

7. MULTILIFT MDV

MULTILIFT MDV are designed according to EN 12050-1 and approved by an external institute. Due to their large size, these pump units are supplied as a package for assembly on site. For information on outlet pipe and valves, see *Accessories* on page 42.



Fig. 17 MULTILIFT MDV with SL pumps

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Applications

MULTILIFT 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 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.

Sizing guide

Figure 18 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 pipes requires a flow of min. 3.5 l/s and DN 100 pipes requires a flow of min. 5.5 l/s. The non-return valve, an isolating valve and four bends have been taken into account.

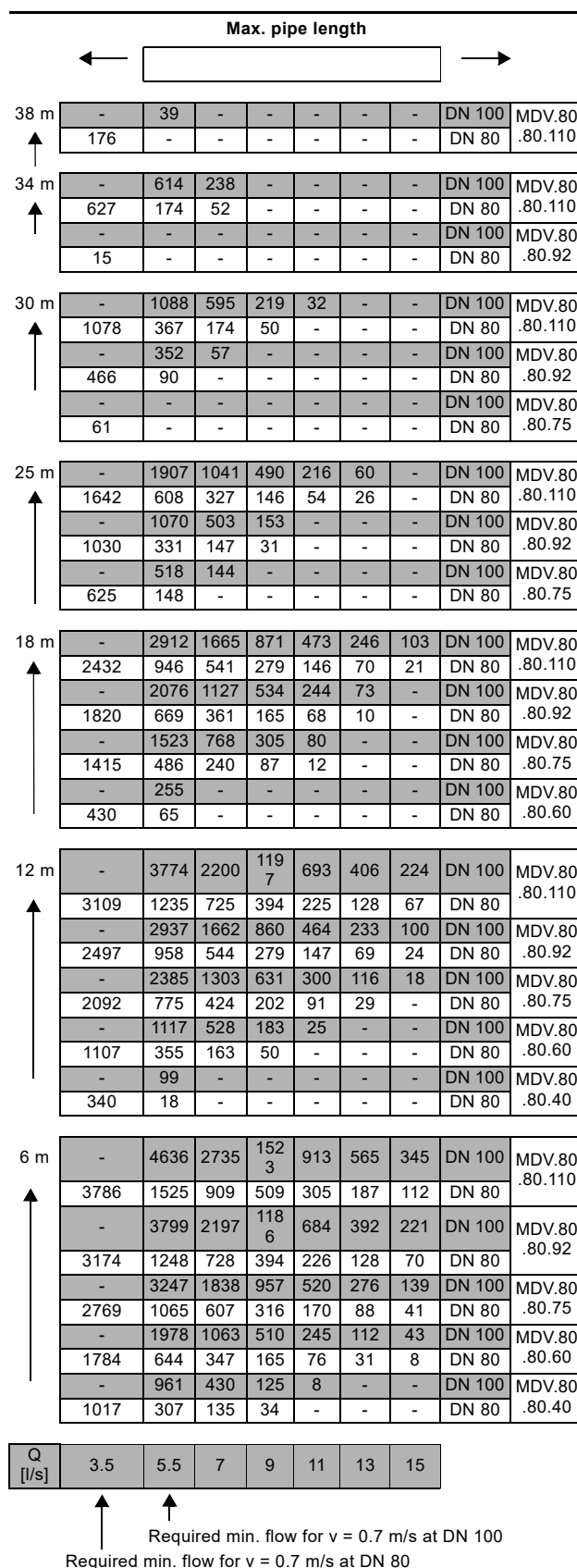


Fig. 18 Maximum length of vertical and horizontal outlet pipes

Constructional features

MULTILIFT 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	
	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 SLV pump with Vortex impeller and a free passage of 65 or 80 mm for trouble-free operation and unchanged performance throughout the entire life of the pump	
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 outlet	
	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 outlet pipe in case of service or maintenance	

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Product description

Features

- High effective tank volume up to 3 x 450 litres
- 5 different pump 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 42
- reliable, blockage-free level detection with no direct contact to the pumped liquid
- extremely high operating safety ensured by high quality motor designs with large free passage; SLV pumps for intermittent operation, S3-50 %, for standard inflow applications.
- one impeller type is available: Vortex, impeller for SLV.
- easy and smart maintenance and service features for pumps, sensor tube, collecting tank and controller.

