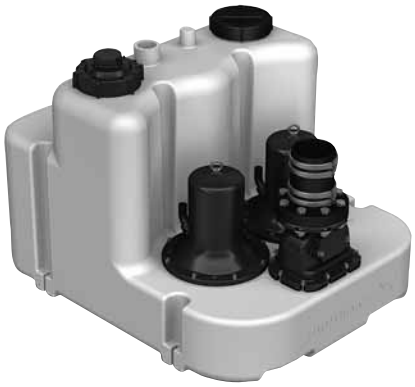


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Fig. 22 Multilift MLD

Applications

Multilift MLD is a compact and reliable lifting station with easy-to-operate controller for pumping of domestic wastewater (with faeces) in multi-family houses as well as in public and commercial buildings, such as offices, schools, hotels and restaurants.

Multilift MLD is typically used for

- basement installation below sewer level
- renovation or modernisation of existing buildings, e.g. developing basements with fitness room, sauna, bath, washroom, etc.

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Fig. 23 Example of installation of Multilift MLD in a pit in the building's basement

Selection guide

Max. pipe length

15 m	85	-	-			-	-	DN 100	M.38
13 m	385	200	42	-	-	-	-	DN 100	M.38
	115	-	-	-	-	-	-	DN 100	M.32
11 m	680	415	180	94	30	-	-	DN 100	M.38
	415	210	34	-	-	-	-	DN 100	M.32
9 m	980	630	330	209	120	13	-	DN 100	M.38
	710	425	178	88	20	-	-	DN 100	M.32
	175	60	-	-	-	-	-	DN 100	M.24
7 m	1280	850	475	325	215	75	-	DN 100	M.38
	1010	640	325	198	115	-	-	DN 100	M.32
	475	275	56	-	-	-	-	DN 100	M.24
	220	110	49	-	-	-	-	DN 100	M.22
5 m	1575	1075	620	440	3100	140	40	DN 100	M.38
	1310	860	470	320	205	70	-	DN 100	M.32
	770	490	208	100	28	-	-	DN 100	M.24
	520	3300	194	135	90	35	5	DN 100	M.22
	265	155	63	30	-	-	-	DN 100	M.15
	160	70	-	-	-	-	-	DN 100	M.12
3 m	1875	1280	765	495	405	200	92	DN 100	M.38
	1605	1075	615	435	300	135	42	DN 100	M.32
	1070	705	345	215	122	15	-	DN 100	M.24
	815	545	338	250	183	105	57	DN 100	M.22
	565	370	208	145	98	30	-	DN 100	M.15
	460	285	143	88	51	-	-	DN 100	M.12
2 m	2025	1390	837	610	450	235	118	DN 100	M.38
	1755	1180	685	490	348	170	68	DN 100	M.32
	1220	815	418	275	168	50	-	DN 100	M.24
	965	650	410	307	230	140	83	DN 100	M.22
	710	480	280	204	1145	65	18	DN 100	M.15
	605	395	215	145	98	30	-	DN 100	M.12

Q [l/s]	5/5	6.5	8	9	10	12	14

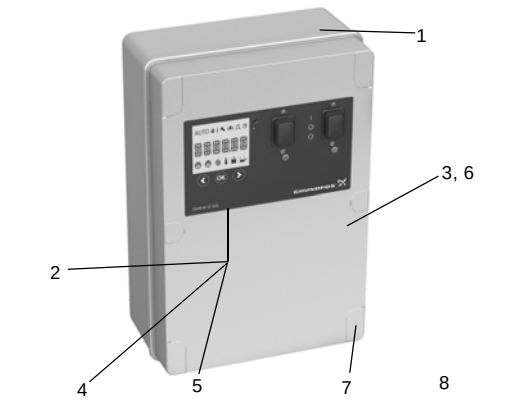
Required min. flow for v = 0.7 m/s at DN 100

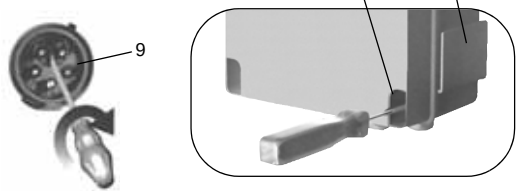
Fig. 24 Maximum length of vertical and horizontal discharge pipes

Figure 24 shows the sizing guide with maximum length of vertical and horizontal pipes depending on the internal pipe diameter and the duty point. The non-return valve, an isolating valve and four bends have been taken into account. The limit of use is based on the self cleaning velocity of 0.7 m/s.

Constructional features

Multilift MLD





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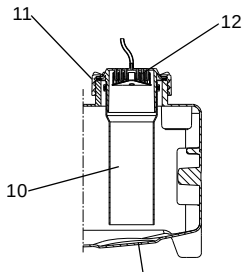

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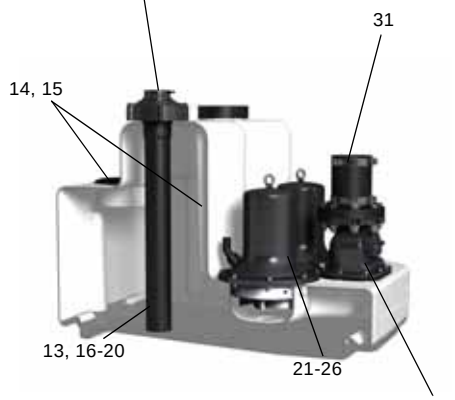

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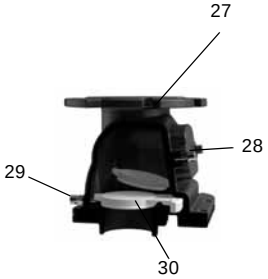

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Description

Pos.	Controller
1	Pre-assembled and ready to operate with all necessary presettings – only the inlet level needs to be set
2	Controller with LCD display, interactive menu, multiple motor protection features and further safety options
3	Potential-free contact for common alarm (inside)
4	External alarm can be used e.g. to monitor the installation room or well around the lifting station with separate float switch outside the tank to detect groundwater intake, water pipe burst or other flooding accidents; no extra alarm device needed
5	Maintenance/service reminder (0, 3, 6 or 12 months)
6	Connection of PC Tool for further information and adjustments (inside)
7	Quick and easy installation of the controller to the wall without the need of opening the cabinet
8	Holder for a quick guide
9	Phase inverter for easy changing of phases (only three-phase versions)
Pos.	**Level sensor**
10	No moving parts in pumped liquid. Blockage-free pressure tube, DN 100, connected via a pressure hose to piezoresistive pressure sensor in the controller
11	Screw cap for pressure tube fixation and tank inspection cover, enabling easy maintenance of pressure tube and inspection of collecting tank
12	Condensate trap prevents condensation in pressure hose in case of hot-water inflow
Pos.	**Collecting tank**
13	Design and volume adapted to multi-family house and commercial applications
14	Possible to connect inlet DN 150 from three horizontal directions and vertically
15	High effective tank volume of 190 litres
16	Wastewater-resistant and odour-free, seamless collecting tank made of polyethylene (PE) with strong walls
17	Sedimentation-free tank bottom with chamfers, leading the wastewater to the pump to reduce the need of cleaning the tank
18	Pressure tight design up to 5 m water column according to EN 12050-1
19	Suitable for liquid temperature up to 50 °C
20	Easy handling during transportation and installation
Pos.	**Pump**
21	Six motor sizes adapted to all application needs, up to 21 m discharge head and 50 m^3 discharge flow.
22	Vortex impeller with large free passage for trouble-free operation and unchanged performance throughout the entire life of the pump
23	Motor protection with built-in thermal switch
24	Highly reliable motor design with up to 60 starts per hour for handling peak inflow conditions
25	Tripple shaft seal and a chamber filled with non-toxic oil to ensure reliable, long service life
26	Self-venting pump housing due to hydraulic design
Pos.	**Non-return valve**
27	Designed and approved according to EN 12050-4
28	Compact design with large and well accessible inspection cover for taking out foreign bodies if necessary
29	Lifting device to drain discharge pipe in case of service or maintenance
30	Smooth and silent flap valve
Pos.	**Discharge**
31	Flexible and sound absorbing discharge connection

Product description

Features

- Complete, pre-assembled and ready to install
- high effective volume
- eight different motor sizes for perfect adjustment to the required draining performance
- easy-to-operate LC 221 controller with outstanding motor protection and additional safety and service functions. See *LC 221 controller* on page 79
- reliable blockage-free level detection with no direct contact to the pumped liquid
- one backup pump for high operating safety
- easy and smart maintenance and service features for sensor tube, collecting tank and controller.

See details on page 48.

Scope of delivery

Grundfos Multilift MLD lifting stations are supplied complete with collecting tank, two single- or three-phase pumps, level sensor, butterfly non-return valve and LC 221 controller. Both sensor and pump are connected to the controller with 4 or 10 m cable and hose.

An accessories bag containing the following items is also included:

- 1 x installation and operating instructions
- 1 x Quick guide for controller menu
- 1 x discharge adapter flange, DN 80, with connection piece, DN 100 (outer diameter, 110 mm)
- 1 x flexible hose, DN 100, and two clamps to connect discharge pipe
- 1 x flexible hose, DN 70, and two clamps to connect venting pipe
- 4 x screw and expansion anchor for tank fixation
- 1 x socket seal, DN 150
- 1 x flexible hose connection with two clamps, DN 50, for diaphragm pump connection or inlet, DN 50
- 1 x gasket kit, DN 80, 8 bolts M16 x 65, nuts and washers (galvanized).

Type key

Example	M	L	D	.22	.3	.4
Multilift lifting station						
L = large tank						
D = 2 pumps						
Output power, P_2 / 100 [W]						
1 = single-phase motor 3 = three-phase motor						
2 = 2-pole motor 4 = 4-pole motor						

Collecting tank

The gas-, odour- and pressure-tight collecting tank is made of wastewater resistant polyethylene (PE) and has all necessary ports for the connection of inlet pipes, discharge pipe, venting pipe and a manually operated diaphragm pump (accessory).

The tank volume and effective volume (volume between start and stop) of the collecting tank appear from the following table:

Inlet level [mm]	560
Total tank volume [l]	270
Effective tank volume [l]	190

Setting to the relevant inlet level must be made via the control panel of the controller. The factory-set inlet level is 250 mm above the floor.

Pump

The composite impeller of the pump is designed as a free-flow, vortex impeller, ensuring almost unchanged performance throughout the entire life of the pump. The pump has three shaft seals with an oil chamber filled for life with non-toxic oil.

Single-phase motors are protected by a thermal switch in the windings and run via a capacitor inside the controller cabinet. Three-phase motors are protected by a thermal switch in the windings and an additional thermal circuit breaker in the controller cabinet.

If the motor is overloaded, it will stop automatically. When it has cooled to normal operating temperature, it will restart automatically when automatic reset is set at the controller (factory setting).

In case of high inflow, the pump can start 60 times per hour. The start and stop sequence must correspond to intermittent duty (see *Electrical data* on page 50).

Controller

See section *LC 221 controller*.

Technical data

General data

Parameter	Value
Free passage	50 mm
Liquid temperature	Max. 40 °C For short periods up to 60 °C (max. 5 minutes per hour)
Ambient temperature	0-40 °C
pH-value	4-10
Max. density of pump liquid	1,100 kg/m^3
Enclosure class (lifting station and motor)	IP68 (2 m water column for 7 days)
Enclosure class (controller)	IP56
Insulation class (motor)	F (155 °C)
Voltage (motor)	1 x 230 V 3 x 230 V 3 x 400 V
Frequency (motor)	50 Hz
Potential-free contacts	NO/NC, max. 250 VAC / 2 A
Voltage (sensor)	12 V
Signal output (sensor)	0-5 V
Power consumption (controller)	2 W

Parameter	Value
Number of starts per hour	Max. 60
Sound pressure level	< 70 dB(A)
Dimensions (lifting station)	See section *Dimensional drawings*
Dimensions (controller)	Height = 390 mm Width = 262 mm Depth = 142 mm

Material specification

Component	Material
Collecting tank	Polyethylene (PE)
Pump housing	Cast iron
Impeller	Luranyl
Shaft	Stainless steel 1.4301
Control cabinet	Acrylonitrile butadiene styrene (ABS)
Screws	Stainless steel 1.4301
O-rings	NBR rubber
Cable	Neoprene

Mechanical data and order data

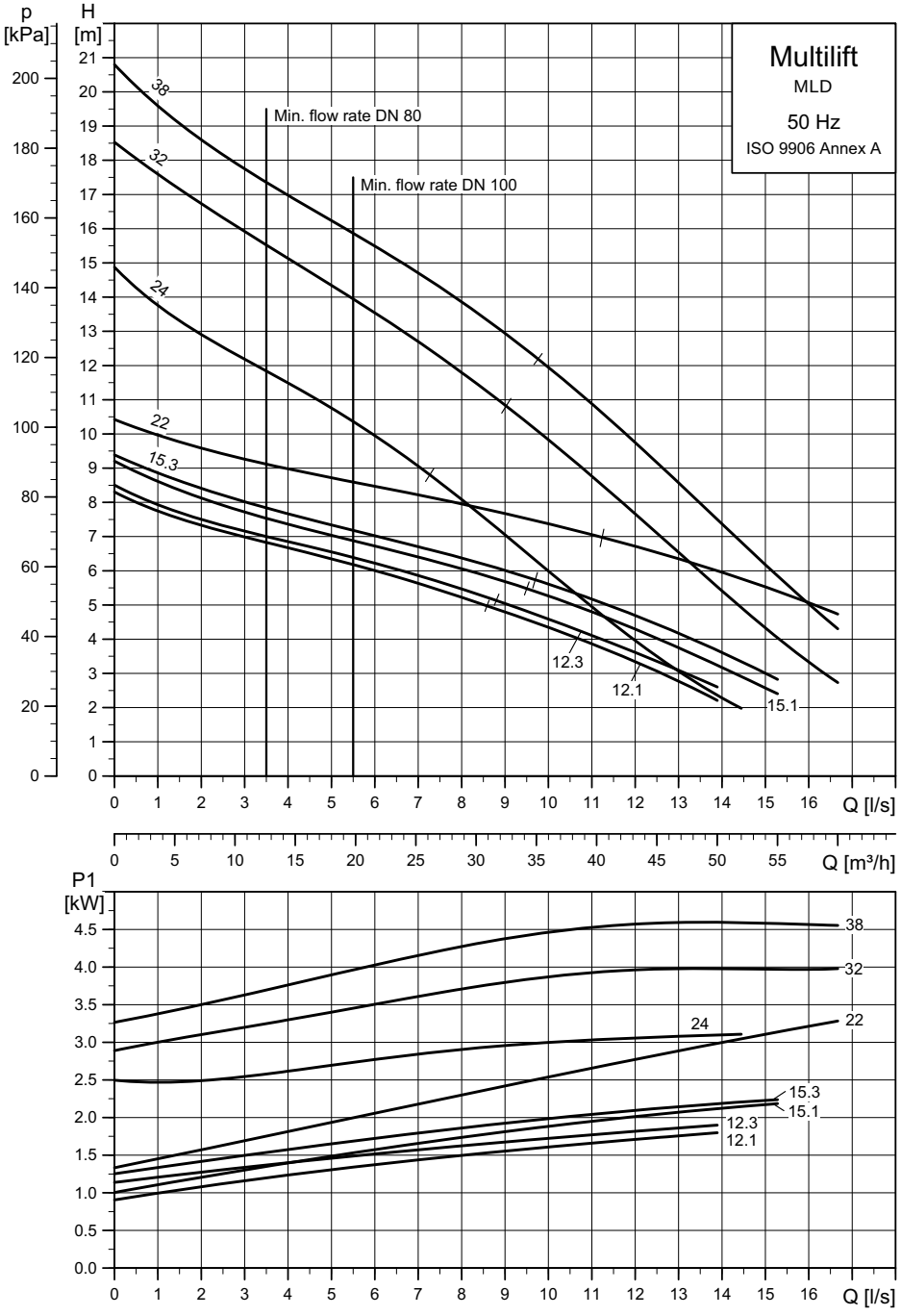
Multilift	Inlet level [mm]	Tank volume [l]	Effective tank volume [l]	Weight [kg]	Plug type	Cable length between plug and controller [m]	Cable length between motor and controller [m]	Product number
MLD.12.1.4	560	270	190	130	CEE 2P+E 32A	1.5	4	97901104
MLD.12.3.4				130	CEE 3P+N+E, 16A			97901105
MLD.15.1.4				130	CEE 2P+E 32A			97901106
MLD.15.3.4				130	CEE 3P+N+E, 16A			97901107
MLD.22.3.4				132	CEE 3P+E 32A			97901109
MLD.22.3.4				132	CEE 3P+N+E, 16A			97901108
MLD.24.3.2				136	CEE 3P+E 32A			97901111
MLD.24.3.2				136	CEE 3P+N+E, 16A			97901110
MLD.32.3.2				136	CEE 3P+E 32A			97901113
MLD.32.3.2				136	CEE 3P+N+E, 16A			97901112
MLD.38.3.2				136	CEE 3P+E 32A			97901115
MLD.38.3.2				136	CEE 3P+N+E, 16A			97901114
MLD.12.1.4	560	270	190	130	CEE 2P+E 32A	1.5	10	97901116
MLD.12.3.4				130	CEE 3P+N+E, 16A			97901117
MLD.15.1.4				130	CEE 2P+E 32A			97901118
MLD.15.3.4				130	CEE 3P+N+E, 16A			97901119
MLD.22.3.4				132	CEE 3P+N+E, 16A			97901120
MLD.24.3.2				136	CEE 3P+N+E, 16A			97901121
MLD.32.3.2				136	CEE 3P+N+E, 16A			97901122
MLD.38.3.2				136	CEE 3P+N+E, 16A			97901123

