

**50 Hz**



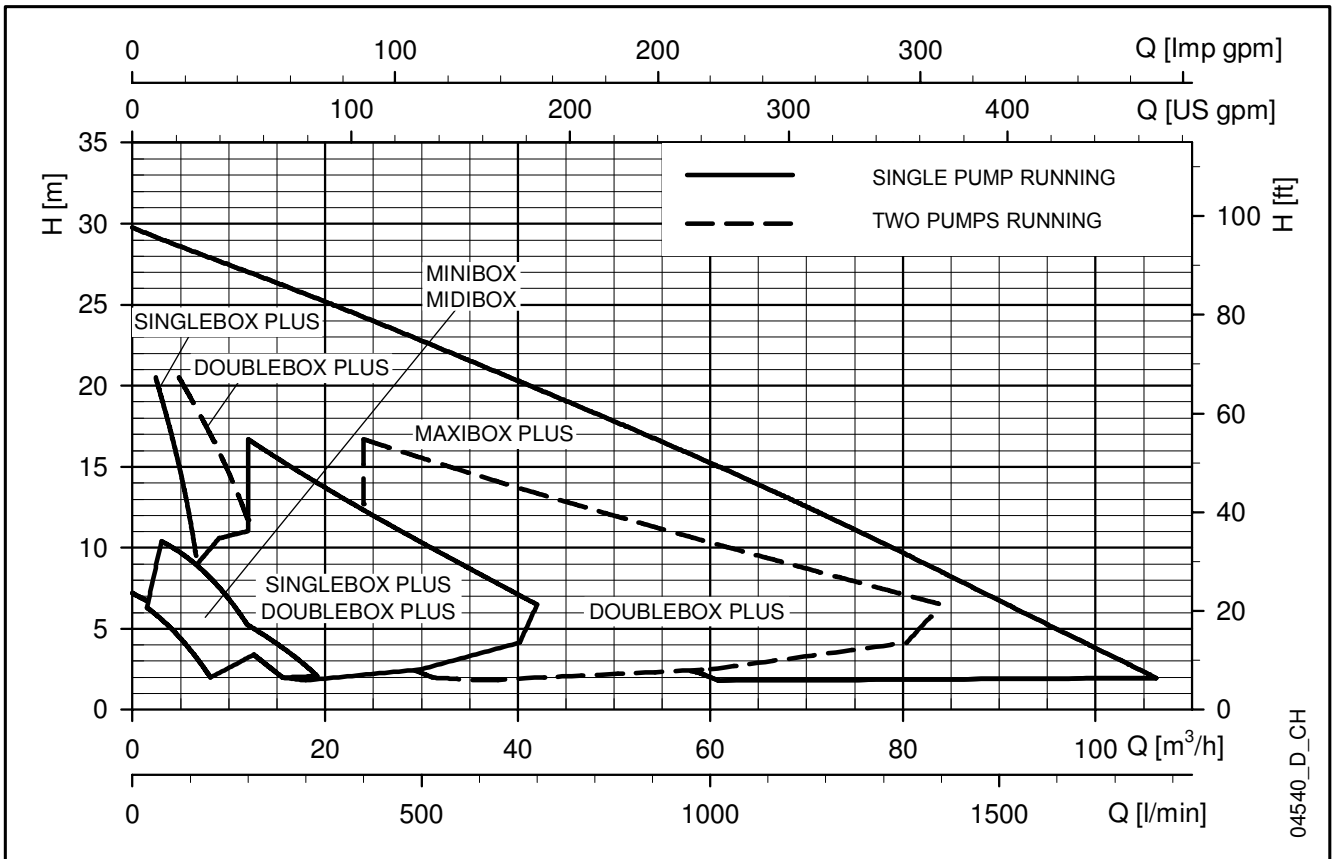
# MINIBOX, MIDIBOX, SINGLEBOX PLUS, DOUBLEBOX PLUS MAXIBOX PLUS Series

PREFABRICATED LIFTING STATIONS FOR WASTEWATER  
IN COMPLIANCE WITH EUROPEAN LEGISLATION

Cod. 191004481 Rev.B Ed.07/2012

 **LOWARA**  
a xylem brand

**MINIBOX, MIDIBOX  
SINGLEBOX PLUS, DOUBLEBOX PLUS, MAXIBOX PLUS SERIES  
HYDRAULIC PERFORMANCE RANGE AT 50 Hz**



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## Prefabricated lifting stations for clean water

### MINIBOX Series



#### MARKET SECTORS

DOMESTIC.

#### APPLICATIONS

- Suitable for delivering clean water to main sewer lines located at a higher level, or where gravity drainage is not possible.

#### SPECIFICATIONS

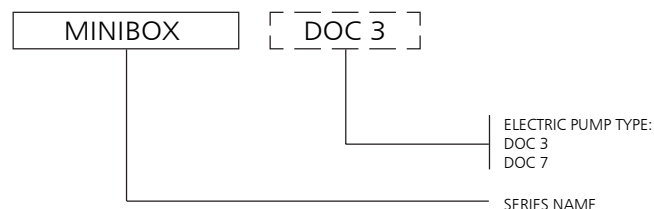
- The station is equipped with:
  - **DOC submersible pump**, with flow rate up to 230 l/min and head up to 11 m. Passes suspended solids up to 10 mm diameter. Equipped with float switch for automatic operation.
  - 85 litres high density polyethylene **tank**.
  - 1 1/4" **flexible pipe** equipped with a check valve; left or right-hand connection.
  - **Power cord** outlet.
  - Three types of 40 mm diameter pipe inlets.
  - **Screens**.
  - **Basin** to be filled with sand or gravel to filter solid particles.

- The Minibox station can be equipped with a **DOC3** (0,25 kW rating) or a **DOC7** (0,55 kW rating).
- **Installation is quick and easy**: just connect the pipes and plug it in.
- Minibox can be installed on the floor or buried in a suitable structure (to withstand vehicle or foot traffic).

#### ACCESSORIES

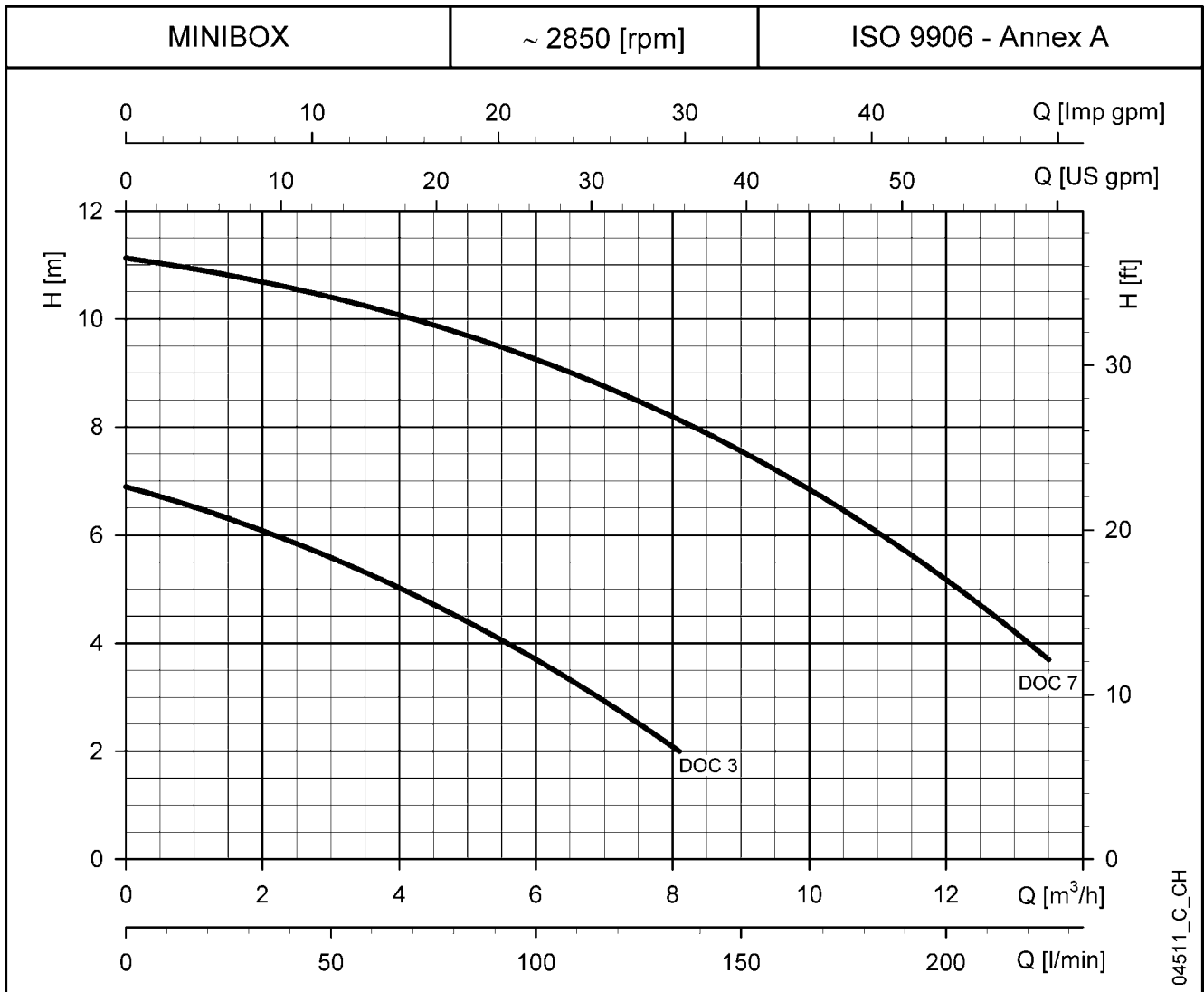
- An **optional watertight lid** (substituting the screens) can be installed for indoor use.