See details on page 34.

Scope of delivery

Grundfos MULTILIFT MDV lifting stations are supplied complete with one collecting tank, 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
- 1 x flexible hose, DN 70, with two clamps to connect the venting pipe
- 2 x socket seal, DN 100, for connection of inlet 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, 1 1/2" 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 inlet line of the pumps and a large maintenance opening.

The standard delivery contains one tank, but the effective pump volume and the drain capacity can be increased by connecting additional tank(s). The additional tank and all parts for connections are available as an accessory.

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]	240	480	720

Setting to the relevant inlet level must be made via the control panel of the controller. The factory-set inlet level is 700 mm above the floor.

Pump

- Single-stage, submersible pumps in horizontal installation with a free passage of 80 mm
- direct drive with motor and pump mounted on common, particularly rigid shaft for vibration-free operation
- vertical outlet port, DN 80 or DN 100 (PN 10)
- pump and motor connected by stainless steel clamp for easy servicing
- Vortex impeller for SLV
- 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 %.

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* on page 42.

Type key

Code	Example	M	D	1	.80	.80	.15	.4	.5	OD/	400	-1	SE
M	Type range: MULTILIFT lifting station												
D	Number of pumps: Two pumps												
1	Impeller type: Single-channel impeller												
V	Vortex impeller (SuperVortex)												
80	Free passage: Maximum solids size [mm]												
80	Pump outlet port: Nominal diameter of pump outlet port [mm]												
15	Power: Motor power output $P_2/100$ [W]												
2	Number of poles: 2-pole, 3000 min ⁻¹ , 60 Hz												
4	4-pole, 1500 min ⁻¹ , 60 Hz												
5	Frequency: 60 Hz												
0D	Voltage and starting method: 380-415 V, DOL												
1D	380-415 V, Y/D												
0E	220-240 V, DOL												
1E	220-240 V, Y/D												
400	Size of collecting tank: Number of litres												
[]	Number of collecting tanks: One tank												
2	Two tanks*												
SL	Pump type: 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	65/80 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)	≤ 4 kW: IP55 > 4 kW: IP54
Insulation class	F (155 °C)
Voltage (motor)	3 x 220-240 V 3 x 380-415 V
Frequency (motor)	60 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 <i>Dimensional drawings</i> on page 14
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	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