Electrical data

Multilift	Duty	Voltage [V]*	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	RPM [min^{-1}]	Number of poles	Starting method
MLD.12.1.4	S3-40 %, 1 min.	1 x 23 0 V	1.9 / 1.4	9 / 39	1430	4	DOL
MLD.12.3.4		3 x 400 V	1.8 / 1.5	3.6 / 19			
MLD.15.1.4		1 x 230 V	2.2 / 1.6	10.1 / 39	1410	4	
MLD.15.3.4		3 x 400 V	2.1 / 1.7	4.0 / 19			
MLD.22.3.4	S3-50 %, 1 min.	3 x 230 V	3.0 / 2.5	10.2 / 51.5	1430	4	
MLD.22.3.4		3 x 400 V		5.5 / 29.7			
MLD.24.3.2		3 x 230 V	3.1 / 2.7	9.7 / 88.7	2920	2	
MLD.24.3.2		3 x 400 V		5.5 / 39			
MLD.32.3.2		3 x 230 V	4.0 / 3.4	88.7	2920	2	
MLD.32.3.2		3 x 400 V		6.7 / 39			
MLD.38.3.2	S3-40 %, 1 min.	3 x 230 V	4.6 / 3.8	13 / 88.7	2880	2	
MLD.38.3.2		3 x 400 V		7.5 / 39			

* Tolerance: - 10 %/ 6 %

Performance curves



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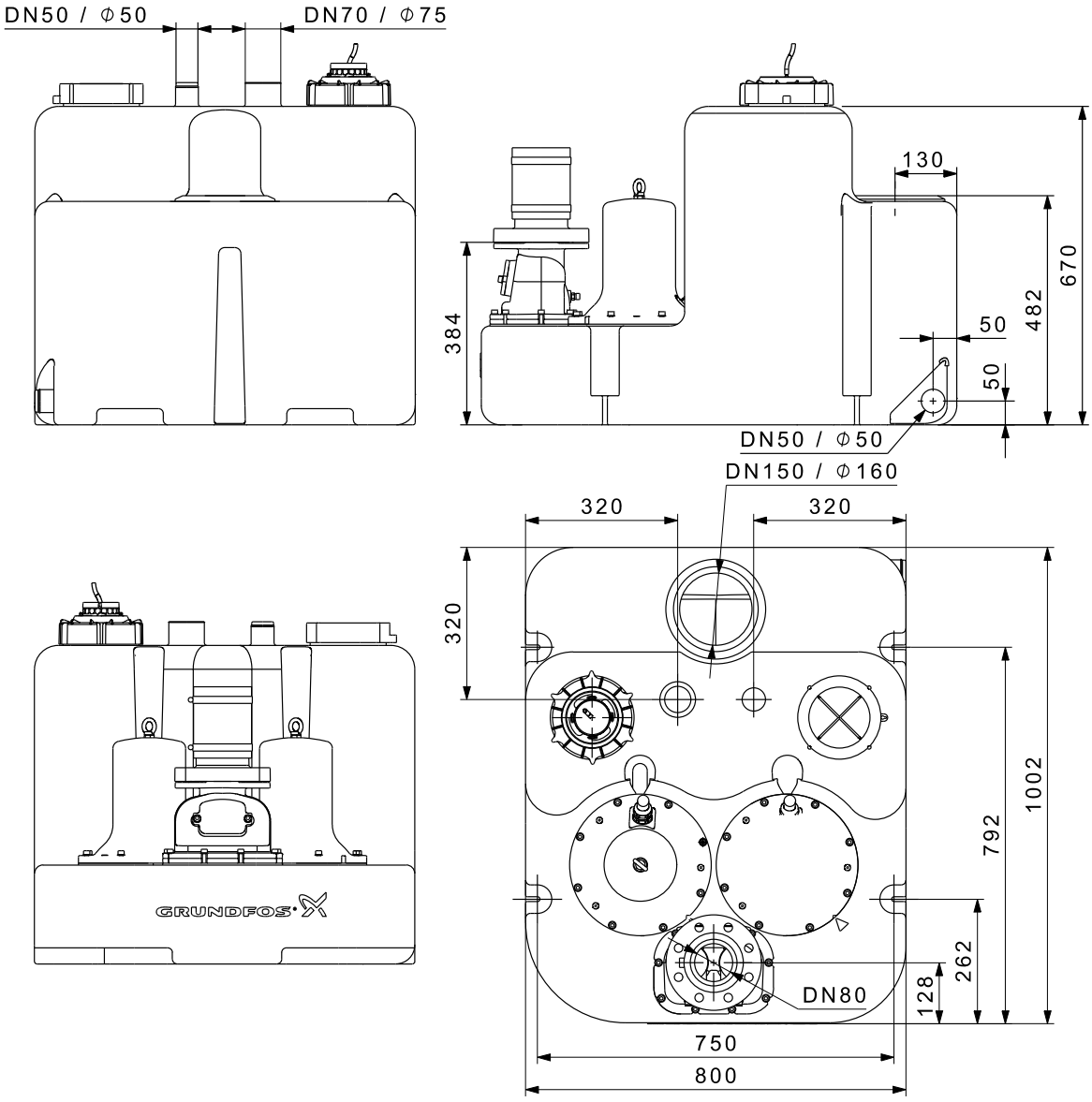
Dimensional drawings



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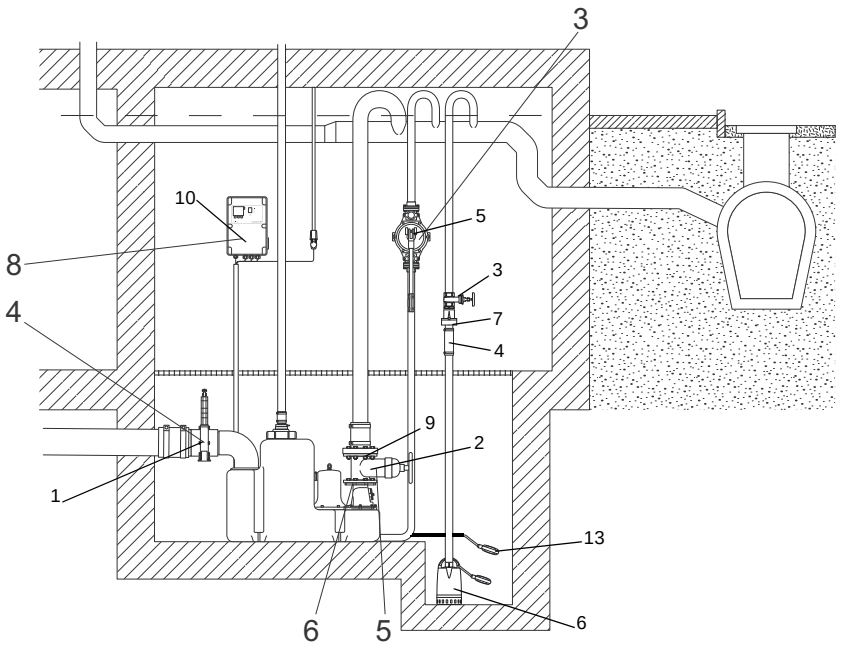
Accessories



TM05 2034 4211

Fig. 25 Accessories for Multilift MLD

No.	Figure	Description	Dimensions	Product number
1		Isolating valve, PVC	DN 150 Installation length: 227 mm Height: 496 mm Connection piece: Ø160	96697920
2		Isolating valve, epoxy-coated cast iron	DN 80 Installation length: 180 mm Height: 300 mm Connection: flange PN 10	96002011
3		Isolating valve, brass	DN 32 Length: 76 mm Connection: Rp 1 1/4"	00ID0918
4		Flexible connection with clamps for additional connections and inlets	DN 32 Length: 150 mm Internal-Ø42	91071645
5		Manually operated diaphragm pump	Installation length: 423 mm Width: 215 mm Connection: Rp 1 1/2"	96003721
6	For wastewater pump, e.g. Unilift CC and KP, please see data booklet for the pump or WebCAPS.			
7		Non-return flap valve, composite	Length: 90 mm Height: 90 mm Connection: Rp 1 1/4"	96005308
8		Socket seal for additional inlet	DN 50 Internal ∅48-50	98079669
9		Bolts, nuts, 8 of each galvanised Gasket	16 x 65 mm DN 80	96001999

No.	Figure	Description	Dimensions	Product number
10		Battery buffer for alarm in case of mains failure (battery is not included) Use a commercially available 9.6 V battery	Replace the battery once a year.	
11		Signal lamp for wall mounting	1 x 230 V, 50 Hz	91077209
12		Signal horn	Indoors, 1 x 230 V, 50 Hz	62500021
			Outdoors, 1 x 230 V, 50 Hz	62500022
13		Level switch type SAS	Cable length 5 m, 250 V	00ID7805
14		External main switch for supply cable	Up to 25 A	96002511
15		Venting valve (with filter)	DN 70/80/100	98059596
16		Filter kit for venting valve	DN 70/80/100	98059594
17		Wall installation box for venting valve	204 x 204 x 130 mm	98059598
18		PC Tool link USB		96705378

9. Multilift MDG

Multilift MOG is designed according to EN 12050-1 and approved by an external institute. It is supplied complete and ready to install.

Multilift MDG is equipped with two grinder pumps (SEG) which is necessary when high discharge heads are required or long distances through a building must be overcome with small pipes.

TM05 0427 1011

Fig. 26 Multilift MDG

Applications

Multilift MDG is a compact and reliable lifting station with easy-to-operate controller for pumping of domestic wastewater (with faeces) in multi-family houses as well as in public and commercial buildings, such as offices, schools, hotels and restaurants.

Multilift MDG is typically used for

- basement installation below sewer level
- renovation or modernisation of existing buildings, e.g. developing basements with fitness room, sauna, bath, washroom, etc.
  - direct connection of wall-hung or floor-standing toilets with horizontal outlet according to EN33/EN37.

TM05 1772 3611

Fig. 27 Example of installation of Multilift MDG in a pit in the building's basement

Selection guide

Max. pipe length

40 m	70	-	-	-	DN 40	MDG.40
30 m	520	70	3	-	DN 40	MDG.40
	150	-	-	-	DN 40	MDG.31
	5	-	-	-	DN 40	MDG.26
20 m	980	170	50	50	DN 40	MDG.40
	580	80	7	10	DN 40	MDG.31
	430	50	-	-	DN 40	MDG.26
	130	-	-	-	DN 40	MDG.15
	-	-	-	-	DN 40	MDG.12
	-	-	-	-	DN 40	MDG.09
15 m	1095	215	75	28	DN 40	MDG.40
	785	135	35	1	DN 40	MDG.31
	685	100	20	-	DN 40	MDG.26
	345	35	2	-	DN 40	MDG.15
	85	-	-	-	DN 40	MDG.12
		-	-	-	DN 40	MDG.09
10 m	1390	270	100	42	DN 40	MDG.40
	1040	180	60	17	DN 40	MDG.31
	890	130	45	5	DN 40	MDG.26
	540	80	18	-	DN 40	MDG.15
	340	35	-	-	DN 40	MDG.12
	90	-	-	-	DN 40	MDG.09
5 m	1600	320	145	67	DN 40	MDG.40
	1250	235	110	52	DN 40	MDG.31
	1100	205	75	29	DN 40	MDG.26
	700	135	45	17	DN 40	MDG.15
	400	85	20	5	DN 40	MDG.12
	120	20	-	-	DN 40	MDG.09

Q [l/s]	0.9	2	3	4

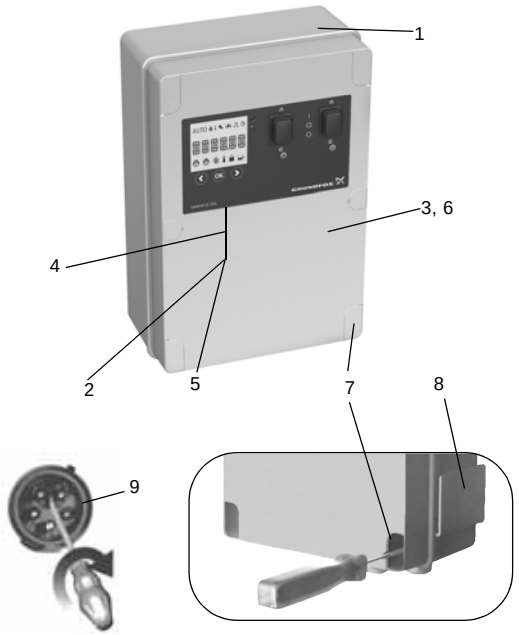
Required min. flow for v = 0.7 m/s at DN 40

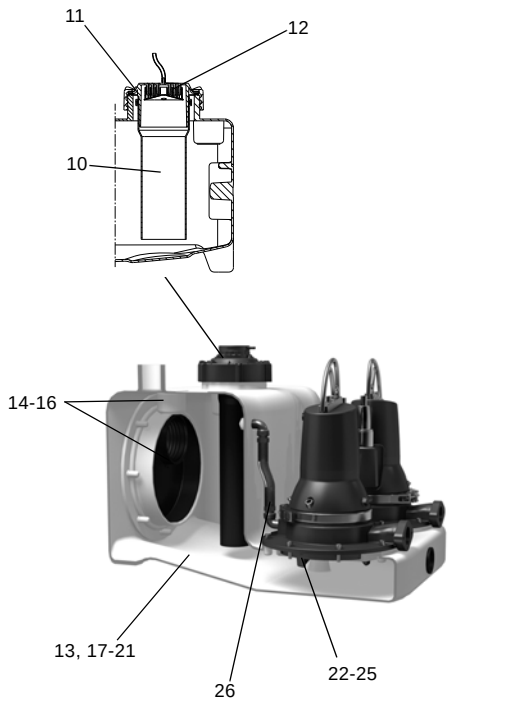
Fig. 28 Maximum length of vertical and horizontal discharge pipes

Figure 28 shows the sizing guide with maximum length of vertical and horizontal pipes depending on the internal pipe diameter and the duty point.
The non-return valve, an isolating valve and four bends have been taken into account. The limit of use is based on the self cleaning velocity of 0.7 m/s.