#### IDENTIFICATION CODE



EXAMPLE : MINIBOX DOC 3  
Lifting station MINIBOX series with DOC 3 submersible electric pump.

## MINIBOX SERIES OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

PUMP TYPE	RATED POWER		Q = DELIVERY									
			l/min	0	25	50	75	100	125	135	175	225
	kW	HP	m <sup>3</sup> /h	0	1,5	3	4,5	6	7,5	8,1	10,5	13,5
H = TOTAL HEAD METRES COLUMN OF WATER												
DOC3	0,25	0,33	6,9	6,3	5,6	4,7	3,7	2,5	2,0			
DOC7	0,55	0,75	11,1	10,8	10,4	9,9	9,3	8,5	8,1	6,5	3,7	

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

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### ELECTRICAL DATA TABLE

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	CAPACITOR
SINGLE-PHASE	kW	220-240 V A	$\mu\text{F} / 450 \text{ V}$
DOC 3	0,31	1,43	6,3
DOC 7	0,78	3,47	16

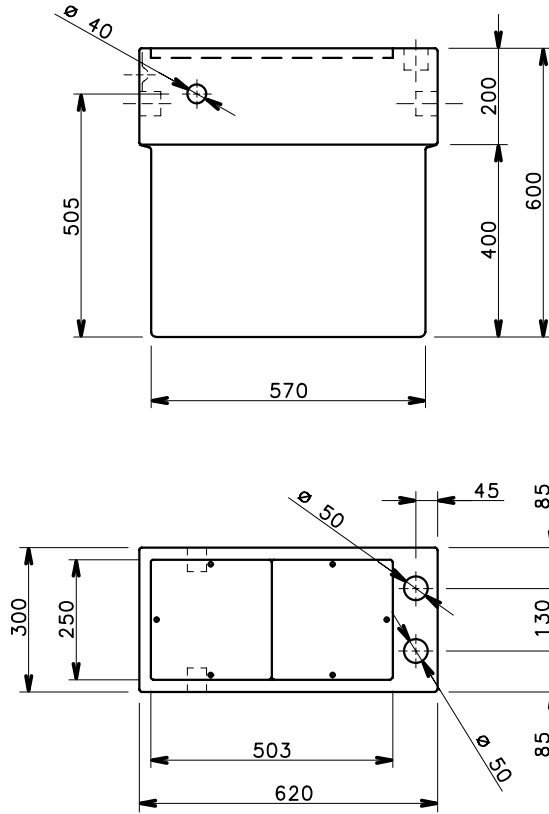
  

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	ABSORBED CURRENT*
THREE-PHASE	kW	220-240 V A	380-415 V A
-	-	-	-
-	-	-	-

\*Maximum values within operating range.

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**MINIBOX SERIES  
DIMENSIONS AND WEIGHTS**



MODEL	WEIGHT kg
MINIBOX (with pipes)	13
MINIBOX DOC3	18
MINIBOX DOC7	20

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**Prefabricated lifting station for clean and grey water in compliance with EN 12050-2 standard**

**MIDIBOX Series**



**MARKET SECTORS**

DOMESTIC.

**APPLICATIONS**

- Suitable for delivering clean and grey water to main sewer lines located at a higher level, or where gravity drainage is not possible.

**SPECIFICATIONS**

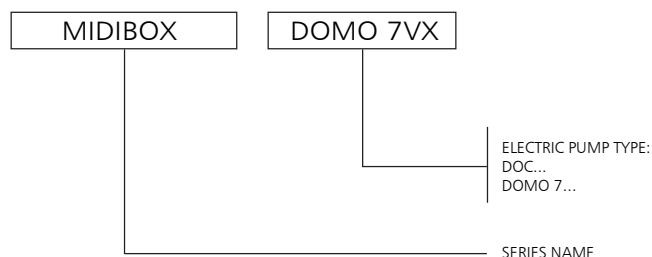
- The station is equipped with:
  - Polyethylene **basin** with a capacity of 110 litres, equipped with a threaded cover.
  - **Cable glands** for power supply cables (and floats).
  - Rp 1 1/4 or Rp 1 1/2 **delivery pipes** with fast connection and ring nut for easy disassembly of the pump.
  - **3 fast connections**:
    - 1 x DN110 for inlet,
    - 1 x DN50 for ventilation and
    - 1 x DN65 for cable connection.
  - **1 x DN50** fast connection for the manual pump.
  - **DOC or DOMO 7 submersible pump**, vortex or channel impeller type.
  - **QDR control panel** for three-phase versions.
- Versions with **vortex impeller** suitable for:
  - clean water, effluent, sewage containing suspended solids and fibres but non-faecal wastewater.
- Versions with **single or twin channel impeller** suitable for:
  - clean water, effluent, sewage not containing suspended fibres and faecal wastewater.

- **Midibox** can be installed on the floor or buried in a suitable structure following instructions in the "Instructions and Operative Manual".
- **Easy installation**:
  - installation is quick and easy: for the single-phase versions you just connect the pipes and the electrical cables; for the three-phase versions you also need to connect the control panel.
  - The new **Midibox** is provided with side handles for ease of handling.
  - Pre-installed delivery pump and unions.
- **Ecological solution**:
  - tank made from 100% recyclable polyethylene.
- **Easy maintenance and repair**.
  - Tried and tested pump technology.
  - Pump quick and easy to remove thanks to the ring nut located near the cover.