Mechanical, electrical and order data

Standard range, 3 x 380-415 V*

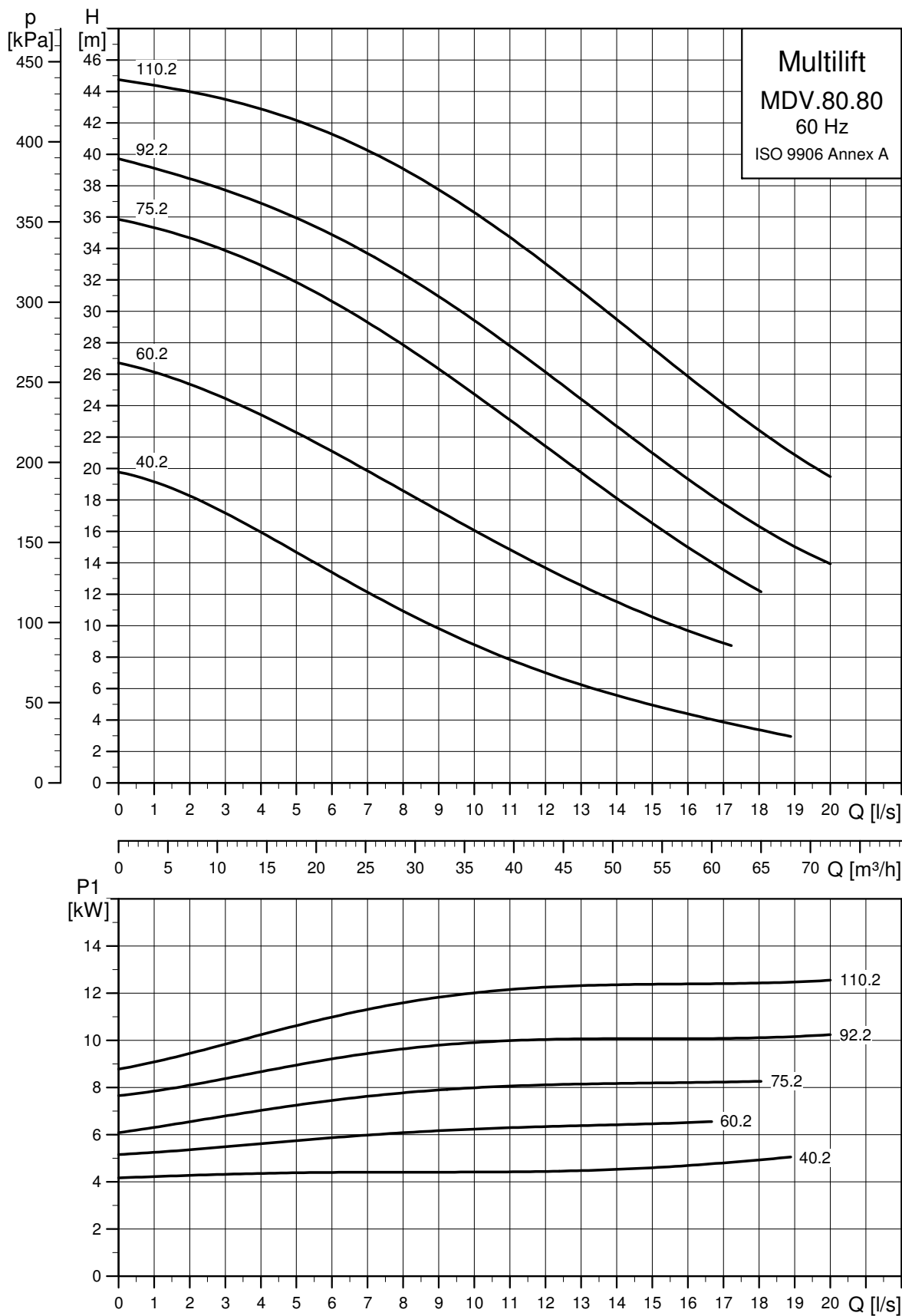
* 3 x 230 V variants are available on request.