Constructional features

Multilift MDG





Description

	Pos.	Controller
	1	Pre-assembled and ready to operate with all necessary presettings – only the inlet level needs to be set
	2	Controller with LCD display, interactive menu, multiple motor protection features and further safety options
	3	Potential-free contact for common alarm (inside)
	4	External alarm can be used e.g. to monitor the installation room or well around the lifting station with separate float switch outside the tank to detect groundwater intake, water pipe burst or other flooding accidents; no extra alarm device needed
	5	Maintenance/service reminder (0, 3, 6 or 12 months)
	6	Connection of PC Tool for further information and adjustments (inside)
TM05 1774 3711	7	Quick and easy installation of the controller to the wall without the need of opening the cabinet
	8	Holder for a quick guide
	9	Phase inverter for easy changing of phases (only three phase versions)
	Pos.	**Level sensor**
TM05 1412 - TM05 3455	10	No moving parts in pumped liquid. Blockage-free pressure tube, DN 100, connected via pressure hose to piezoresistive pressure sensor in the controller
	11	Screw cap serving as pressure tube fixation and tank inspection cover, enabling easy maintenance of pressure tube and inspection of collecting tank
TM05 2055 4311	12	Condensate trap prevents condensation in pressure hose in case of hot-water inflow
	Pos.	**Collecting tank**
	13	Design and volume adapted to multi-family house and commercial applications
	14	Possible to connect inlets from all directions and to connect floor-standing and wall-hung toilets; ideal for replacement and new installation
	15	Unique, patented inlet disk, DN 100 (DN 150 as accessory), for stepless adjustment to inlet levels from 180 to 315 mm
	16	Sockets for space saving installation
TM05 0332 0911	17	Wastewater-resistant and odour-free, seamless tank made of polyethylene (PE) with strong walls
	18	Sedimentation-free tank bottom with chamfers, leading the wastewater to the pump to reduce the need of cleaning the tank
	19	Pressure-tight design up to 5 m water column according to EN 12050-1
	20	Suitable for liquid temperature up to 50 °C (up to 90 °C for short periods)
	21	Easy handling during transportation and installation
	Pos.	**Pump**
	22	Submersible, stainless steel pump with highly reliable grinder system and adjustable, semi-open, radial impeller
	23	Clamp solution as a quick-release fastener makes it easy to separate motor from pump housing in case of service or maintenance
	24	Motor protection with built-in thermal switch and thermal motor circuit breaker
TM05 2072 4311	26	Mechanical shaft seal in a cartridge for safe and quick replacement and a chamber filled with non toxic oil to ensure reliable, long service life
	27	Self-venting pump housing due to hydraulic design

Product description

Features

- Complete, pre-assembled and ready to install
- patented, turnable inlet disk enabling flexible connections from 180 to 315 mm inlet levels - ideal for new installations and replacements
- seven different inlet connections on all sides offer maximum installation flexibility
- eight different motor sizes for perfect adjustment to the required draining performance
- easy-to-operate LC 221 controller with outstanding motor protection and additional safety and service functions. See *LC 221 controller* on page 79
- highly reliable grinder pump for pressurized operation
- one backup pump for high operating safety
- reliable, blockage free level detection with no direct contact to the pumped liquid
- easy and smart maintenance and service features for sensor tube, collecting tank and controller.

See more on page 56.

Scope of delivery

Grundfos Multilift MDG lifting stations are supplied complete with collecting tank, two single- or three-phase grinder pumps, level sensor, butterfly non-return valve and LC 221 controller. Both sensor and pumps are connected to the controller with 10 m cable and hose.

An accessories bag containing the following items is also included:

- 1 x installation and operating instructions
- 1 x Quick guide for controller menu
- 2 x oval discharge flanges, 1 1/4"
- 1 x flexible hose, DN 70, and two clamps to connect venting pipe
- 2 x screw and expansion anchor for tank fixation
- 3 x screw and washer for fastening a pipe plug in the inlet disk, if required
- 1 x socket seal, DN 100
- 1 x socket seal, DN 50, for diaphragm pump connection or inlet, DN 50.

Type key

Example	M	DG	.12	.3	.4
Multilift lifting station					
OG = one grinder pump DG = two grinder pumps					
Output power, P_2 / 100 [W]					
1 = single-phase motor 3 = three-phase motor					
2 = 2-pole motor 4 = 4-pole motor					

Collecting tank

The gas-, odour- and pressure-tight collecting tank is made of wastewater-resistant polyethylene (PE) and has all necessary ports for the connection of inlet pipes, discharge pipe, venting pipe and a manually operated diaphragm pump (accessory).

The main inlet on the rear side of the collecting tank is designed as a turnable disk, DN 100 (optional DN 150), adjustable to any inlet level between 180 and 315 mm.

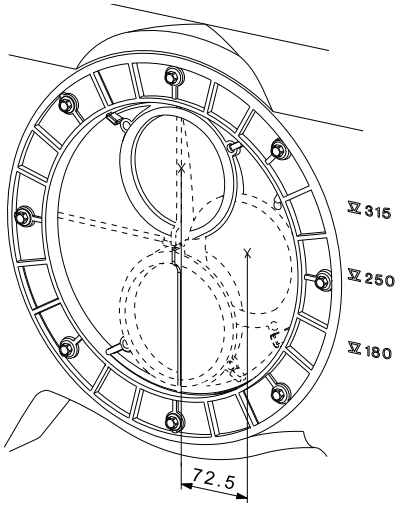


Fig. 29 Main inlet with eccentric disk

The tank volume and effective volume (volume between start and stop) of the collecting tank appear from the following table:

Inlet level [mm]	180	250	315
Total tank volume [l]		93	
Effective tank volume [l]	23	37	50

Setting to the relevant inlet level must be made via the control panel of the controller. The factory-set inlet level is 250 mm above the floor.

Pump

The submersible cast iron pumps are equipped with a grinder system made of stainless steel.
The semi-open, cast iron, radial impeller is used in applications requiring a relatively high pressure.
The impeller can be adjusted to the pump housing to keep the optimum efficiency.

The pump has a mechanical shaft seal with an oil chamber, filled for life with non-toxic oil. The shaft seal is of the cartridge type making it possible to replace the shaft seal in the field without using special tools.
The clamp securing the motor to the pump housing is made of stainless steel and enables easy dismantling of the motor for service and maintenance.

Controller

See section *LC 221 controller*.

Single-phase motors are protected by a thermal switch in the windings and run via a capacitor inside the controller cabinet. Three-phase motors are protected by a thermal switch in the windings and an additional thermal circuit breaker in the controller cabinet.

If the motor is overloaded, it will stop automatically. When it has cooled to normal operating temperature, it will restart automatically when automatic reset is set at the controller (factory setting).

The cable connection is a plug solution made of stainless steel.

In case of high inflow the pump can start 60 times per hour. The start and stop sequence must correspond to intermittent duty (see *Electrical data* on page 59).

Technical data

General data

Parameter	Value
Free passage	50 mm
Liquid temperature	Max. 40 °C For short periods up to 60 °C (max. 5 minutes per hour)
Ambient temperature	0-40 °C
pH-value	4-10
Max. density of pump liquid	1,100 kg/m^3
Enclosure class (lifting station and motor)	IP68
Enclosure class (controller)	IP56
Insulation class (motor)	F (155 °C)
Voltage (motor)	1 x 230 V 3 x 230 V 3 x 400 V
Frequency (motor)	50 Hz
Potential-free contacts	NO/NC, max. 250 VAC / 2 A
Voltage (sensor)	12 V
Signal output (sensor)	0-5 V
Power consumption (controller)	2 W
Number of starts per hour	Max. 60
Sound pressure level	76 dB(A)
Dimensions (lifting station)	See section *Dimensional drawings*
Dimensions (controller)	Height = 390 mm Width = 262 mm Depth = 142 mm

Material specification

Component	Material
Collecting tank	Polyethylene (PE)
Pump housing	Cast iron
Impeller	Cast iron
Shaft	Stainless steel 1.4301
Shaft seal	Primary seal (0.9 - 1.5 kW): SiC/SiC Secondary seal (0.9 - 1.5 kW): Lip seal, NBR Primary seal (2.6 - 4.0 kW): SiC/SiC Secondary seal (2.6 - 4.0 kW): Carbon/aluminium oxide Other components: NBR rubber, stainless steel
Control cabinet	Acrylonitrile butadiene styrene (ABS)
Screws	Stainless steel 1.4301
O-rings	NBR rubber
Cable	H07RN-F

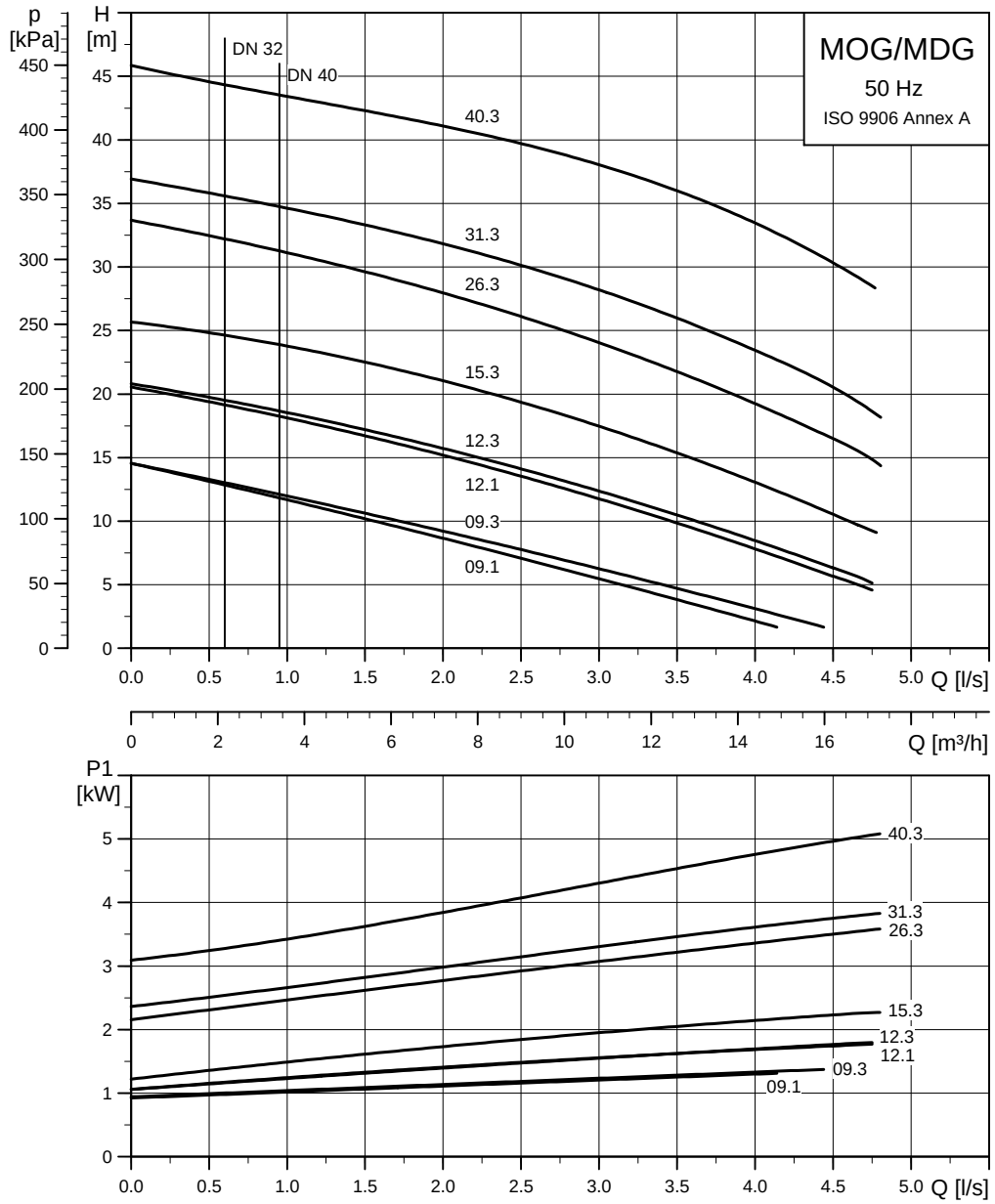
Mechanical data and order data

Multilift	Inlet level [mm]	Tank volume [l]	Effective tank volume [l]	Weight [kg]	Plug type	Cable length between plug and controller [m]	Cable length between motor and controller [m]	Product number
MDG.09.1.2	180 / 250 / 315	93	23 / 37 / 50	106	Schuko	1.5	10	97901136
MDG.09.3.2				106	CEE 3P+N+E, 16A			97901137
MDG.12.1.2				106	Schuko			97901138
MDG.12.3.2				106	CEE 3P+N+E, 16A			97901139
MDG.15.3.2				108	CEE 3P+E 16A			97901141
MDG.15.3.2				108	CEE 3P+N+E, 16A			97901140
MDG.26.3.2				150	CEE 3P+E, 16A			97901143
MDG.26.3.2				150	CEE 3P+N+E, 16A			97901142
MDG.31.3.2				166	CEE 3P+E 16A			97901145
MDG.31.3.2				166	CEE 3P+N+E, 16A			97901144
MDG.40.3.2				166	CEE 3P+E 16A			97901147
MDG.40.3.2				166	CEE 3P+N+E, 16A			97901146