**ACCESSORIES**

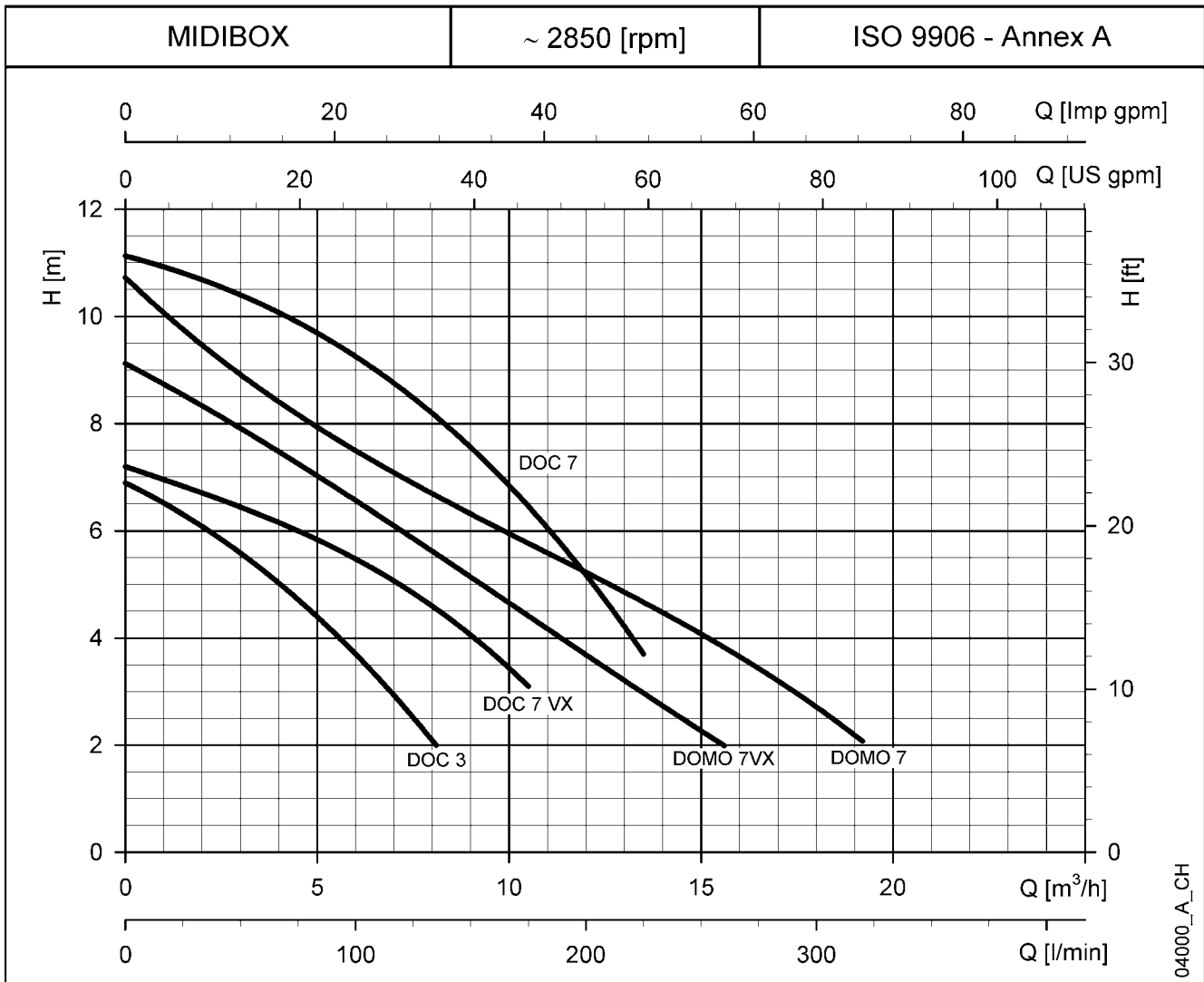
- Available accessories:
  - Ball check valves.
  - Alarm kit.
  - Connector kit.
  - Manual pump.

**IDENTIFICATION CODE**



EXAMPLE : MIDIBOX DOMO 7VX  
Lifting station MIDIBOX series with DOMO 7VX submersible electric pump.

## MIDIBOX SERIES OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

PUMP TYPE	RATED POWER		Q = DELIVERY													
			l/min	0	30	60	90	135	175	225	260	320				
			m <sup>3</sup> /h	0	1,8	3,6	5,4	8,1	10,5	13,5	15,6	19,2				
		H = TOTAL HEAD METRES COLUMN OF WATER														
	kW	HP														
DOC 3	0,25	0,33	6,9	6,2	5,3	4,1	2,0									
DOC 7(T)	0,55	0,75	11,1	10,7	10,2	9,5	8,1	6,5	3,7							
DOC 7VX(T)	0,55	0,75	7,2	6,8	6,3	5,7	4,5	3,1								
DOMO 7(T)	0,55	0,75	10,7	9,6	8,6	7,8	6,7	5,8	4,7	3,8	2,1					
DOMO 7VX(T)	0,55	0,75	9,1	8,4	7,7	6,8	5,6	4,4	3,0	2,0						

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

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### ELECTRICAL DATA TABLE

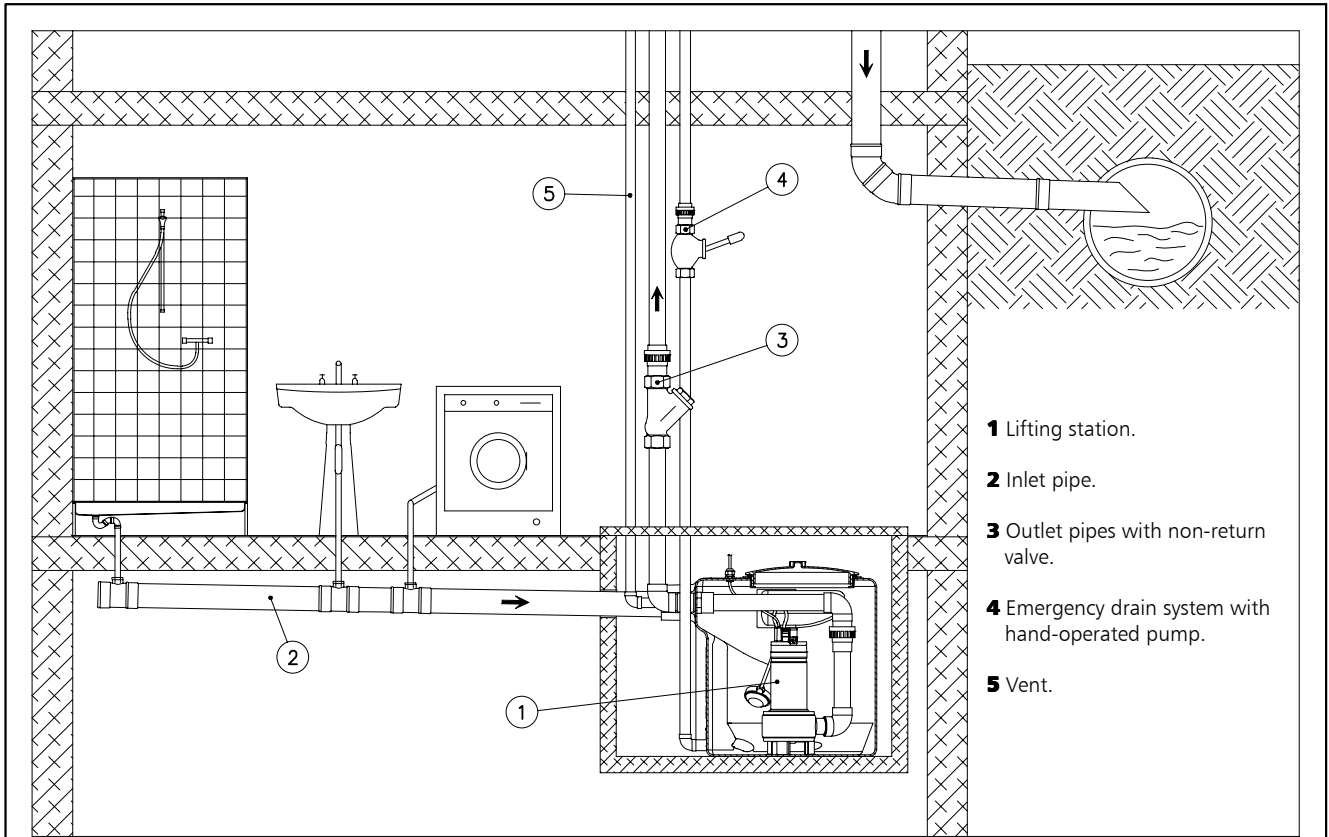
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	CAPACITOR
	SINGLE-PHASE	220-240 V	$\mu\text{F} / 450 \text{ V}$
	kW	A	
DOC 3	0,31	1,43	6,3
DOC 7	0,78	3,47	16
DOC 7VX	0,66	2,96	16
DOMO 7	0,8	3,94	16
DOMO 7VX	0,79	3,91	16

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	ABSORBED CURRENT*
	THREE-PHASE	220-240 V	380-415 V
	kW	A	A
-	-	-	-
DOC 7T	0,79	2,82	1,63
DOC 7VXT	0,66	2,68	1,55
DOMO 7T	0,73	2,58	1,49
DOMO 7VXT	0,71	2,56	1,48