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

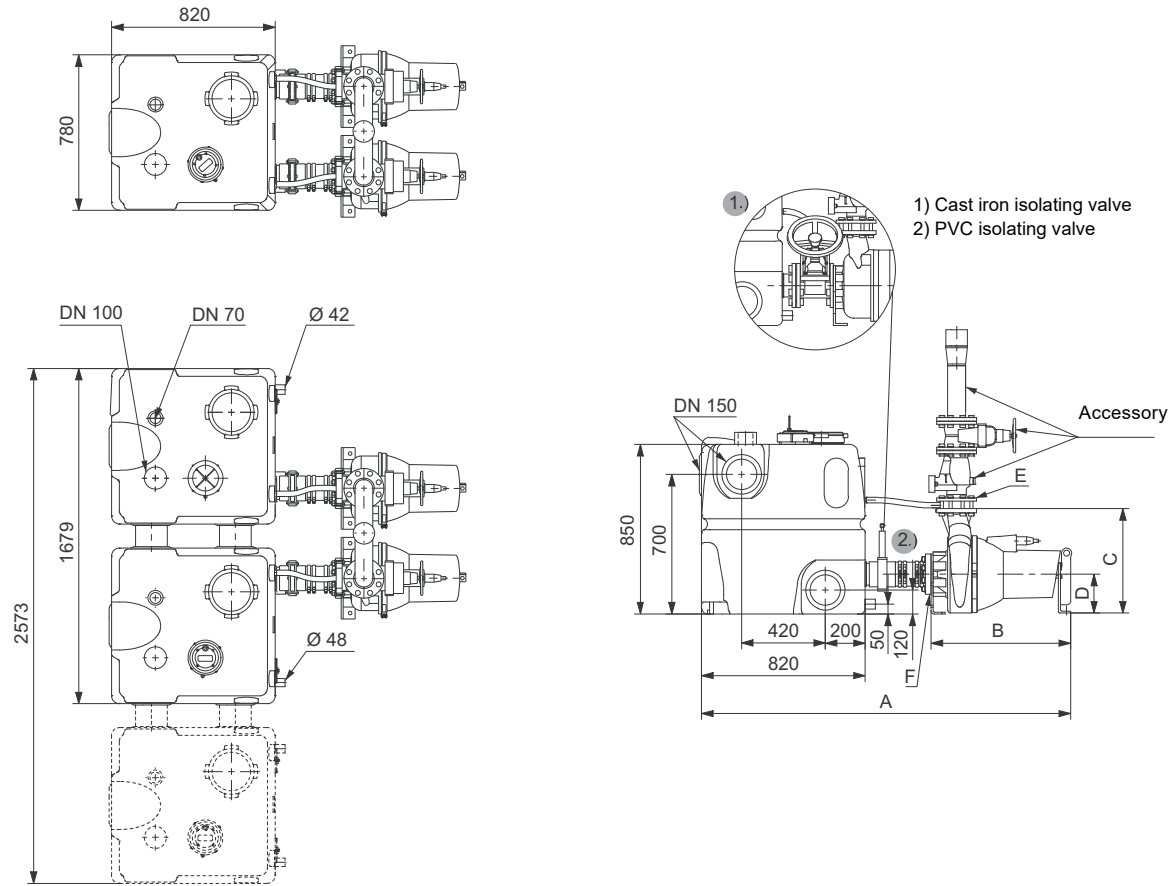
MULTILIFT	Inlet level [mm]	Number of tanks and tank volume [l]	Effective tank volume [l]	Weight [kg]	Power P1 / P2 [kW]	$I_{1/1} / I_{start}$ [A]	Number of poles	Voltage [V]	Starting method	Product number
MDV.80.80.40.2	700 / 840	1 x 450	240	331	5.0 / 4.0	14.4-12.2 / 147	2	3 x 220-240 V	Y/D	97783257
MDV.80.80.60.2	700 / 840	1 x 450	240	361	7.2 / 6.0	21.7-18.2 / 191	2	3 x 220-240 V	Y/D	97783266
MDV.80.80.75.2	700 / 840	1 x 450	240	362	8.8 / 7.5	26.1-21.9 / 191	2	3 x 220-240 V	Y/D	97783267
MDV.80.80.92.2	700 / 840	1 x 450	240	440	10.6 / 9.2	30.0-26.3 / 274	2	3 x 220-240 V	Y/D	97783268
MDV.80.80.110.2	700 / 840	1 x 450	240	439	12.6 / 11.0	38.1-32.1 / 274	2	3 x 220-240 V	Y/D	97783269
MDV.80.80.40.2	700 / 840	1 x 450	240	331	5.0 / 4.0	8.3-7.0 / 85	2	3 x 380-415 V	Y/D	99866977
MDV.80.80.60.2	700 / 840	1 x 450	240	361	7.2 / 6.0	12.5-10.5 / 110	2	3 x 380-415 V	Y/D	99866978
MDV.80.80.75.2	700 / 840	1 x 450	240	362	8.8 / 7.5	15.0-12.6 / 110	2	3 x 380-415 V	Y/D	99866980
MDV.80.80.92.2	700 / 840	1 x 450	240	440	10.6 / 9.2	17.3-15.2 / 158	2	3 x 380-415 V	Y/D	99866982
MDV.80.80.110.2	700 / 840	1 x 450	240	439	12.6 / 11.0	22.0-18.5 / 158	2	3 x 380-415 V	Y/D	99866983