Electrical data

Multilift	Duty	Voltage [V]	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	RPM [min^{-1}]	Number of poles	Starting method
MDG.09.1.2	S3 - 35 %	1 x 230 V	1.4 / 0.9	6.3 / 38	2890	2	DOL
MDG.09.3.2		3 x 400 V		2.6 / 21	2860		
MDG.12.1.2		1 x 230 V	1.8 / 1.2	8.2 / 38	2820		
MDG.12.3.2		3 x 400 V		3.1 / 21	2750		
MDG.15.3.2		3 x 230 V	2.3 / 1.5	6.6 / 36	2700		
MDG.15.3.2		3 x 400 V		3.8 / 21	2700		
MDG.26.3.2		3 x 230 V	3.7 / 2.6	9.2 / 57	2870		
MDG.26.3.2		3 x 400 V		5.3 / 33	2870		
MDG.31.3.2	S3 - 30 %	3 x 230 V	3.9 / 3.1	10.9 / 74	2900		
MDG.31.3.2		3 x 400 V		6.3 / 43	2900		
MDG.40.3.2		3 x 230 V	5.2 / 4.0	14.2 / 74	2830		
MDG.40.3.2		3 x 400 V		8.2 / 43	2830		

Performance curves



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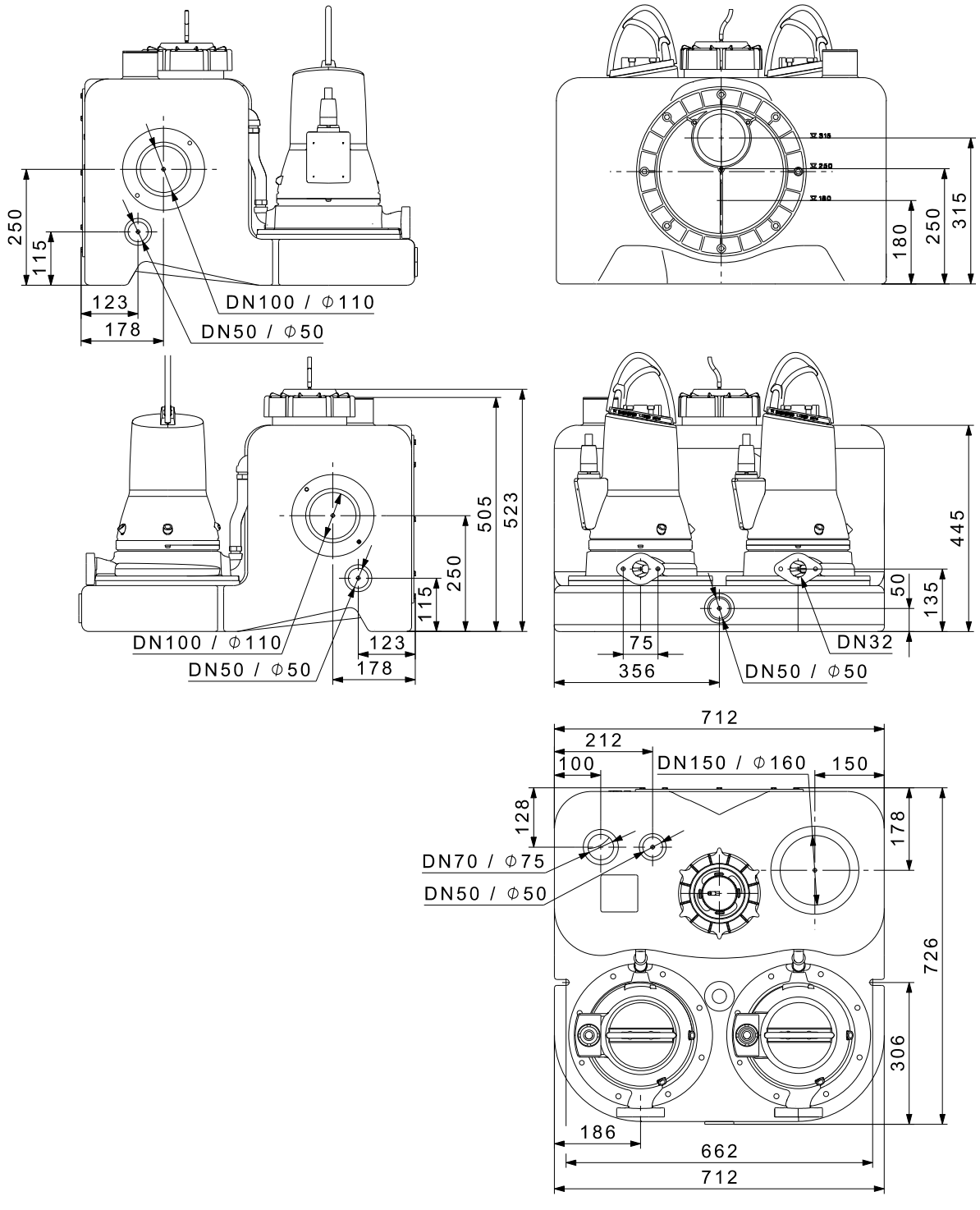
Dimensional drawings



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Accessories

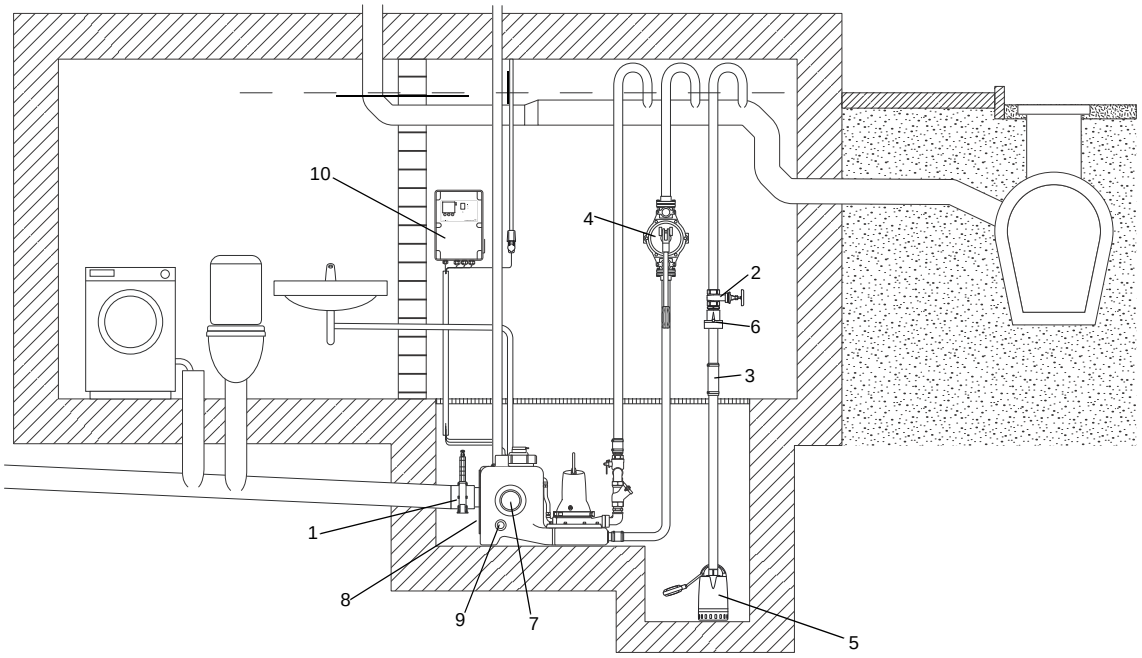
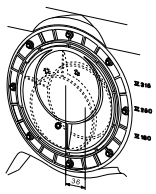
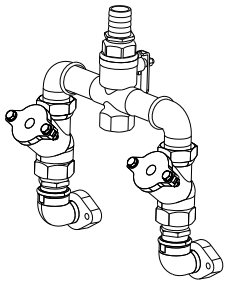


Fig. 30 Accessories for Multilift MDG

No.	Figure	Description	Dimensions	Product number
1		Isolating valve, PVC	DN 100 Installation length: 130 mm Height: 375 mm Connection piece: Ø110	96615831
2		Isolating valve, brass	DN 32 Length: 76 mm Connection: Rp 1 1/4"	00ID0918
3		Flexible connection with clamps for additional connections and inlets	DN 32 Length: 150 mm Internal Ø42	91071645
4		Manually operated diaphragm pump	Installation length: 423 mm Width: 215 mm Connection: Rp 1 1/2"	96003721
5	For wastewater pump, e.g. Unilift CC and KP, please see data booklet for the pump or WebCAPS.			
6		Non-return flap valve, composite	Length: 90 mm Height: 90 mm Connection: Rp 1 1/4"	96005308
7		Socket seal for additional standard inlet	DN 100 Internal ∅110	97726942
		Socket seal for additional inlet (vertical inlet on top)	DN 150, internal Ø160	96636544
8		Turnable inlet disk with socket seal for adjustable inlet level	DN 150 Internal ∅160	97620831

No.	Figure	Description	Dimensions	Product number
9		Socket seal for additional inlet	DN 50 Internal ∅48-50	98079669
10		Battery buffer for alarm in case of mains failure (battery is not included). Replace the battery once a year	Use a commercially available 9.6 V battery	
11		Signal lamp for wall mounting	1 x 230 V, 50 Hz	91077209
12		Signal horn	Indoors, 1 x 230 V, 50 Hz	62500021
			Outdoors, 1 x 230 V, 50 Hz	62500022
13		Level switch type SAS	Cable length 5 m, 250 V	00ID7805
14		External main switch for supply cable	Up to 25 A	96002511
15		1 1/2" complete pre-assembled pipework incl.: - 1 x flexible connecting piece with 2 clamps, DN 32 (not shown, see pos. 6) - 1 x hose nozzle, Rp 1 1/2 / DN 40 - 1 x ball valve ,R 1 1/2 - 1 x cross piece, Rp 1 1/2 - 1 x blind cover, Rp 1 1/2 - 2 x long nipple ,R 1 1/2 - 2 x bend 90 °, Rp 1 1/2 / R 1 1/2 - 2 x double nipple, R 1 1/2 - 2 x non-return ball valve, R 1 1/2 - 2 x bend, 90 ° Rp 1 1/2 / R 1 1/4 (Pipework can be set up in 1 1/4" / DN 32 locally)		98085358
16		Non-return ball valve, Rp 1 1/4, made of cast iron with epoxy coating, to mounted on installation site	Length: 140 mm Width: 83 mm	96116550
		Non-return ball valve, Rp 1 1/2, made of cast iron with epoxy coating	Length: 140 mm Width: 83 mm	91076761
17		Venting valve (with filter)	DN 70/80/100	98059596
18		Filter kit for venting valve	DN 70/80/100	98059594
19		Wall installation box for venting valve	204 x 204 x 130 mm	98059598
20		PC Tool link USB		96705378

10. Multilift MD1, MDV

Multilift MD1 and MDV are designed according to EN 12050-1 and approved by an external institute. They are supplied complete and ready to install with non-return valve.

TM04 4897 2209 - TM04 7170 1710

Fig. 31 Multilift MD1/MDV

Applications

Multilift MD1 and MDV are reliable lifting stations with easy-to-operate controller for pumping of domestic wastewater (with faeces) in large-scale multi-family houses as well as in public and commercial buildings, such as offices, schools, hotels and restaurants.

Multilift MD1 and MDV are typically used for

- basement installation below sewer level
- renovation or modernisation of existing buildings, e.g. developing basements with fitness room, sauna, bath, washroom, etc.

Selection guide

Max. pipe length

22 m	85	-	-	-	-	-	DN 100	MDV.65.80.40
	22	-	-	-	-	-	DN 80	
20 m	385	39	-	-	-	-	DN 100	MDV.65.80.40
	116	-	-	-	-	-	DN 80	
16 m	980	415	48	-	-	-	DN 100	MDV.65.80.40
	305	125	-	-	-	-	DN 80	
13 m	1425	695	220	-	-	-	DN 100	MDV.65.80.40
	445	215	66	-	-	-	DN 80	
	385	48	-	-	-	-	DN 100	MDV.65.80.30
	116	-	-	-	-	-	DN 80	
9 m	2025	1070	450	158	19	-	DN 100	MDV.65.80.40
	635	335	138	46	-	-	DN 80	
	980	425	71	-	-	-	DN 100	MDV.65.80.30
	305	129	19	-	-	-	DN 80	
	415	58	-	-	-	-	DN 100	MDV.65.80.22
	125	13	-	-	-	-	DN 80	
6 m	2470	1350	625	275	103	13	DN 100	MDV.65.80.40
	780	420	192	83	30	-	DN 80	
	1430	705	245	37	-	-	DN 100	MDV.65.80.30
	450	218	73	9	-	-	DN 80	
	860	340	42	-	-	-	DN 100	MDV.65.80.22
	270	102	10	-	-	-	DN 80	

Q [l/s]	5.5	7	9	11	13	15

Fig. 32 Maximum length of vertical and horizontal discharge pipes

Figure 32 shows the sizing guide for Multilift MDV with maximum length of vertical and horizontal pipes depending on the internal pipe diameter and the duty point. The limit of use is based on the self cleaning velocity of 0.7 m/s. DN 80 pipework requires a flow of min. 3.5 l/s and DN 100 pipework requires a flow of min. 5.5 l/s. The non return-valve, an isolating valve and four bends have been taken into account.