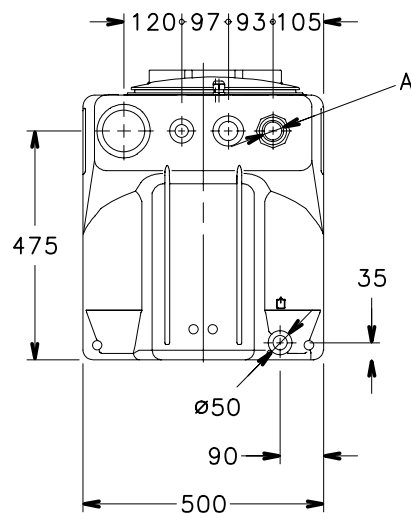
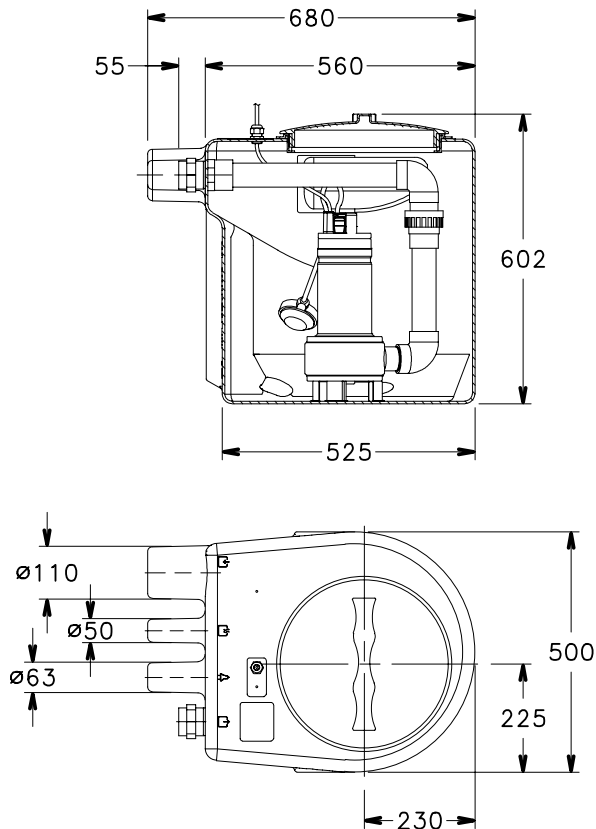
\*Maximum values within operating range

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**MIDIBOX SERIES**



**DIMENSIONS AND WEIGHTS**

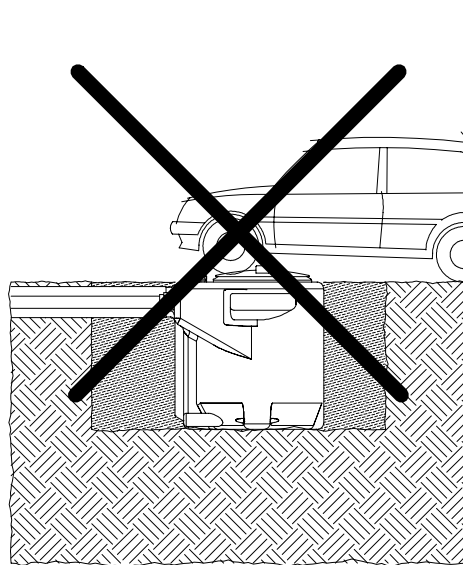
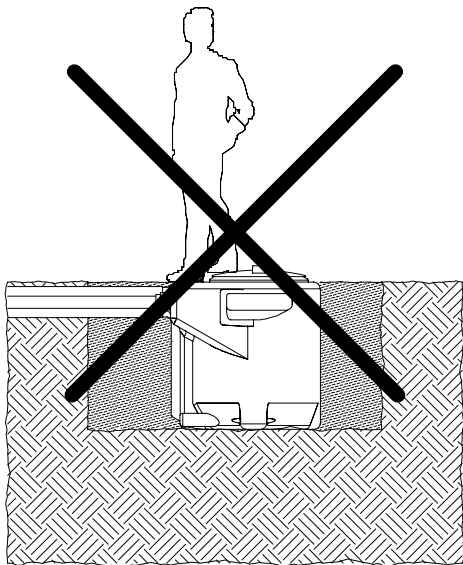
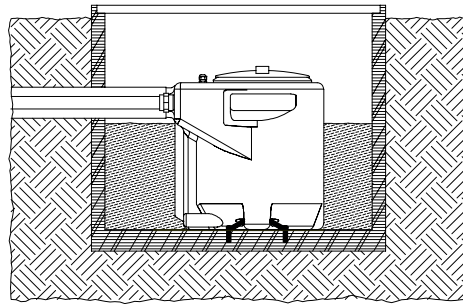
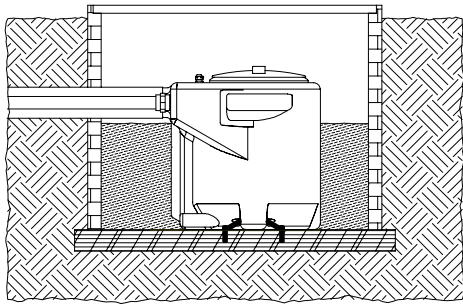
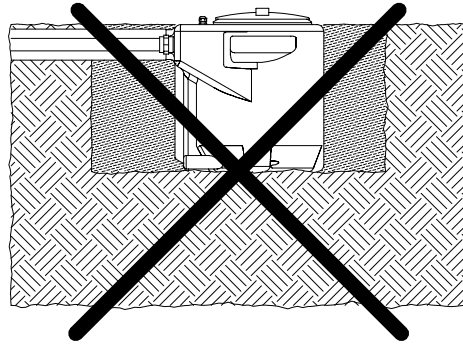
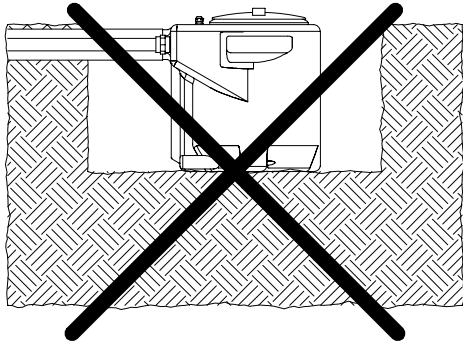


MODEL	DIMENSIONS (mm)		WEIGHT kg
	A		
MIDIBOX DOC3	Rp 1 1/4		13
MIDIBOX DOC7(T)	Rp 1 1/4		16
MIDIBOX DOC7VX(T)	Rp 1 1/4		16
MIDIBOX DOMO7(T)	Rp 1 1/2		20
MIDIBOX DOMO7VX(T)	Rp 1 1/2		20

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midibox-en\_b\_td

**MIDIBOX SERIES  
APPLICATION EXAMPLES**



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## Prefabricated lifting station for wastewater in compliance with EN 12050-1&2 standard

### SINGLEBOX PLUS Series



#### MARKET SECTORS

DOMESTIC.

#### APPLICATIONS

- Suitable for delivering gray water and wastewater to main sewer lines located at a higher level, or where gravity drainage is not possible.

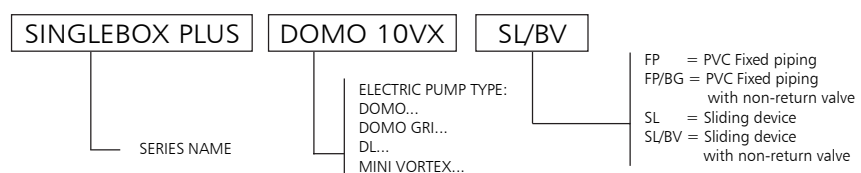
#### SPECIFICATIONS

- The standard station is equipped with:
    - polyethylene **basin** with a capacity of 270 litres, equipped with a threaded pedestrian cover (100 kg max).
    - **Cable glands** for power supply cables (and floats).
    - Rp 1 1/2 or Rp 2 **delivery pipes** with fast connection and ring nut for easy disassembly of the pump or with sliding device.
    - **4 fast connections:** 2 x DN110 for inlet, 1 x DN50 for ventilation and 1 x DN65 for cable connection.
    - **1 x DN50** fast connection for the manual pump.
    - **DOMO** or **DL submersible pump**, vortex, channel impeller type or with grinder device.
    - **QDR control panel** for three-phase versions.
    - **3 rubber seal:** 1 x DN110, 1 x DN50 and 1 x DN65 mm.
  - Versions with **vortex impeller** or with **grinder device** suitable for:
    - clean water, effluent, sewage containing suspended solids and fibres.
  - Versions with **single or twin channel impeller** suitable for:
    - clean water, effluent, sewage containing suspended solids but not containing fibres.
  - Special versions equipped with delivery pipes, ball check valve and gate valve.
  - Special versions equipped with sliding device and non-return ball valve.
- **Singlebox plus** can be installed on the floor or buried in a suitable structure following instructions in the "Instructions and Operative Manual".
  - **Easy installation:**
    - installation is quick and easy: for the single-phase versions you just connect the pipes and the electrical cables; for the three-phase versions you also need to connect the control panel.
    - The new **Singlebox plus** is provided with side handles for ease of handling.
    - Pre-installed delivery pump and unions.
  - **Ecological solution:**
    - tank made from 100% recyclable polyethylene.
    - Airtight anti-pollution tank, pursuant to European standard EN 12050.
  - **Easy maintenance and repair.**
    - Tried and tested pump technology.
    - Pump quick and easy to remove thanks to the ring nut located near the cover.