Performance curves



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Dimensional drawings

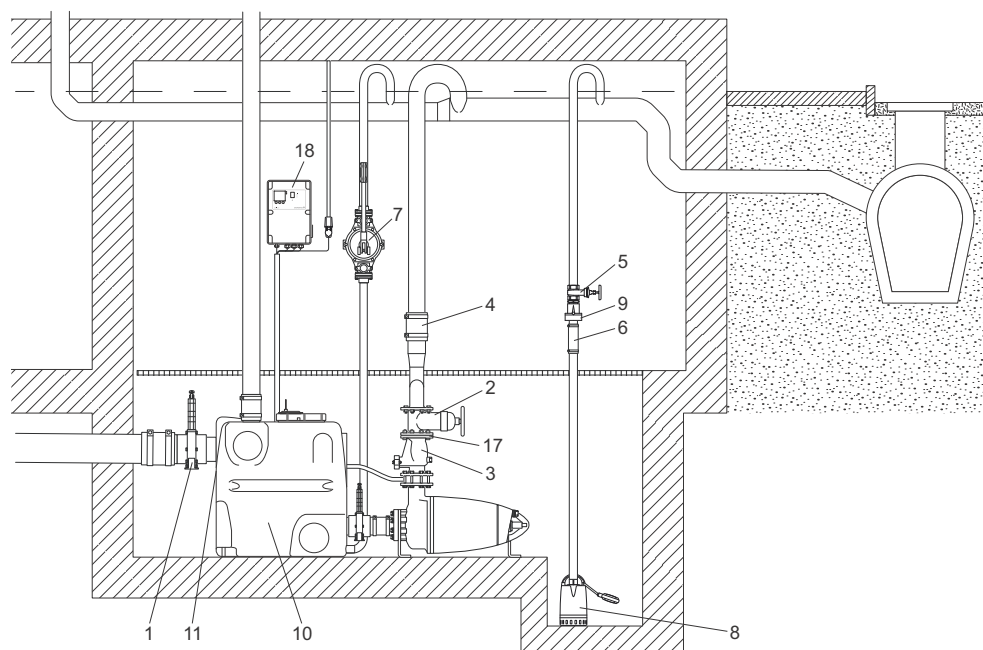


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MULTILIFT MDV with SL pumps

MULTILIFT	Dimensions [mm]						
	A1	A2	B	C	D	E	F
MDV.80.80.40.2	1758	1838	690	476	200	DN 80	DN 80
MDV.80.80.60.2	1715	1795	645	476	200	DN 80	DN 80
MDV.80.80.75.2	1715	1795	645	476	200	DN 80	DN 80
MDV.80.80.92.2	1740	1820	675	493	200	DN 80	DN 80
MDV.80.80.110.2	1740	1820	675	493	200	DN 80	DN 80














Accessories



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Fig. 19 Accessories for MULTILIFT MDV

No.	Figure	Description	Dimensions	Product number
1		Isolating valve, PVC	DN 100 Installation length: 130 mm Height: 375 mm Connection piece: \varnothing 110	96615831
		Isolating valve, PVC	DN 150 Installation length: 227 mm Height: 496 mm Connection piece: \varnothing 160	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			DN 80 / \varnothing 90 / H = 359 mm	96003704
			DN 80 / \varnothing 110 / H = 459 mm	96003705
			DN 100 / \varnothing 110 / H = 410 mm	96003706
			DN 80 / \varnothing 160 / H = 550 mm	96003707
5		Isolating valve, brass	DN 32 Length: 76 mm Connection: Rp 1 1/4"	00ID0918
6			DN 32 Length: 150 mm Internal \varnothing 42	91071645
			DN 100 Length: 150 mm Internal \varnothing 110	96075422
			DN 150 Length: 200 mm Internal \varnothing 160	96473060

No.	Figure	Description	Dimensions	Product number
7		Manually operated diaphragm pump	Installation length: 435 mm Width: 234 mm Connection: Rp 1 1/2" Pumped volume per cycle: 0.65 litre Maximum suction lift: 4 m Maximum pump head: 20 m	96003721
8		For wastewater pump, e.g. Unilift CC and KP, please see data booklet for the pump or Grundfos Product Center.		
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 Ø160	96636544
15		Flange with socket (cast iron) for PVC pipe, incl. lip seal	DN 150 Internal Ø160	96003701
16		Flange-hose unit (cast iron) with flexible connection and clamps	DN 150 Internal Ø160	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 buffer is included in the LC 221, battery is not included. Only the battery connection is in scope of delivery! Replace the battery once a year.	Use a commercially available 9 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
26		PC Tool link USB		96705378
27		Pressure hose for sensor, as a replacement	30 m 8 x 1.25 mm	98403665