Max. pipe length

22 m	-	-	-	-	-	-	-	-		DN 100	MD1.80.80.75
	26	-	-	-	-	-	-	-		DN 80	
20 m	-	280	20	-	-	-	-	-		DN 100	MD1.80.80.75
	120	83	-	-	-	-	-	-	-	DN 80	
16 m	-	875	200	50	-	-	-	-	-	DN 100	MD1.80.80.75
	310	270	60	-	-	-	-	-	-	DN 80	
13 m	-	1320	340	114	46	18	-	-	-	DN 100	MD1.80.80.75
	450	415	104	33	13	-	-	-	-	DN 80	
	-	830	178	44	-	-	-	-	-	DN 100	MD1.80.80.55
	300	255	53	-	-	-	-	-	-	DN 80	
	-	220	-	-	-	-	-	-	-	DN 100	MD1.80.80.40
	97	64	-	-	-	-	-	-	-	DN 80	
9 m	-	1920	530	200	94	49	27	15	-	DN 100	MD1.80.80.75
	640	605	163	60	27	14	-	-	-	DN 80	
	-	1425	365	129	54	25	10	-	-	DN 100	MD1.80.80.55
	490	445	11	38	15	-	-	-	-	DN 80	
	-	815	182	46	10	-	-	-	-	DN 100	MD1.80.80.40
	285	245	54	12	-	-	-	-	-	DN 80	
	-	385	23	-	-	-	-	-	-	DN 100	MD1.80.80.30
	139	116	16	-	-	-	-	-	-	DN 80	
	-	295	-	-	-	-	-	-	-	DN 100	MD1.80.80.22
	120	88	-	-	-	-	-	-	-	DN 80	
6 m	-	2365	670	260	130	73	44	27	16	DN 100	MD1.80.80.75
	785	745	205	80	39	21	-	-	-	DN 80	
	-	1875	505	193	90	48	26	13	-	DN 100	MD1.80.80.55
	630	590	155	58	26	13	-	-	-	DN 80	
	-	1260	325	110	46	20	7	-	-	DN 100	MD1.80.80.40
	430	395	98	32	12	-	-	-	-	DN 80	
	-	830	200	65	20	-	-	-	-	DN 100	MD1.80.80.30
	280	260	60	18	-	-	-	-	-	DN 80	
	-	740	164	42	6	-	-	-	-	DN 100	MD1.80.80.22
	260	230	48	11	-	-	-	-	-	DN 80	
	-	190	6	-	-	-	-	-	-	DN 100	MD1.80.80.15
	78	54	-	-	-	-	-	-	-	DN 80	
3 m	-	2810	810	325	166	96	60	39	25	DN 100	MD1.80.80.75
	925	885	250	100	50	28	-	-	-	DN 80	
	-	2320	645	255	126	71	43	25	-	DN 100	MD1.80.80.55
	775	730	200	78	37	21	-	-	-	DN 80	
	-	1710	465	174	82	43	23	12	-	DN 100	MD1.80.80.40
	570	535	142	52	24	12	-	-	-	DN 80	
	-	1275	340	129	56	25	-	-	-	DN 100	MD1.80.80.30
	425	400	104	38	16	6	-	-	-	DN 80	
	-	1190	305	106	41	-	-	-	-	DN 100	MD1.80.80.22
	405	370	92	31	11	-	-	-	-	DN 80	
	-	635	145	42	-	-	-	-	-	DN 100	MD1.80.80.15
	220	195	42	11	-	-	-	-	-	DN 80	
Q [l/s]	3.5	5.5	10	15	20	25	30	35	40		

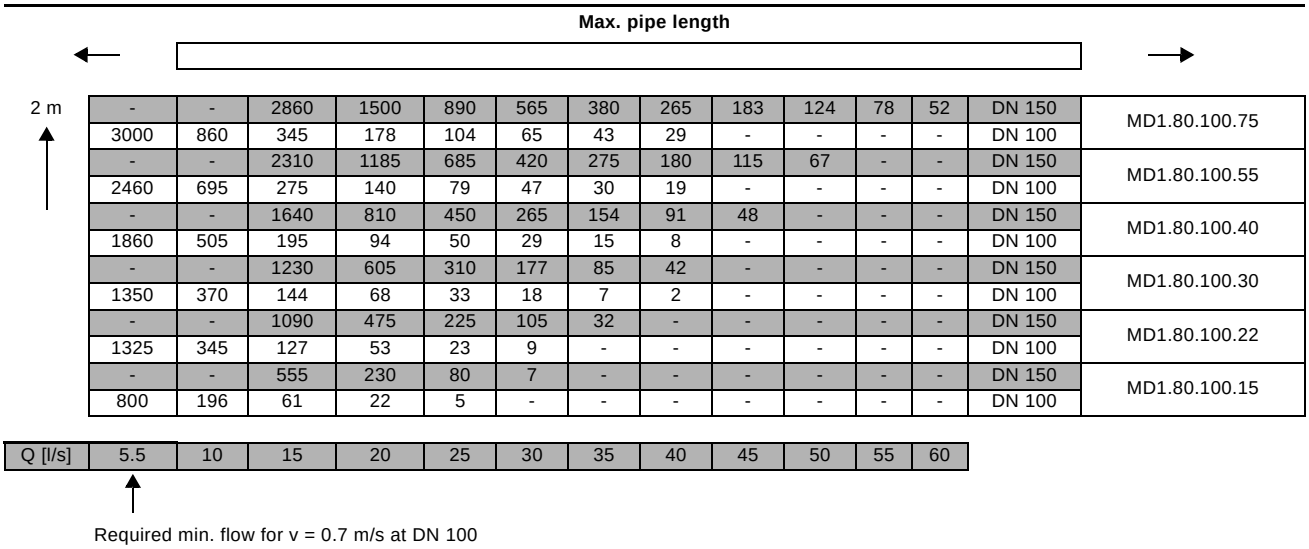
Required min. flow for v = 0.7 m/s at DN 100

Fig. 33 Maximum length of vertical and horizontal discharge pipes

Figure 33 shows the sizing guide for Multilift MD1.80.80 with maximum length of vertical and horizontal pipes depending on the internal pipe diameter and the duty point. The limit of use is based on the self cleaning velocity of 0.7 m/s.
DN 80 pipework requires a flow of min. 3.5 l/s and DN 100 pipework requires a flow of min. 5.5 l/s.
The non-return valve, an isolating valve and four bends have been taken into account.

Max. pipe length

22 m	22	-	-	-	-	-	-	-	-	-	-	-	DN 100	MD1.80.100.75
20 m	310	20	-	-	-	-	-	-	-	-	-	-	DN 100	MD1.80.100.75
16 m	-	-	450	120	-	-	-	-	-	-	-	-	DN 150	MD1.80.100.75
	900	205	48	-	-	-	-	-	-	-	-	-	DN 100	
	-	-	-	-	-	-	-	-	-	-	-	-	DN 150	MD1.80.100.55
	380	37	-	-	-	-	-	-	-	-	-	-	DN 100	
13 m	-	-	965	420	188	74	15	-	-	-	-	-	DN 150	MD1.80.100.75
	1350	345	112	45	18	-	-	-	-	-	-	-	DN 100	
	-	-	415	102	-	-	-	-	-	-	-	-	DN 150	MD1.80.100.55
	830	178	44	-	-	-	-	-	-	-	-	-	DN 100	
	-	-	-	-	-	-	-	-	-	-	-	-	DN 150	MD1.80.100.40
	220	-	-	-	-	-	-	-	-	-	-	-	DN 100	
9 m	-	-	1655	810	440	250	147	86	42	10	-	-	DN 150	MD1.80.100.75
	1950	505	197	94	50	27	15	-	-	-	-	-	DN 100	
	-	-	1105	500	240	110	42	-	-	-	-	-	DN 150	MD1.80.100.55
	1430	365	129	55	25	10	-	-	-	-	-	-	DN 100	
	-	-	435	125	9	-	-	-	-	-	-	-	DN 150	MD1.80.100.40
	815	178	46	9	-	-	-	-	-	-	-	-	DN 100	
	-	-	22	-	-	-	-	-	-	-	-	-	DN 150	MD1.80.100.30
	310	42	-	-	-	-	-	-	-	-	-	-	DN 100	
	-	-	-	-	-	-	-	-	-	-	-	-	DN 150	MD1.80.100.22
	280	18	-	-	-	-	-	-	-	-	-	-	DN 100	
6 m	-	-	2175	1110	635	385	245	162	102	59	24	7	DN 150	MD1.80.100.75
	2400	675	260	130	73	43	26	17	-	-	-	-	DN 100	
	-	-	1620	790	430	245	141	78	34	-	-	-	DN 150	MD1.80.100.55
	1875	505	193	91	48	26	14	6	-	-	-	-	DN 100	
	-	-	950	420	195	88	22	-	-	-	-	-	DN 150	MD1.80.100.40
	1260	320	110	46	19	7	-	-	-	-	-	-	DN 100	
	-	-	540	210	54	-	-	-	-	-	-	-	DN 150	MD1.80.100.30
	755	182	59	20	-	-	-	-	-	-	-	-	DN 100	
	-	-	400	83	-	-	-	-	-	-	-	-	DN 150	MD1.80.100.22
	725	160	42	5	-	-	-	-	-	-	-	-	DN 100	
	205	9	-	-	-	-	-	-	-	-	-		DN 100	MD1.80.100.15
4 m	-	-	2515	1305	765	475	315	215	142	91	51	30	DN 150	MD1.80.100.75
	2700	770	300	154	88	54	35	23	-	-	-	-	DN 100	
	-	-	1965	990	560	335	205	131	74	34	-	-	DN 150	MD1.80.100.55
	2170	600	235	115	63	37	22	13	-	-	-	-	DN 100	
	-	-	1295	615	320	177	88	40	8	-	-	-	DN 150	MD1.80.100.40
	1560	410	152	70	35	18	7	-	-	-	-	-	DN 100	
	-	-	880	405	180	88	19	-	-	-	-	-	DN 150	MD1.80.100.30
	1050	275	102	44	18	7	-	-	-	-	-	-	DN 100	
	-	-	725	280	99	16	-	-	-	-	-	-	DN 150	MD1.80.100.22
	1025	250	84	29	8	-	-	-	-	-	-	-	DN 100	
	-	-	210	33	-	-	-	-	-	-	-	-	DN 150	MD1.80.100.15
	500	103	19	-	-	-	-	-	-	-	-	-	DN 100	



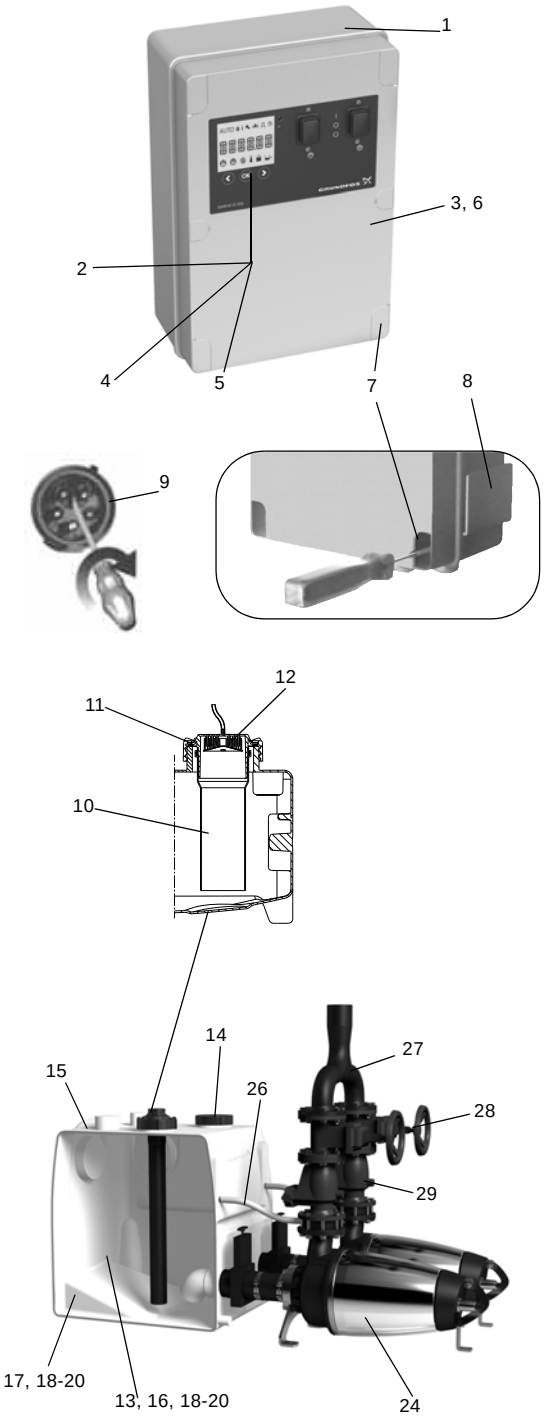
-	-	2860	1500	890	565	380	265	183	124	78	52	DN 150	MD1.80.100.75
3000	860	345	178	104	65	43	29	-	-	-	-	DN 100	
-	-	2310	1185	685	420	275	180	115	67	-	-	DN 150	MD1.80.100.55
2460	695	275	140	79	47	30	19	-	-	-	-	DN 100	
-	-	1640	810	450	265	154	91	48	-	-	-	DN 150	MD1.80.100.40
1860	505	195	94	50	29	15	8	-	-	-	-	DN 100	
-	-	1230	605	310	177	85	42	-	-	-	-	DN 150	MD1.80.100.30
1350	370	144	68	33	18	7	2	-	-	-	-	DN 100	
-	-	1090	475	225	105	32	-	-	-	-	-	DN 150	MD1.80.100.22
1325	345	127	53	23	9	-	-	-	-	-	-	DN 100	
-	-	555	230	80	7	-	-	-	-	-	-	DN 150	MD1.80.100.15
800	196	61	22	5	-	-	-	-	-	-	-	DN 100	

Fig. 34 Maximum length of vertical and horizontal discharge pipes

Figure 34 shows the sizing guide for Multilift MD1.80.100 with maximum length of vertical and horizontal pipes depending on the internal pipe diameter and the duty point. The limit of use is based on the self cleaning velocity of 0.7 m/s.
DN 80 pipework requires a flow of min. 3.5 l/s and DN 100 pipework requires a flow of min. 5.5 l/s.
The non-return valve, an isolating valve and four bends have been taken into account.

Constructional features

Multilift MD1/MDV



Description

Pos.	Controller
1	Pre-assembled and ready to operate with all necessary presettings – only the inlet level needs to be set
2	Controller with LCD display, interactive menu, multiple motor protection features and further safety options
3	Potential-free contact for common alarm (inside)
4	External alarm can be used e.g. to monitor the installation room or well around the lifting station with separate float switch outside the tank to detect groundwater intake, water pipe burst or other flooding accidents; no extra alarm device needed
5	Maintenance/service reminder (0, 3, 6 or 12 months)
6	Connection of PC Tool for further information and adjustments (inside)
7	Quick and easy installation of the controller to the wall without the need of opening the cabinet
8	Holder for a quick guide
9	Phase inverter for easy changing of phases (only direct-on-line versions)
Pos.	**Level sensor**
10	No moving parts in pumped liquid. Blockage-free pressure tube, DN 100, connected via a pressure hose to piezoresistive pressure sensor in the controller
11	Screw cap serving as pressure tube fixation and tank inspection cover enabling maintenance of pressure tube and inspection of collecting tank
12	Condensate trap prevents condensation in pressure hose in case of hot-water inflow
Pos.	**Collecting tank**
13	Large-volume, 450-litre collecting tanks extendable with extra tanks up to 1350 litres
14	Separate inspection cover for quick access to the tank
15	Socket sealing for space saving installation
16	Wastewater-resistant and odour-free, seamless collecting tank made of polyethylene (PE) with strong walls
17	Sedimentation-free tank bottom with chamfers leading the wastewater to the pump to reduce the need of cleaning the tank
18	Pressure tight design up to 5 m water column according to EN 12050-1
19	Suitable for liquid temperature up to 50 °C
20	Easy handling during transportation and installation
Pos.	**Pump**
21	11 pump sizes within each pump range, SE and SL, adapted to all application needs
22	New, highly efficient S-tube impeller (SL1 or SE1), or Vortex impeller with large free passage for trouble-free operation and unchanged performance throughout the entire life of the pump (SLV or SEV)
23	Motor protection with built-in thermal switch
24	Quick and easy maintenance and service with clamp fixation between pump housing and motor
25	Double mechanical shaft seal in a cartridge and a chamber filled for life with non-toxic oil
26	Self-venting discharge
Pos.	**Accessories**
27	Special Y branch pipe with connection piece, Ø90 (DN 80), Ø110 (DN 100) or Ø160 (DN 150), and flexible hose connection and clamps
28	High quality standard accessories - non-return and isolating valves of all sizes
29	Non-return valve with lifting device to drain discharge pipe in case of service or maintenance

TM05 1774 3711 - TM05 1412 - TM05 3455 4311 - TM05 2055 4311 - TM05 0332 0911 - TM05 2074 4311

Product description

Features

- High effective tank volume up to 3 x 450 litres
- 17 different motor sizes for perfect adjustment to the required draining performance
- easy-to-operate LC 221 controller with outstanding motor protection and additional safety and service functions. See *LC 221 controller* page 79
- reliable, blockage-free level detection with no direct contact to the pumped liquid
- extremely high operating safety ensured by two different motor designs, both with same hydraulic design:
  SL and SE pumps with large free passage;
  SL pumps for intermittent operation, S3-50 %, for standard inflow applications; SE pumps suitable for continuous operation, S1, without any additional action (important in case it is difficult to calculate inflow or in case of lasting high inflow).
- two impeller types are available:
  Vortex, free-flow impeller for SLV/SEV;
  single-channel, high-efficiency, S-tube impeller for SL1/SE1.
- easy and smart maintenance and service features for pumps, sensor tube, collecting tank and controller.