#### ACCESSORIES

- Available accessories:
  - Ball check valves.
  - Alarm kit.
  - Manual pump + seal.
  - Seals kit.

#### IDENTIFICATION CODE



EXAMPLE : SINGLEBOX PLUS DOMO 10VX SL/BV  
 Lifting station SINGLEBOX PLUS series with DOMO 10VX submersible electric pump with sliding device and non-return valve.

## SINGLEBOX PLUS SERIES CHART

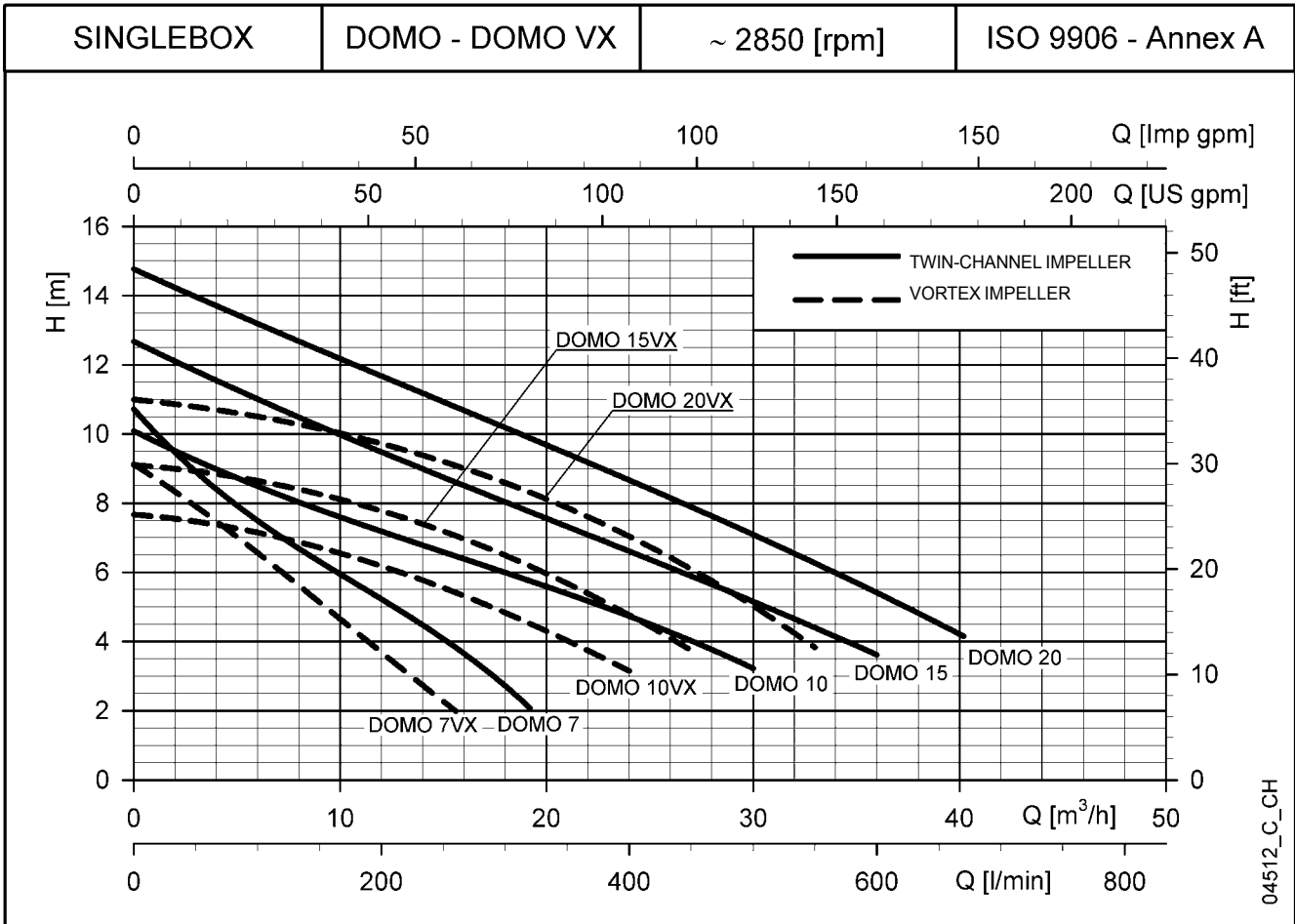
SINGLEBOX PLUS		CHARACTERISTICS					FEATURED COMPONENTS			VERSIONS				
		kW	HP	Q max (l/min)	H max (m)	Impeller type	QDR control panel	Float pre-assembled on pump	Float (10 m cable)	Standard with ring nut	Ring nut, non-return valve and gate valve	Standard	With non-return valve	
FIXED PVC PIPE FITTINGS	SINGLE_PHASE	SINGLEBOX PLUS DOMO 7	0,55	0,75	320	10,7	TWIN CHANNEL		X		X	X		
		SINGLEBOX PLUS DOMO 7VX	0,55	0,75	260	9,1	VORTEX		X		X	X		
		SINGLEBOX PLUS DOMO 10	0,75	1	500	10,1	TWIN CHANNEL		X		X	X		
		SINGLEBOX PLUS DOMO 10VX	0,75	1	400	7,7	VORTEX		X		X	X		
		SINGLEBOX PLUS DOMO 15	1,1	1,5	600	12,7	TWIN CHANNEL		X		X	X		
		SINGLEBOX PLUS DOMO 15VX	1,1	1,5	450	9,1	VORTEX		X		X	X		
	SINGLEBOX PLUS DOMO GRI 11	1,1	1,5	110	25	GRINDER		X		X	X			
	THREE_PHASE	SINGLEBOX PLUS DOMO 7T	0,55	0,75	320	10,7	TWIN CHANNEL	X		X	X	X		
		SINGLEBOX PLUS DOMO 7VXT	0,55	0,75	260	9,1	VORTEX	X		X	X	X		
		SINGLEBOX PLUS DOMO 10T	0,75	1	500	10,1	TWIN CHANNEL	X		X	X	X		
		SINGLEBOX PLUS DOMO 10VXT	0,75	1	400	7,7	VORTEX	X		X	X	X		
		SINGLEBOX PLUS DOMO 15T	1,1	1,5	600	12,7	TWIN CHANNEL	X		X	X	X		
		SINGLEBOX PLUS DOMO 15VXT	1,1	1,5	450	9,1	VORTEX	X		X	X	X		
		SINGLEBOX PLUS DOMO 20T	1,5	2	670	14,8	TWIN CHANNEL	X		X	X	X		
		SINGLEBOX PLUS DOMO 20VXT	1,5	2	550	11	VORTEX	X		X	X	X		
		SINGLEBOX PLUS DOMO GRI 11T	1,1	1,5	110	25	GRINDER	X		X	X	X		
		LOWERING DEVICE	SINGLE_PHASE	SINGLEBOX PLUS DOMO 10	0,75	1	500	10,1	TWIN CHANNEL		X			X
	SINGLEBOX PLUS DOMO 10VX			0,75	1	400	7,7	VORTEX		X			X	X
	SINGLEBOX PLUS DOMO 15			1,1	1,5	600	12,7	TWIN CHANNEL		X			X	X
	SINGLEBOX PLUS DOMO 15VX			1,1	1,5	450	9,1	VORTEX		X			X	X
	SINGLEBOX PLUS DOMO GRI 11			1,1	1,5	110	25	GRINDER		X			X	X
	THREE_PHASE		SINGLEBOX PLUS DOMO 10T	0,75	1	500	10,1	TWIN CHANNEL	X		X		X	X
			SINGLEBOX PLUS DOMO 10VXT	0,75	1	400	7,7	VORTEX	X		X		X	X
			SINGLEBOX PLUS DOMO 15T	1,1	1,5	600	12,7	TWIN CHANNEL	X		X		X	X
			SINGLEBOX PLUS DOMO 15VXT	1,1	1,5	450	9,1	VORTEX	X		X		X	X
			SINGLEBOX PLUS DOMO 20T	1,5	2	670	14,8	TWIN CHANNEL	X		X		X	X
SINGLEBOX PLUS DOMO 20VXT			1,5	2	550	11	VORTEX	X		X		X	X	
SINGLEBOX PLUS DOMO GRI 11T			1,1	1,5	110	25	GRINDER	X		X		X	X	
SINGLE_PHASE	SINGLEBOX PLUS DLFM 80		0,6	0,8	350	7,6	SINGLE CHANNEL		X			X	X	
	SINGLEBOX PLUS DLFM 90		0,6	0,8	450	9,7	MONOCANALE		X			X	X	
	SINGLEBOX PLUS MINI VORTEX M		0,6	0,8	300	7,2	VORTEX		X			X	X	
	SINGLEBOX PLUS DLM 109		1,1	1,5	600	18,3	SINGLE CHANNEL		X			X	X	
	SINGLEBOX PLUS DLVM 100		1,1	1,5	500	10,6	VORTEX		X			X	X	
	THREE_PHASE		SINGLEBOX PLUS DLF 80	0,6	0,8	350	7,6	SINGLE CHANNEL	X		X		X	X
			SINGLEBOX PLUS DLF 90	0,6	0,8	450	9,7	SINGLE CHANNEL	X		X		X	X
			SINGLEBOX PLUS MINI VORTEX	0,6	0,8	300	7,2	VORTEX	X		X		X	X
			SINGLEBOX PLUS DLF 105	1,1	1,5	500	14,1	SINGLE CHANNEL	X		X		X	X
			SINGLEBOX PLUS DL 109	1,1	1,5	600	18,3	SINGLE CHANNEL	X		X		X	X
			SINGLEBOX PLUS DLV 100	1,1	1,5	500	10,6	VORTEX	X		X		X	X
			SINGLEBOX PLUS DLF VORTEX	1,1	1,5	500	8,4	VORTEX	X		X		X	X
			SINGLEBOX PLUS DL 125	1,5	2	700	21,9	SINGLE CHANNEL	X		X		X	X
	SINGLEBOX PLUS DLV 115		1,5	2	600	13,1	VORTEX	X		X		X	X	

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### Notes

Single-phase pumps come with start capacitor, overload protection and float switch. Versions with control panel and accessories are available on request.

### SINGLEBOX PLUS WITH DOMO-DOMO VX ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

DOMO	PUMP TYPE	RATED POWER		Q = DELIVERY																	
				kW		HP		H = TOTAL HEAD METRES COLUMN OF WATER													
				l/min	m <sup>3</sup> /h	0	50	100	150	200	250	300	320	400	500	600	670				
				0	3	6	9	12	15	18	19,2	24	30	36	40,2						
	DOMO 7(T)	0,55	0,75	10,7	8,9	7,5	6,3	5,2	4,1	2,7	2,1										
	DOMO 10(T)	0,75	1	10,1	9,2	8,5	7,8	7,2	6,6	6,0	5,8	4,7	3,2								
	DOMO 15(T)	1,1	1,5	12,7	11,8	11,0	10,2	9,5	8,8	8,0	7,8	6,6	5,2	3,6							
	DOMO 20T	1,5	2	14,8	14,0	13,2	12,4	11,7	10,9	10,2	9,9	8,7	7,1	5,4	4,2						

DOMO VX	PUMP TYPE	RATED POWER		Q = DELIVERY																	
				kW		HP		H = TOTAL HEAD METRES COLUMN OF WATER													
				l/min	m <sup>3</sup> /h	0	80	100	150	175	200	225	260	300	400	450	550				
				0	4,8	6	9	10,5	12	13,5	15,6	18	24	27	33						
	DOMO 7VX(T)	0,55	0,75	9,1	7,1	6,6	5,1	4,4	3,7	3,0	2,0										
	DOMO 10VX(T)	0,75	1	7,7	7,3	7,1	6,7	6,5	6,2	5,9	5,4	4,8	3,1								
	DOMO 15VX(T)	1,1	1,5	9,1	8,8	8,6	8,3	8,0	7,8	7,5	7,1	6,5	4,8	3,7							
	DOMO 20VXT	1,5	2	11,0	10,6	10,5	10,2	9,9	9,7	9,5	9,1	8,6	7,0	6,1	3,8						

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ . sbox\_domo-domovx-2p50-en\_a\_th

### ELECTRICAL DATA TABLE

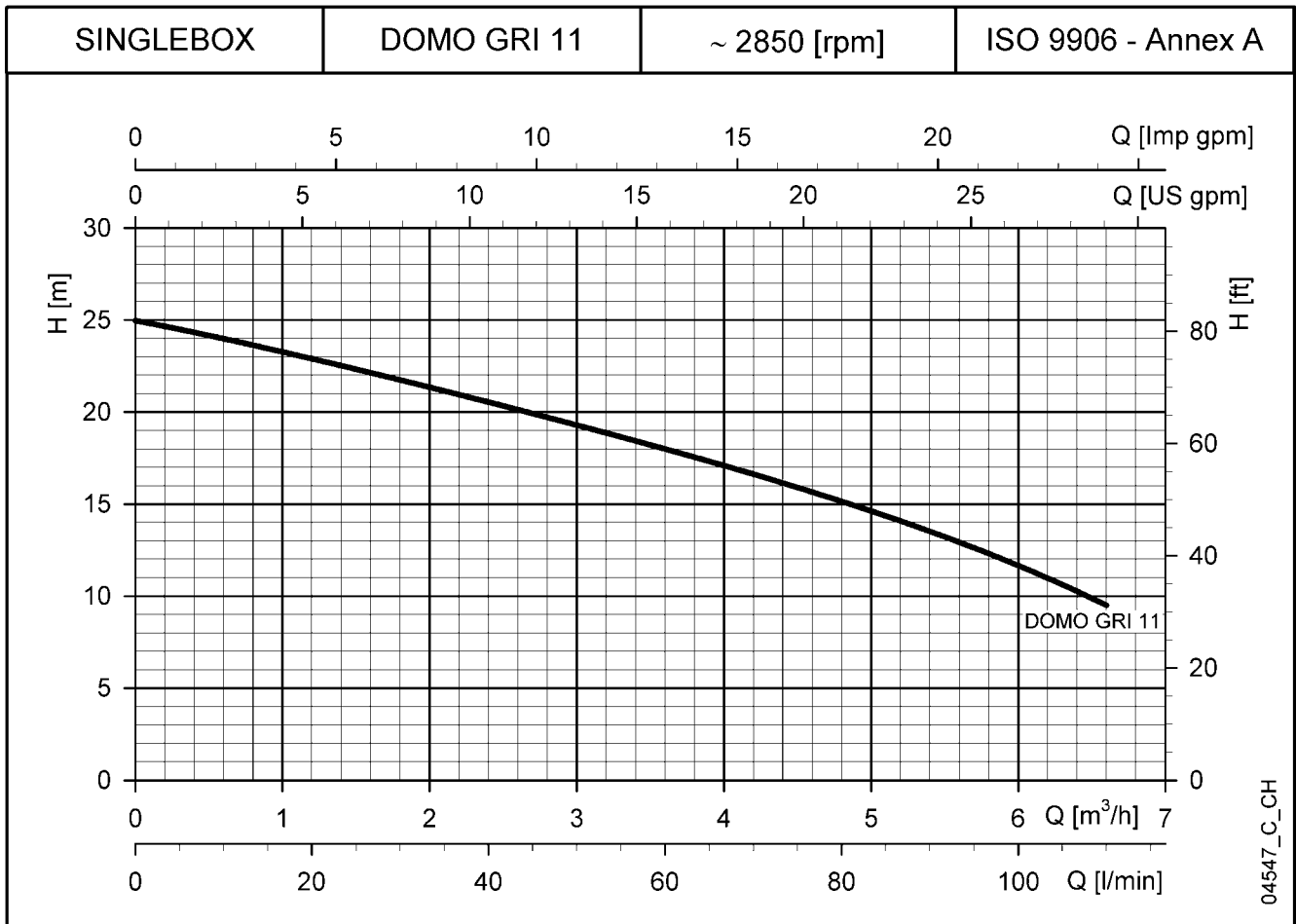
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	CAPACITOR
	kW	220-240 V A	$\mu\text{F} / 450 \text{ V}$
SINGLE-PHASE			
DOMO 7	0,8	3,94	16
DOMO 10	1,14	5,84	22
DOMO 15	1,58	7,02	30
-	-	-	-
DOMO 7VX	0,79	3,91	16
DOMO 10VX	1,15	5,88	22
DOMO 15VX	1,36	6,11	30
-	-	-	-