See details on page 68.

Scope of delivery

Grundfos Multilift MD1 and MDV lifting stations are supplied complete with one or two collecting tank(s), two three-phase pumps, level sensor, and LC 221 controller. Both sensor and pumps are connected to the controller with 10 m cable and hose.

An accessories bag containing the following items is also included:

- 1 x installation and operating instructions
- 1 x socket seal, DN 150, for inlet
- 2 x venting flange, DN 80 or DN 100, with venting hose and fitting connection
- 2 x flexible hose, DN 70, with two clamps to connect the venting pipe
- 2 x socket seal, DN 100, for connection of suction side of pump
- 2 x flange, DN 80 or DN 100, with connection piece, DN 100 (outer diameter, 110 mm)
- 1 x flexible connection piece, internal diameter, 50 mm, for diaphragm pump, 1½" or DN 50 inlet PP pipe
- 2 x gasket kit, DN 80 or DN 100, 8 bolts M16 x 65, nuts and washers (galvanised)
- 3 x screw and expansion anchor for tank fixation.

Collecting tank

The gas-, odour- and pressure-tight collecting tank made of wastewater-resistant polyethylene (PE) with three horizontal inlet ports, DN 150 (inlet level, 700 mm), 1 vertical inlet port, DN 100, 1 connection port, DN 70, for venting line, two ports, Ø40/50, for additional connections, two ports, Ø110, for suction line of the pumps and a large maintenance opening.

The tank volume and effective volume (volume between start and stop) of the collecting tank appear from the following table:

Number of collecting tanks	1	2	3
Total tank volume [l]	450	900	1350
Effective tank volume [l]	225/150	450/300	675/450

Setting to the relevant inlet level must be made via the control panel of the controller. The factory-set inlet level is 250 mm above the floor.

Pump

- Single-stage, submersible pumps in horizontal installation with a free passage of 65 or 80 mm (100 mm on request)
- direct drive with motor and pump mounted on common, particularly rigid shaft for vibration-free operation
- vertical discharge port, DN 80 or DN 100 (PN 10)
- pump and motor connected by stainless steel clamp for easy servicing
- Vortex impeller for SLV/SEV
- high-efficiency, single-channel, S-tube impeller for SL1/SE1
- watertight, moulded, stainless steel cable entry with integrated insertion coupling.

The pressure-tight motor is integrated in the pump housing and is enclosure class IP68.

Three-phase motors are protected by a thermal switch in the windings and an additional thermal circuit breaker in the controller cabinet.

If the motor is overloaded, it will stop automatically. When it has cooled to normal operating temperature, it will restart automatically when automatic reset is set at the controller (factory setting).

The cable connection is a plug solution made of stainless steel.

Starting method of motors is either direct (DOL) or star/delta (SD) as from 5 kW.

Motor bearings are maintenance-free, heavy single-row or double-row angular contact ball bearings lubricated for life.

Duty types:

- SL: intermittent operation, S3-50 %
- SE: continuous operation, S1, due to patented motor cooling design, or intermittent operation, S3-50 %.

The double mechanical shaft seal system is integrated in a stainless steel cartridge. The seal faces are made of SiC/SiC on the liquid side and synthetic carbon/ceramic on the motor side. The seal system is mounted in an oil chamber and hermetically separated from the pumped liquid. The dry-running safe, service-friendly cartridge design allows the removal of the complete component in only a few simple steps.

Controller

See section *LC 221 controller*.

Type key

Code	Example	M	D	1	.80	.100	.15	.4	.5	OD/	400	-2	SE
	Type range:												
M	Multilift lifting station												
	Number of pumps:												
D	Two pumps												
	Impeller type:												
1	Single-channel impeller												
V	Vortex impeller (SuperVortex)												
	Free passage:												
80	Maximum solids size [mm]												
	Pump discharge port:												
100	Nominal diameter of pump discharge port [mm]												
	Power:												
15	Motor power output P_2/100 [W]												
	Number of poles:												
2	2-pole, 3000 min^{-1}, 50 Hz												
4	4-pole, 1500 min^{-1}, 50 Hz												
	Frequency:												
5	50 Hz												
	Voltage and starting method:												
0D	380-415 V, DOL												
1D	380-415 V, Y/D												
0E	220-240 V, DOL												
1E	220-240 V, Y/D												
	Size of collecting tank:												
400	Number of litres												
	Number of collecting tanks:												
[ ]	One tank												
2	Two tanks*												
	Pump type:												
SE	SE pump												
SL	SL pump												

* A third tank is available as accessory if the effective volume of the standard lifting station is too small.

Technical data

General data

Parameter	Value
Free passage	50 mm
Liquid temperature	Max. 40 °C For short periods up to 60 °C (max. 5 minutes per hour)
Ambient temperature	0-40 °C
pH-value	4-10
Max. density of pump liquid	1,100 kg/m^3
Enclosure class (lifting station and motor)	IP68
Enclosure class (controller)	IP56
Insulation class	F (155 °C)
Voltage (motor)	3 x 400 V
Frequency (motor)	50 Hz
Potential-free contacts	NO/NC, max. 250 VAC / 2 A
Voltage (sensor)	12 V
Signal output (sensor)	0-5 V
Power consumption (controller)	2 W
Number of starts per hour	Max. 60
Sound pressure level	< 70 dB(A)
Dimensions (lifting station)	See section *Dimensional drawings*
Dimensions (controller for ≤ 4 kW)	Height = 390 mm Width = 262 mm Depth = 142 mm
Dimensions (controller for > 4 kW)	Height = 680 mm Width = 380 mm Depth = 350 mm

Material specification

Component	Material
Collecting tank	Polyethylene (PE)
Pump housing	Cast iron EN-GJL-250
Clamp	Stainless steel
Impeller	Cast iron
Stator housing	Aluminium G-ALSI 12 (SE) Cast iron (SL)
Control cabinet (≤ 4 kW)	Acrylonitrile butadiene styrene (ABS)
Screws	Stainless steel 1.4301
O-rings	NBR rubber
Cable	H07RN-F, cover PE

Multilift MDV - with SEV pumps (SuperVortex, free-flow impeller)

Mechanical, electrical and order data

Multilift	Inlet level [mm]	Number of tanks and tank volume [l]	Effective tank volume [l]	Weight [kg]	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	Number of poles	Voltage [V]	Starting method	Product number
MDV.65.80.22.2	700 / 840	1 x 450	240	280	2.8 / 2.2	5.0 / 37	2	3 x 400	DOL	96102274
MDV.65.80.30.2				280	3.8 / 3.0	6.6 / 51				96102276
MDV.65.80.40.2				320	4.8 / 4.0	8.6 / 71				96102278
MDV.80.80.60.2				335	7.1 / 6.0	13.9 / 148			Y/D	96102220
MDV.80.80.75.2				336	8.9 / 7.5	16.2 / 152				96741485

Multilift MD1 - with SE1 pumps (single-channel impeller)

Mechanical, electrical and order data

Multilift	Inlet level [mm]	Number of tanks and tank volume [l]	Effective tank volume [l]	Weight [kg]	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	Number of poles	Voltage [V]	Starting method	Product number
MD1.80.80.15.4	700 / 840	1 x 450	240	300	2.1 / 1.5	4.2 / 22	4	3 x 380-415	DOL	96102280
MD1.80.80.22.4				300	2.9 / 2.2	5.9 / 32				96102282
MD1.80.80.30.4				360	3.7 / 3.0	7.8 / 43				96102284
MD1.80.80.40.4				380	4.9 / 4.0	10.0 / 67				96102286
MD1.80.80.55.4				390	6.5 / 5.5	13.4 / 87			Y/D	96102288
MD1.80.80.75.4				490	9.0 / 7.5	17.3 / 107				96102290
MD1.80.80.15.4	700 / 840	2 x 450	480	300	2.1 / 1.5	4.2 / 22	4	3 x 380-415	DOL	96102292
MD1.80.80.22.4				300	2.9 / 2.2	5.9 / 32				96102294
MD1.80.80.30.4				360	3.7 / 3.0	7.8 / 43				96102296
MD1.80.80.40.4				380	4.9 / 4.0	10.0 / 67				96102298
MD1.80.80.55.4				390	6.5 / 5.5	13.4 / 87			Y/D	96102300
MD1.80.80.75.4				490	9.0 / 7.5	17.3 / 107				96102302

Multilift MDV - with SLV pumps (SuperVortex, free-flow impeller)

Mechanical, electrical and order data

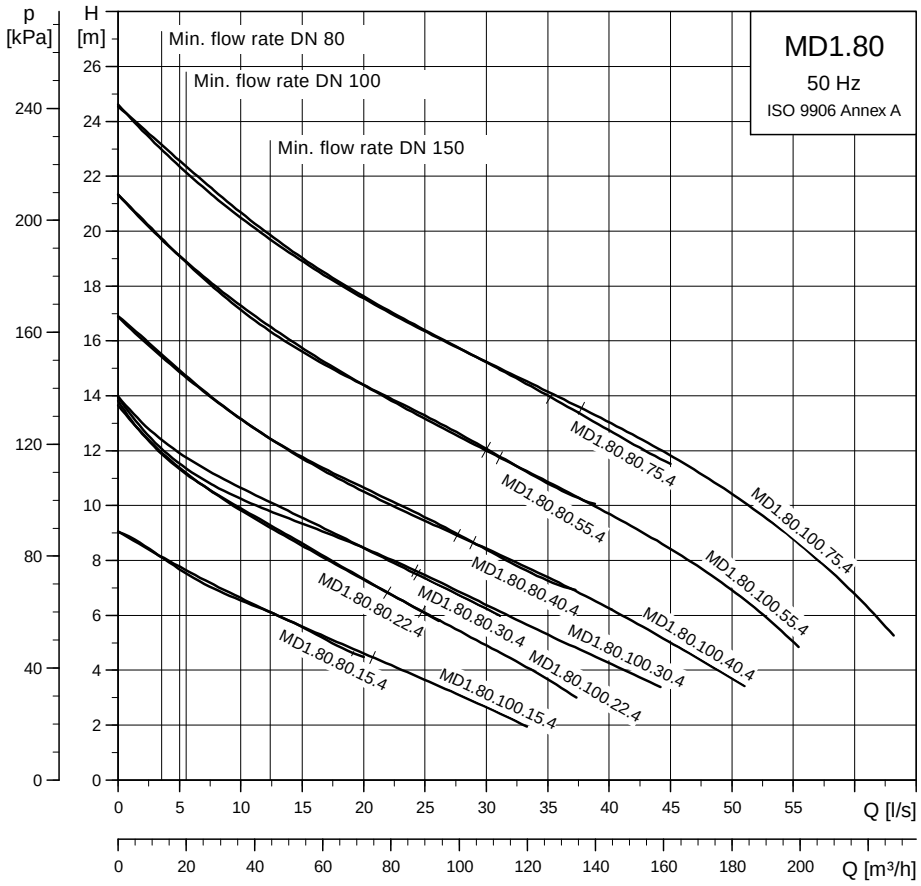
Multilift	Inlet level [mm]	Number of tanks and tank volume [l]	Effective tank volume [l]	Weight [kg]	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	Number of poles	Voltage [V]	Starting method	Product number
MDV.65.80.22.2	700 / 840	1 x 450	240	280	2.8 / 2.2	4.9 /43	2	3 x 400	DOL	97577818
MDV.65.80.30.2				280	3.8 / 3.0	6.8 / 59.8				97577833
MDV.65.80.40.2				320	4.8 / 4.0	8.5 / 93				97577836
MDV.80.80.60.2				335	6.9 / 6.0	12.5 / 122			Y/D	97577838
MDV.80.80.75.2				336	8.7 / 7.5	15.1 / 152				97577840

Multilift MD1 - with SL1 pumps (single-channel impeller)

Mechanical, electrical and order data

Multilift	Inlet level [mm]	Number of tanks and tank volume [l]	Effective tank volume [l]	Weight [kg]	Power P1 / P2 [kW]	$I_{1/1}$ / I_{start} [A]	Number of poles	Voltage [V]	Starting method	Product number
MD1.80.80.15.4	700 / 840	1 x 450	240	300	2.1 / 1.5	3.9 / 26	4	3 x 380-415	DOL	97577857
MD1.80.80.22.4				300	2.9 / 2.2	5.3 / 38.3				97577859
MD1.80.80.30.4				360	3.7 / 3.0	7.2 / 50				97577861
MD1.80.80.40.4				380	4.9 / 4.0	9.7 / 51				97577863
MD1.80.80.55.4				390	6.4 / 5.5	11.8 / 81			Y/D	97577865
MD1.80.80.75.4				490	8.6 / 7.5	15.2 / 109				97577867
MD1.80.100.15.4	700 / 840	2 x 450	480	300	2.1 / 1.5	3.9 / 26	4	3 x 380-415	DOL	97577870
MD1.80.100.22.4				300	2.9 / 2.2	5.3 / 38.3				97577872
MD1.80.100.30.4				360	3.7 / 3.0	7.2 / 50				97577874
MD1.80.100.40.4				380	4.9 / 4.0	9.7 / 51				97577876
MD1.80.100.55.4				390	6.4 / 5.5	11.8 / 81			Y/D	97577878
MD1.80.100.75.4				490	8.6 / 7.5	15.2 / 109				97577880