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	ABSORBED CURRENT*
	kW	220-240 V A	380-415 V A
THREE-PHASE			
DOMO 7T	0,73	2,58	1,49
DOMO 10T	1,09	4,09	2,36
DOMO 15T	1,49	4,73	2,73
DOMO 20T	1,96	6,6	3,81
DOMO 7VXT	0,71	2,56	1,48
DOMO 10VXT	1,1	4,09	2,36
DOMO 15VXT	1,26	4,31	2,49
DOMO 20VXT	1,74	6,22	3,59

\*Maximum values within operating range.

sbox\_domo-domovx-2p50-en\_a\_th

## SINGLEBOX PLUS WITH DOMO GRI ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

DOMO GRI	PUMP TYPE	RATED POWER		Q = DELIVERY											
				H = TOTAL HEAD METRES COLUMN OF WATER											
				l/min	0	15	30	40	50	60	70	80	90	100	110
				m <sup>3</sup> /h	0	0,9	1,8	2,4	3	3,6	4,2	4,8	5,4	6	6,6
		kW	HP												
	DOMO GRI 11	1,1	1,5	25,0	23,5	21,7	20,5	19,3	18,0	16,6	15,2	13,5	11,7	9,5	
	DOMO GRI 11T														

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

sbox\_domo-gri-2p50-en\_b\_th

### ELECTRICAL DATA TABLE

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	CAPACITOR
SINGLE-PHASE		220-240 V	
	kW	A	$\mu\text{F} / 450 \text{ V}$
DOMO GRI 11	1,5	6,84	30

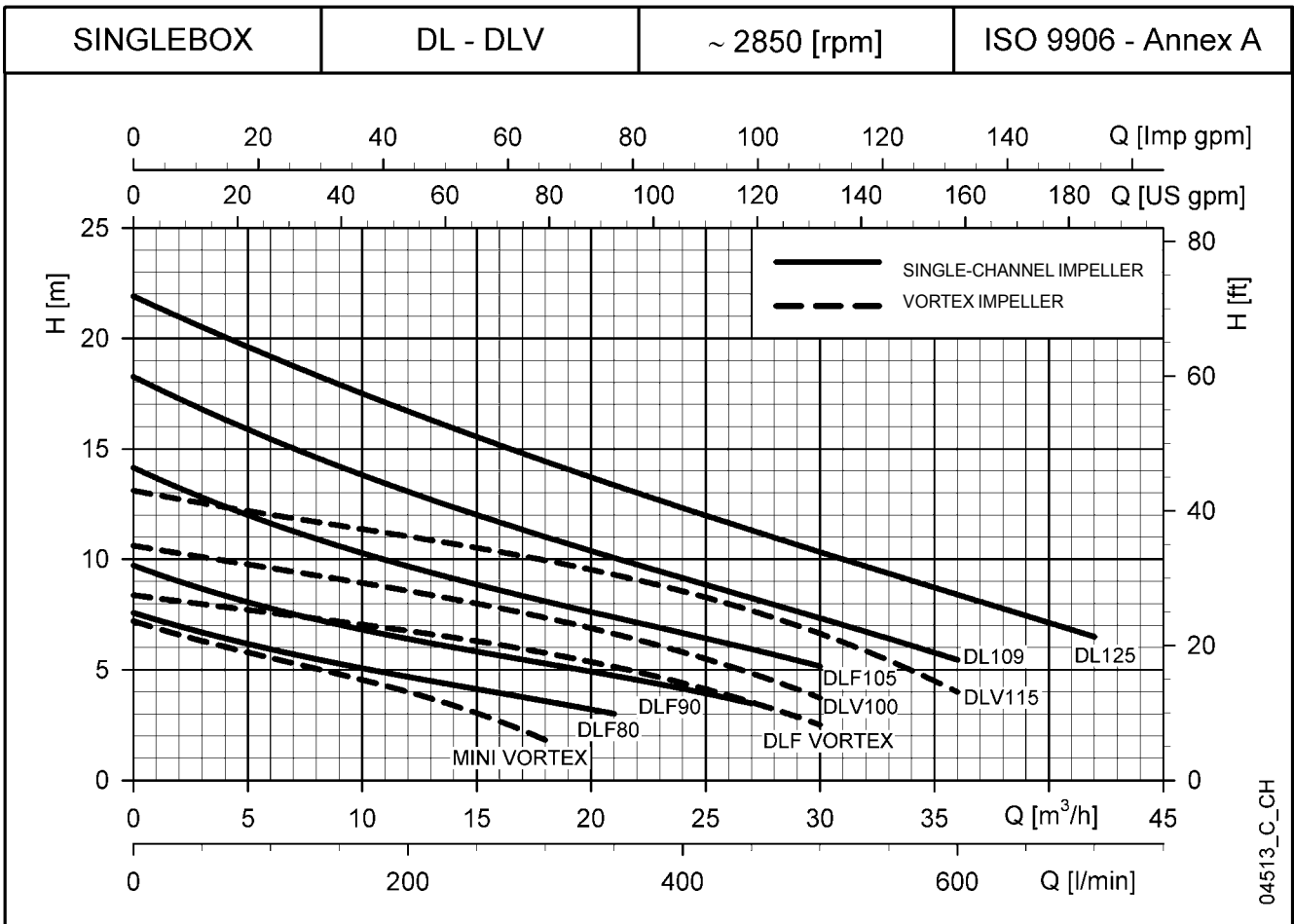
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	ABSORBED CURRENT*
THREE-PHASE		220-240 V	380-415 V
	kW	A	A
DOMO GRI 11T	1,39	4,55	2,63

\*Maximum values within operating range.

sbox\_domo-gri-2p50-en\_a\_te



## SINGLEBOX PLUS WITH DL-DLV ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



04513\_C\_CH

### HYDRAULIC PERFORMANCE TABLE

DL	PUMP TYPE	RATED POWER		Q = DELIVERY													
				H = TOTAL HEAD METRES COLUMN OF WATER													
				l/min m³/h	0	100	150	200	250	300	350	400	450	500	600	700	
		kW	HP	0	6	9	12	15	18	21	24	27	30	36	42		
	DLF(M) 80	0,6	0,8	7,6	5,9	5,3	4,7	4,1	3,6	3,0							
	DLF(M) 90	0,6	0,8	9,7	7,8	7,0	6,4	5,8	5,3	4,7	4,1	3,5					
	DLF 105	1,1	1,5	14,1	11,6	10,6	9,7	8,9	8,1	7,4	6,7	5,9	5,2				
	DL(M) 109	1,1	1,5	18,3	15,4	14,2	13,1	12,0	11,0	10,1	9,2	8,2	7,3	5,4			
	DL 125	1,5	2	21,9	19,2	17,9	16,7	15,5	14,4	13,4	12,3	11,3	10,3	8,4	6,5		

DLV	PUMP TYPE	RATED POWER		Q = DELIVERY													
				H = TOTAL HEAD METRES COLUMN OF WATER													
				l/min m³/h	0	50	100	150	200	250	300	350	400	450	500	600	
		kW	HP	0	3	6	9	12	15	18	21	24	27	30	36		
	MINI VORTEX(M)	0,6	0,8	7,2	6,3	5,5	4,8	4,0	3,0	1,8							
	DLF VORTEX	1,1	1,5	8,4	8,0	7,6	7,2	6,8	6,3	5,8	5,1	4,4	3,5	2,5			
	DLV(M) 100	1,1	1,5	10,6	10,1	9,6	9,1	8,6	8,0	7,4	6,6	5,8	4,8	3,7			
	DLV 115	1,5	2	13,1	12,5	12,0	11,5	11,0	10,5	9,9	9,3	8,5	7,7	6,6	4,0		