Performance curves



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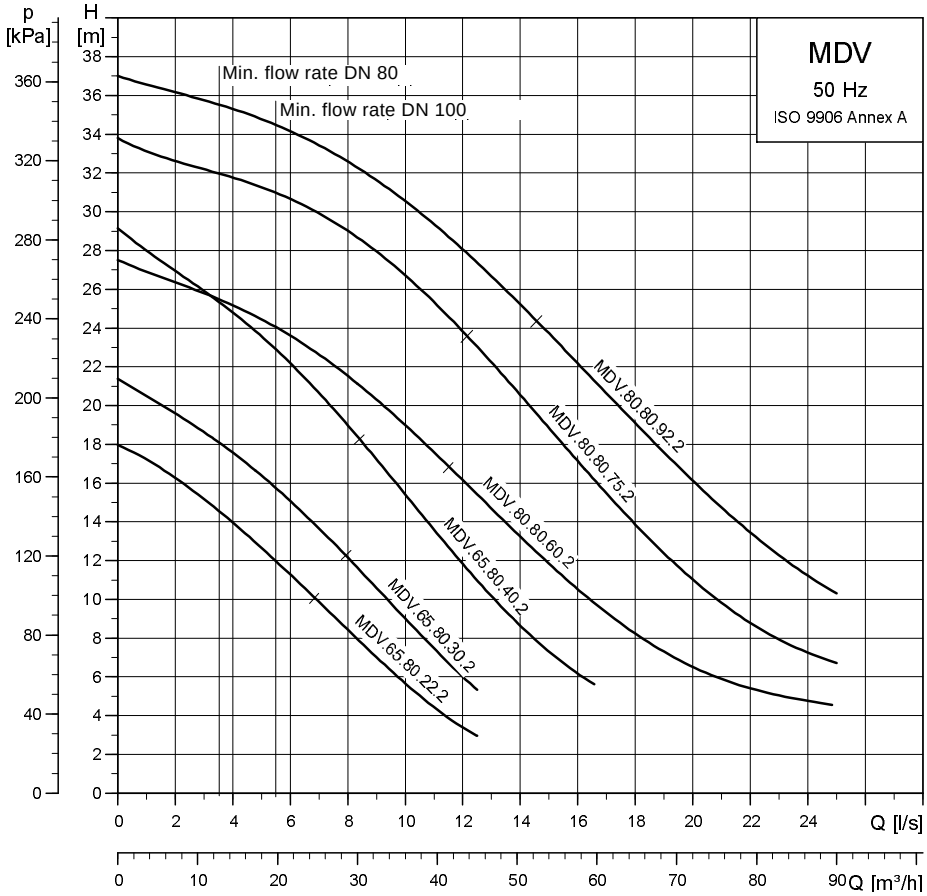

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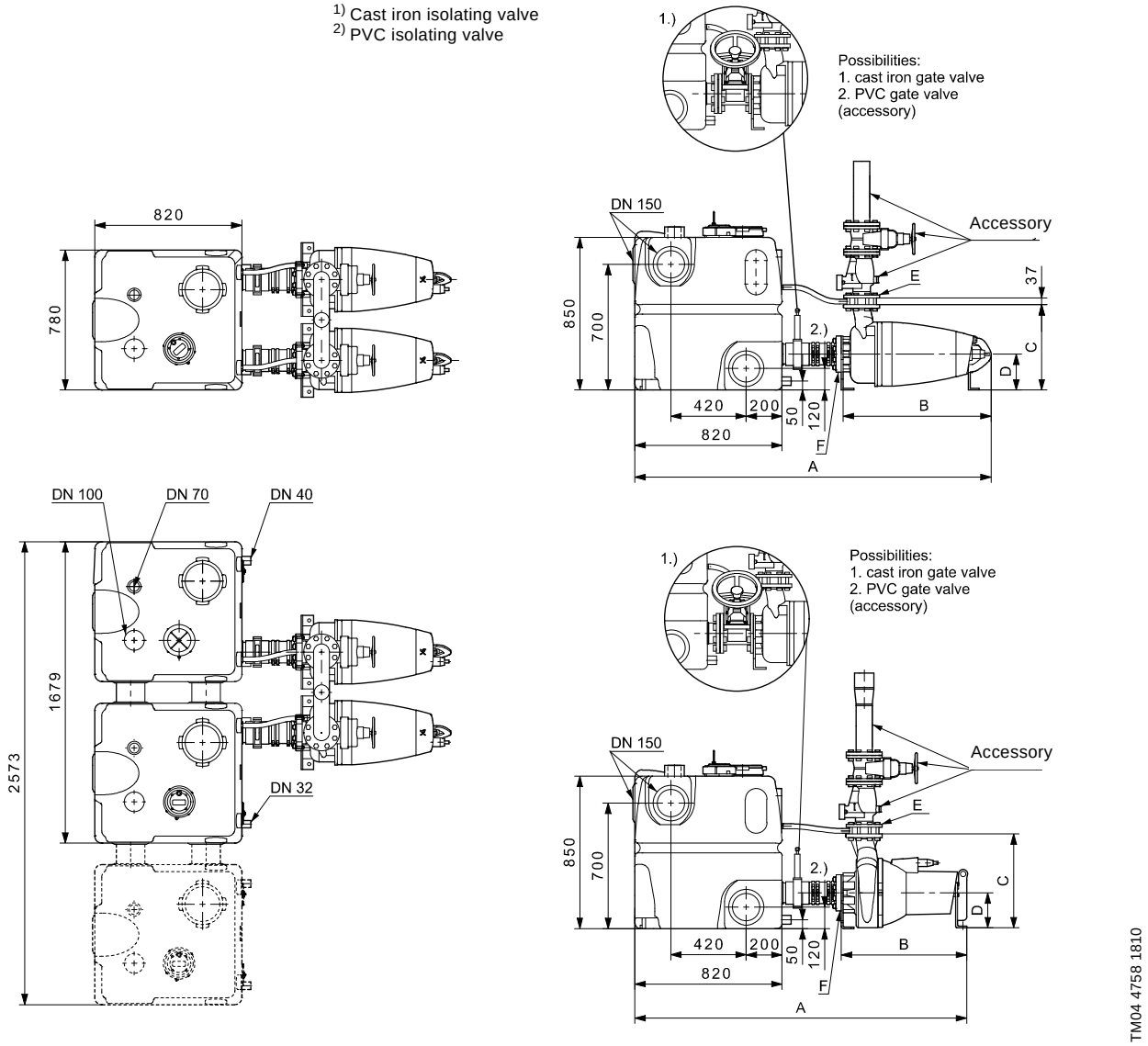
Dimensional drawings

1) Cast iron isolating valve
2) PVC isolating valve



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Multilift MDV and MD1 with SE pumps

Multilift	Dimensions [mm]						
	A1)	A2)	B	C	D	E	F
MDV65.80.22./30.2	1800	1890	726	447	200	DN 80	DN 80
MDV65.80.40.2	1870	1950	791	476	200		
MDV.80.80.60.-75.2	1895	1975	816	476	200		DN 100
MD1.80.80.15-22.4	1910	1980	723	472	200		
MD1.80.80.30.-55.4	2005	2080	820	519	200		
MD1.80.80.75.4	2060	2135	876	528	200		
MD1.80.100.15-22.4	1910	1980	723	472	200	DN 100	
MD1.80.100.30.-55.4	2060	2135	820	519	200		
MD1.80.100.75.4	2060	2135	876	528	200		

Multilift MDV and MD1 with SL pumps

Multilift	Dimensions [mm]						
	A1)	A2)	B	C	D	E	F
MDV65.80.22./30.2	1605	1685	535	447	200	DN 80	DN 80
MDV65.80.40.2	1690	1770	620	476	200		
MDV.80.80.60.-75.2	1695	1775	625	476	200		DN 100
MD1.80.80.15-22.4	1625	1705	555	472	200		
MD1.80.80.30.-55.4	1655	1735	585	519	200		
MD1.80.80.75.4	1775	1850	705	528	200		
MD1.80.100.15-22.4	1625	1705	555	472	200	DN 100	
MD1.80.100.30.-55.4	1655	1735	585	519	200		
MD1.80.100.75.4	1775	1850	705	528	200		

Accessories

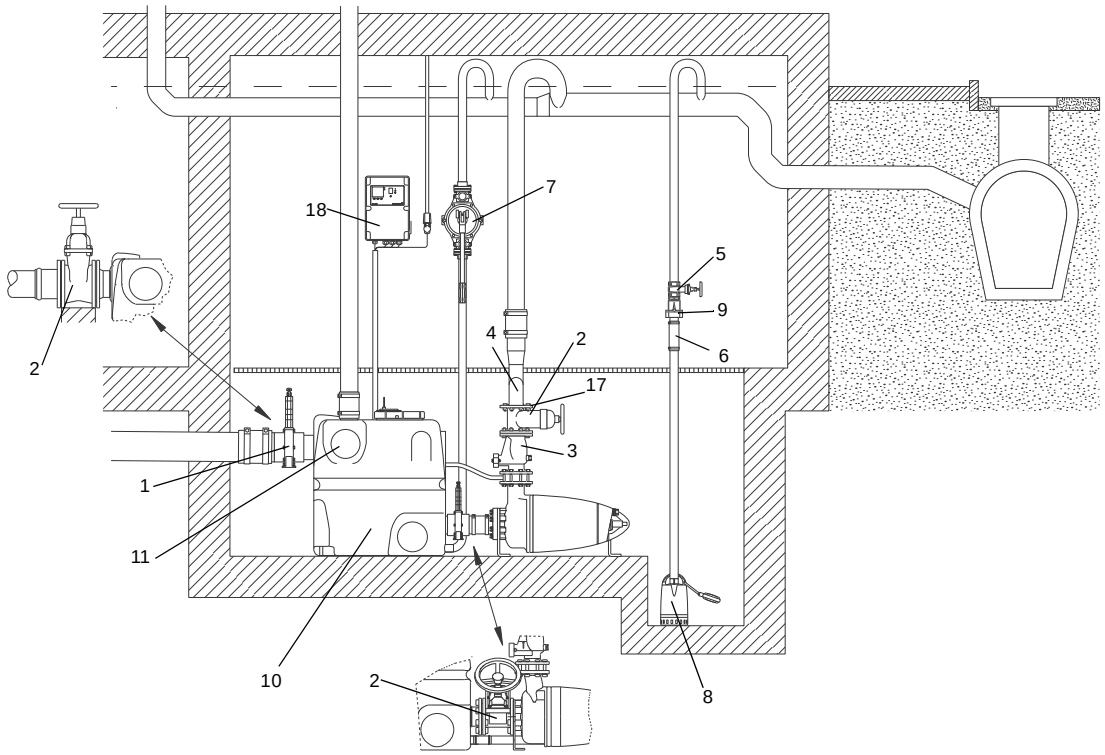

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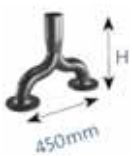
Fig. 35 Accessories for Multilift MD1, MDV

No.	Figure	Description	Dimensions	Product number
1		Isolating valve, PVC	DN 100 Installation length: 130 mm Height: 375 mm Connection piece: Ø110	96615831
		Isolating valve, PVC	DN 150 Installation length: 227 mm Height: 496 mm Connection piece: Ø160	96697920
2		Isolating valve, epoxy-coated cast iron	DN 80 Installation length: 180 mm Height: 300 mm Connection: flange PN 10	96002011
		Isolating valve, epoxy-coated cast iron	DN 100 Installation length: 190 mm Height: 340 mm Connection: flange PN 10	96002012
		Isolating valve, epoxy-coated cast iron	DN 150 Installation length: 210 mm Height: 460 mm Connection: flange PN 10	96003427
3		Non-return flap valve, epoxy-coated cast iron	DN 80 Installation length: 260 mm Connection: flange PN 10	96003826
		Non-return flap valve, epoxy-coated cast iron	DN 100 Installation length: 300 mm Connection: flange PN 10	96003827
4		Breeches pipe with flexible connection and clamps, made of epoxy coated steel	DN 80 / Ø90 / H = 359 mm	96003704
			DN 80 / Ø110 / H = 459 mm	96003705
			DN 100 / Ø110 / H = 410 mm	96003706
			DN 80 / Ø160 / H = 550 mm	96003707
5		Isolating valve, brass	DN 32 Length: 76 mm Connection: Rp 1 1/4"	00ID0918

No.	Figure	Description	Dimensions	Product number
6		Flexible connection with clamps for additional connections and inlets	DN 32 Length: 150 mm Internal Ø42	91071645
			DN 100 Length: 150 mm Internal Ø110	96075422
			DN 150 Length: 200 mm Internal Ø160	96473060
7		Manually operated diaphragm pump	Installation length: 423 mm Width: 215 mm Connection: Rp 1 1/2"	96003721
8	For wastewater pump, e.g. Unilift CC and KP, please see the data booklet for the pump or WebCAPS.			
9		Non-return flap valve, composite	Length: 90 mm Height: 90 mm Connection: Rp 1 1/4"	96005308
10		Extra PE-tank incl. connections, lids, sealings, and anchor bolts	Volume: 450 litres	96982790
11		Socket seal for additional standard inlet	DN 150 Internal ∅160	96636544
12		Extra lip seal for lower inlet connection to the tank	DN 150 Internal ∅160	91071939
13		Hole-saw	∅177	91713755
14		Centre drill	∅6	91712026
15		Flange with socket (cast iron) for PVC pipe, incl. lip seal	DN 150 Internal ∅160	96003701
16		Flange-hose unit (cast iron) with flexible connection and clamps	DN 150 Internal ∅160	96477895
17		Bolts, nuts, 8 of each (galvanised) Gasket	16 x 65 mm DN 80	96001999
			16 x 65 mm DN 100	96003823
			16 x 65 mm DN 150	96003605
18		Battery buffer for alarm in case of mains failure (battery is not inclued). Replace the battery once a year	Use a commercially available 9.6 V battery	
19		Signal lamp for wall mounting	1 x 230 V, 50 Hz	91077209
20		Signal horn	Indoors, 1 x 230 V, 50 Hz	62500021
			Outdoors, 1 x 230 V, 50 Hz	62500022
21		Level switch type SAS	Cable length 5 m, 250 V	00ID7805
22		External main switch for supply cable	Up to 25 A	96002511
			Up to 40 A	96002512
23		Venting valve (with filter)	DN 70/80/100	98059596
24		Filter kit for venting valve	DN 70/80/100	98059594
25		Wall installation box for venting valve	204 x 204 x 130 mm	98059598

No.	Figure	Description	Dimensions	Product number
26		PC Tool link USB		96705378

11. Controllers

LC 220 controller

The level controller switches the pump of Multilift MSS on and off according to the liquid level measured by the level sensor. The rising liquid level compresses the air inside the pressure tube and the piezoresistive sensor in the control cabinet measures the changing pressure. The controller uses the analogue signal to start and stop the pump and to indicate high water-level alarm.

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Fig. 36 LC 220 controller for Multilift MSS

An alarm will be indicated in case of high water level in the collecting tank, sensor fault, runtime exceeded and phase sequence fault.

As standard, the LC 220 controller has one alarm signal output for common alarm and one additional signal input to connect e.g. a level switch for flood detection outside Multilift MSS. Lifting stations are often installed in a sump inside the basement - the lowest point in the building. In case of e.g. groundwater inflow or water pipe burst, an alarm will be indicated by the controller if a level switch is connected to the additional signal input. Furthermore, the controller incorporates a buzzer to make the alarm indication audible.

The LC 220 controller has the following functions:

- on/off control of one wastewater pump based on a continuous signal from a piezoresistive, analogue sensor
- automatic test runs during long periods of inactivity (24 hours after last operation)
- battery back-up in case of mains supply failure (accessory)
- selection of automatic alarm resetting (via DIP switch)
- selection between two inlet levels (via DIP switch)
- operating indication of:
  - power on
  - pump running
  - reminder of service/maintenance (selectable via DIP switch).
- alarm indication of:
  - high water-level alarm
  - phase sequence fault (for three-phase pumps)
  - sensor failure
  - external level alarm
- runtime monitoring
- connection of PC Tool for access to fault log, hour counter, impulse (start) counter, operation parameters and for adjustments like stop delay, alarm delay, max. runtime and start/stop level.

The function of the operating elements is shown below:

Element	Function	Description
	Selection of operating mode	The operating mode is selected by the ON-OFF-AUTO selector switch which has three different positions: POS I: Starts the pump manually POS O: • Stops the pump manually • Resets alarm indications. POS AUTO: Automatic operation. The pump will start and stop according to the signal from the level sensor.
	Indication of power supply status	Green indicator light, indicating that the power supply is on.
	Indication of pump status	Red and green indicator lights, indicating pump status: Green: Pump is running. Red: Pump fault.
	High-level alarm	Red indicator light, indicating high water level. The LED lights up if the level sensor measures a certain level in the collecting tank.
	Phase-sequence fault	Red indicator light, indicating phase sequence fault (three-phase pumps).
	Sensor failure alarm	Red indicator light, indicating sensor failure.
	External level alarm	Red indicator light, indicating an alarm from an external level switch.
	Indication of time for service	Yellow indicator light, indicating that it is time for service. This function can be switched on and off by the DIP switch. The factory setting is one year according to EN 12056-4.

Type key

Example	LC 220	.1	.230	.1	.8

LC 220 = controller type

1 = one-pump controller
2 = two-pump controller

Voltage [V]

1 = single-phase
3 = three-phase

Maximum operating current per pump [A]

LC 221 controller

The reliable and easy-to-operate level controller switches the pumps of Multilift lifting stations on and off automatically according to the liquid level measured by the level sensor.

LC 221 comes in two versions, one for single-pump lifting stations and one for double-pump stations.

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Fig. 37 LC 221 one-pump controller for single-pump lifting stations Mulltilift M and MOG

TM05 1859 3811

Fig. 38 LC 221 two-pump controller for double-pump lifting stations Multilift MD, MLD, MDG, MD1 and MDV

For double-pump lifting stations, starts alternate between the two pumps. In case of pump failure in one pump, the other pump will take over (automatic pump changeover).

Both versions of LC 221 controller have the following functions:

- on/off control of two wastewater pumps based on a continuous signal from a piezoresistive level sensor motor protection with motor-protective circuit breaker and/or current measurement as well as connection of thermal switches
- motor protection via operating-time limitation (suitable to the pump performance) with subsequent emergency operation.
- automatic test runs (2 seconds) during long periods of inactivity (24 hours after last operation)
- re-starting delay up to 45 seconds after returning from power cut-off to mains operation (in order to even out the mains load when several appliances are started up at the same time)
- setting of delay times:
  - stopping delay (time from the stop level is reached till the pump is stopped)
  - start delay (time from the start level is reached till the pump is started)
  - alarm delay (time from a fault appears till an alarm is indicated). This prevents short-time high-level alarm in case of temporary high inflow to the tank.
- setting of current values:
  - overcurrent (preset)
  - rated current (preset)
  - dry running current (preset).
- operating indication of:
  - operating mode (auto, manual)
  - operating hours
  - impulses (number of starts)
  - highest measured motor current.
- alarm indication of:
  - pump status (running, fault)
  - phase sequence failure and missing phase
  - overtemperature
  - high-water alarm
  - sensor fault
  - fault of relays or contactors
  - maximum current exceeded
  - time for service/maintenance (selectable from 0, 3, 6 and 12 months in the setup menu).
- selection of automatic alarm resetting
- fault log of up to 20 alarms
- selection between different start levels
- selection of connected sensor type (preset)
- calibration of sensor (preset)

As standard, the LC 221 has four potential-free outputs for:

- pump 1 and/or 2 running
- pump 1 and/or 2 failure
- high water-level alarm
- common fault.

Furthermore, LC 221 has six digital inputs for the following functions.

- connecting an analogue sensor (4-20 mA or 0-5 V)
- connecting up to four level switches or pressure switches instead of the analogue sensor. An additional float switch can be connected to the alarm input as backup for the analogue sensor
- connecting a separate level switch to be used for flood detection outside the Multilift lifting stations are often installed in a sump inside the basement, the lowest point in the building. In case of e.g. groundwater inflow or water pipe burst, an alarm will be indicated by the controller
- connecting a piezoresistive pressure sensor PCB (pre-assembled)
- connecting an external alarm reset from a building management system
- connecting the thermal switch of the motor.

For updates and further adjustments, a PC Tool can be connected. See service instructions.

To allow for the situation that the normal power supply should fail, a battery (accessory) can be installed which activates an acoustic alarm (buzzer).

Control panel of the LC 221

The control panel consists of the display (1), the operating buttons (2), the status indicator lights (3) and the ON-OFF-AUTO selector switch(es) (4). See figs 39 and 40. The display shows all relevant operating data and fault indications and enables changing of the settings.

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Fig. 39 Control panel of one-pump controllers

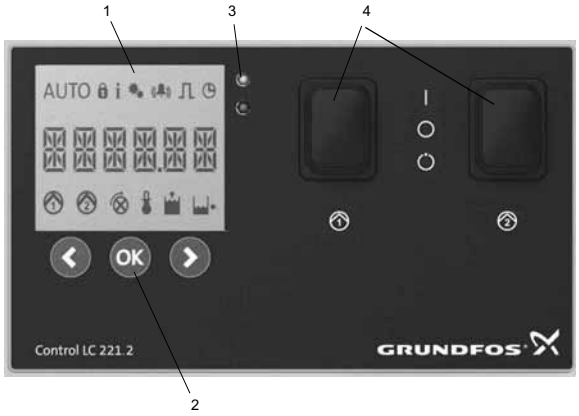

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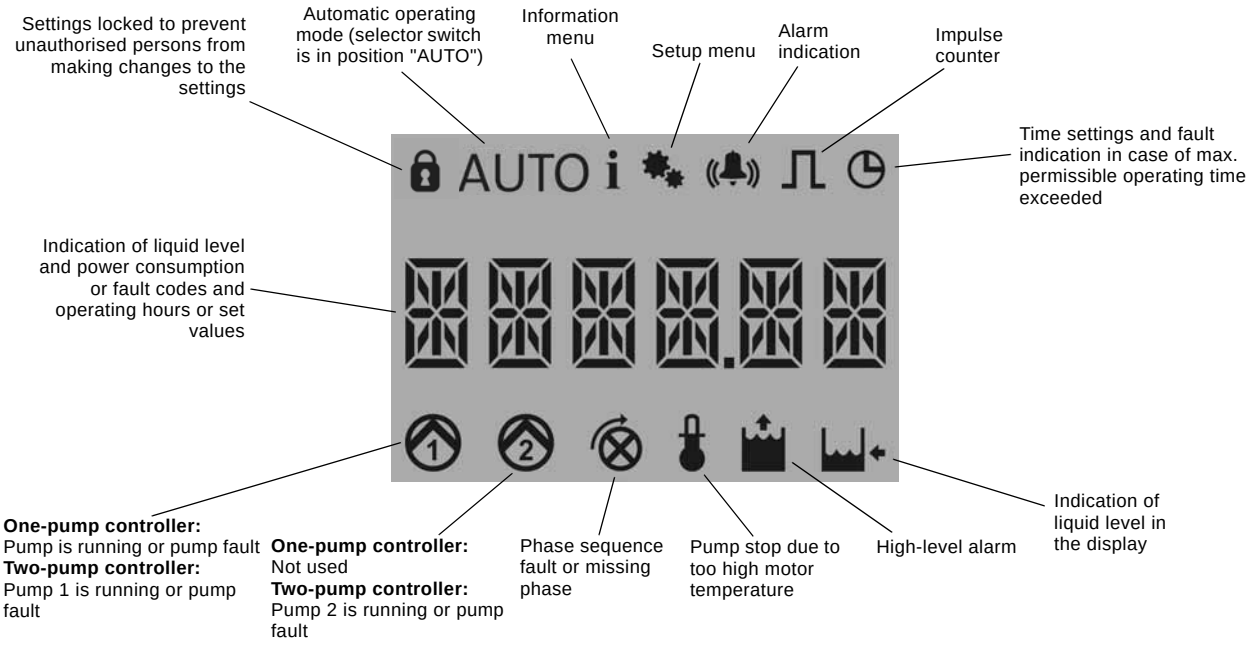
Fig. 40 Control panel of two-pump controllers

The chart below describes the symbols shown in the display as well as the corresponding functions and indication.

Note: There are two menus which can be opened, information menu and setup menu. The other symbols are indications only.



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Information menu

All status data and fault indications can be seen in the information menu. The information menu can be seen in all operating modes (ON-OFF-AUTO).

In the information menu the following data are shown:

- fault indications
- operating hours
- number of starts
- max. measured motor current (indication of worn-out bearing).

Setup menu

All settings are preset except for the start level. The start level depends on the inlet level and must be set during the start-up phase. However, in case adjustments are required, settings can be made easily via the setup menu.

The following settings can be made:

- start level
- rated current
- stop delay
- start delay
- alarm delay
- sensor selection*)
- sensor calibration*)
- sensor offset*)
- time for maintenance
- alarm reset (manually or automatically)
- reset to factory settings.

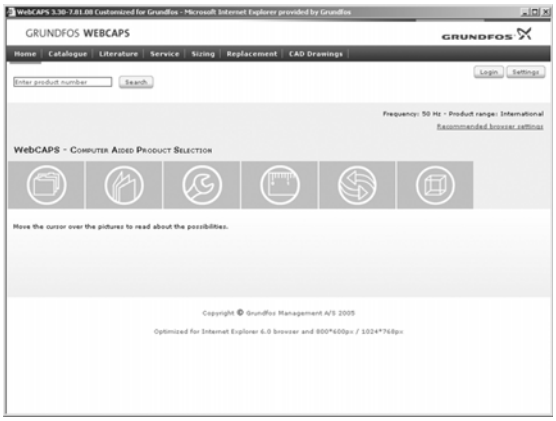
*) These settings are only needed when changing sensor type. The sensors are already calibrated.

Type key, LC 221 controller

Example	LC 221	.1	.230	.1	.10
LC 221 = controller type					
1 = one-pump controller 2 = two-pump controller					
Voltage [V]					
1 = single-phase 3 = three-phase					
Max. operating current [A]					

12. Further product documentation

WebCAPS

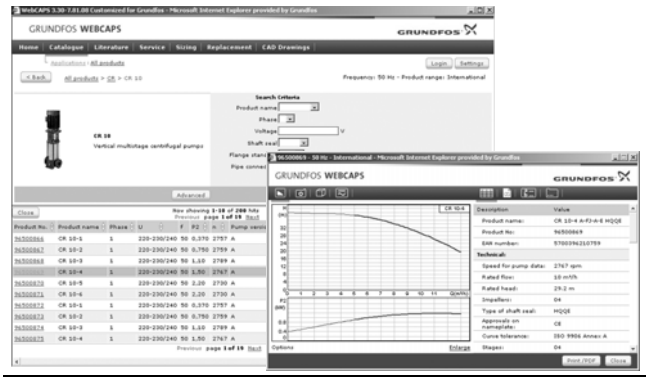


WebCAPS is a **Web**-based **C**omputer **A**ided **P**roduct **S**election program available on www.grundfos.com.

WebCAPS contains detailed information on more than 220,000 Grundfos products in more than 30 languages.

Information in WebCAPS is divided into six sections:

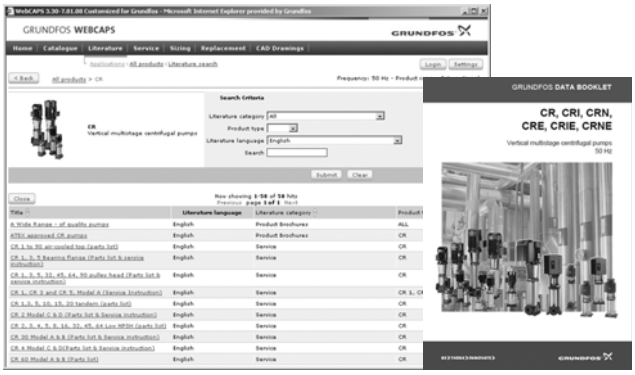
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalogue

Based on fields of application and pump types, this section contains the following:

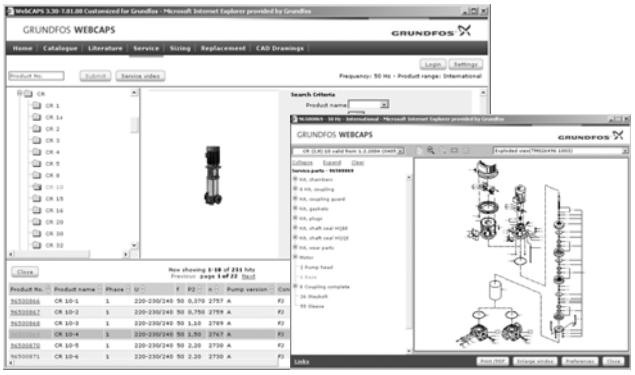
- technical data
- curves (QH, Eta, P1, P2, etc.) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

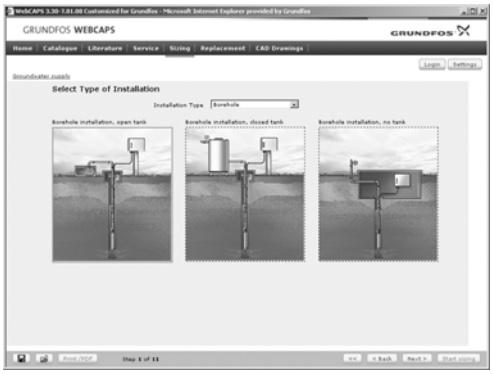
This section contains all the latest documents of a given pump, such as

- data booklets
- installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures.



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and discontinued Grundfos pumps.
Furthermore, the section contains service videos showing you how to replace service parts.



Sizing

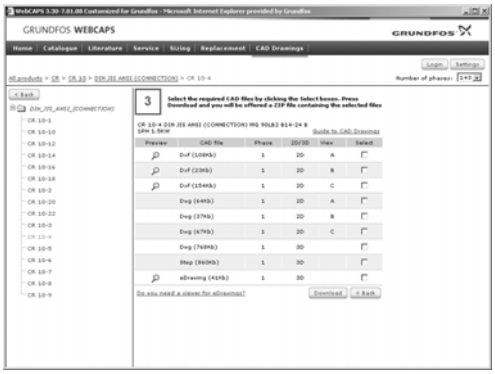
This section is based on different fields of application and installation examples and gives easy step-by-step instructions in how to size a product:

- Select the most suitable and efficient pump for your installation.
- Carry out advanced calculations based on energy, consumption, payback periods, load profiles, life cycle costs, etc.
- Analyse your selected pump via the built-in life cycle cost tool.
- Determine the flow velocity in wastewater applications, etc.

Replacement

In this section you find a guide to selecting and comparing replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump.
The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. When you have specified the installed pump, the guide will suggest a number of Grundfos pumps which can improve both comfort and efficiency.



CAD drawings

In this section, it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

These formats are available in WebCAPS:

2-dimensional drawings:

- .dxf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings:

- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.

WinCAPS

Fig. 41 WinCAPS DVD

WinCAPS is a **Win**dows-based **C**omputer **A**ided **P**roduct **S**election program containing detailed information on more than 220,000 Grundfos products in more than 30 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no internet connection is available.

WinCAPS is available on DVD and updated once a year.

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