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

sbox\_dl-dlv-2p50-en\_b\_th

### ELECTRICAL DATA TABLE

PUMP TYPE	ABSORBED POWER*		CAPACITOR
	ABSORBED POWER*	ABSORBED CURRENT*	
SINGLE-PHASE	kW	220-240 V A	$\mu\text{F} / 450 \text{ V}$
DLFM 80	0,79	3,91	25
DLFM 90	0,89	4,27	25
-	-	-	-
DLM109	1,55	6,87	35
-	-	-	-
MINI VORTEX M	1,05	4,82	25
-	-	-	-
DLVM100	1,64	7,3	35
-	-	-	-

PUMP TYPE	ABSORBED POWER*		ABSORBED CURRENT*
	ABSORBED POWER*	ABSORBED CURRENT*	
THREE-PHASE	kW	220-240 V A	380-415 V A
DLF 80	0,80	-	2,09
DLF 90	0,92	3,81	2,20
DLF 105	1,43	4,66	2,69
DL 109	1,54	5,44	3,14
DL 125	2,14	6,58	3,80
MINI VORTEX	1,10	-	2,36
DLF VORTEX	1,66	5,11	2,95
DLV 100	1,65	5,63	3,25
DLV 115	2,25	6,81	3,93

\*Maximum values within operating range.

sbox\_dl-dlv-2p50-en\_b\_te



## Prefabricated lifting station for wastewater in compliance with EN 12050-1&2 standard

### DOUBLEBOX PLUS Series



#### MARKET SECTORS

DOMESTIC.

#### APPLICATIONS

- Suitable for delivering gray water and wastewater to main sewer lines located at a higher level, or where gravity drainage is not possible.

#### SPECIFICATIONS

- The standard station is equipped with:
  - polyethylene **basin** with a capacity of 550 litres, equipped with two threaded pedestrian covers (100 kg max).
  - **Cable glands** for power supply cables (and floats).
  - 2x Rp 1 1/2 or Rp 2 **delivery pipes** with fast connections and ring nuts for easy disassembly of the pumps or with sliding device.
  - **8 fast connections:**
    - 4 x DN110 for inlet,
    - 2 x DN50 for ventilation and
    - 2 x DN65 for cable connection.
  - **1 x DN50** fast connection for the manual pump.
  - 2x **DOMO** or **DL submersible pumps**, vortex, channel impeller type or with grinder device.
  - QDR2 **control panel** for three-phase versions.
  - **3 rubber seals:**
    - 1 x DN110, 1 x DN50 and
    - 1 x DN65 mm.
- Versions with **vortex impeller** or with **grinder device** suitable for:
  - clean water, effluent, sewage containing suspended solids and fibres.
- Versions with **single or twin channel impeller** suitable for:
  - clean water, effluent, sewage containing suspended solids but not containing fibres.
- Special versions equipped with delivery pipes, ball check valve and gate valve.
- Special versions equipped with sliding device and non-return ball valve.
- **Doublebox plus** can be installed on the floor or buried in a suitable structure following instructions in the "Instructions and Operative Manual".
- **Easy installation:**
  - installation is quick and easy:
    - for the single-phase versions you just connect the pipes and the electrical cables; for the three-phase versions you also need to connect the control panel.
  - The new **Doublebox plus** is provided with side handles for ease of handling.
  - Pre-installed delivery pump and unions.
- **Ecological solution:**
  - tank made from 100% recyclable polyethylene.
  - Airtight anti-pollution tank, pursuant to European standard EN 12050.
- **Easy maintenance and repair.**
  - Tried and tested pump technology.
  - Pump quick and easy to remove thanks to the ring nut located near the cover.

#### ACCESSORIES

- Available accessories:
  - Ball check valves.
  - Alarm kit.
  - Manual pump + seal.
  - Seals kit.

#### IDENTIFICATION CODE



EXAMPLE : DOUBLEBOX PLUS DOMO 10VX SL/BV  
Lifting station DOUBLEBOX PLUS series with DOMO 10VX submersible electric pump with sliding device and non-return valve.

## DOUBLEBOX PLUS SERIES CHART

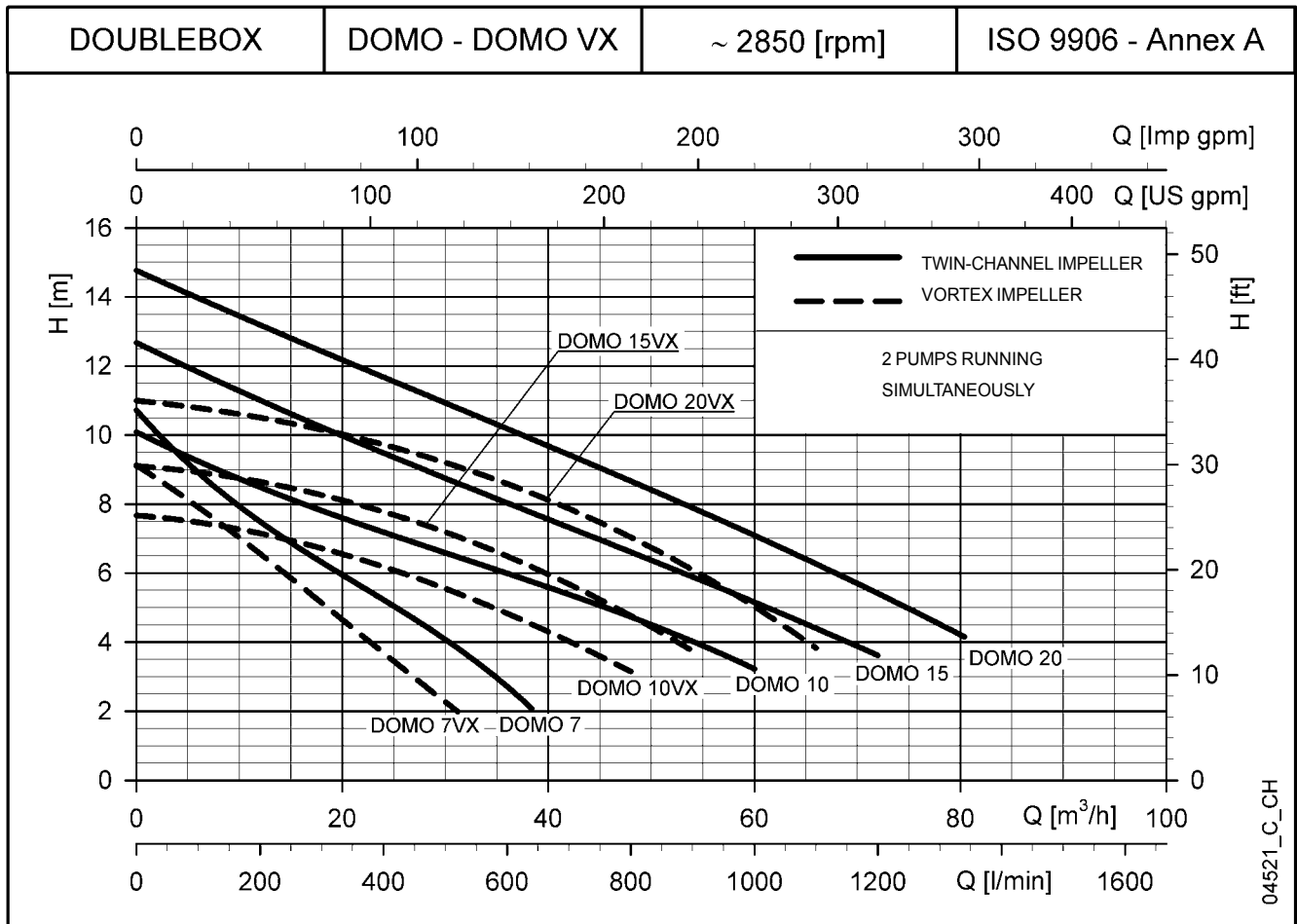
DOUBLEBOX PLUS		CHARACTERISTICS					FEATURED COMPONENTS			VERSIONS																												
		kW	HP	Q max (l/min)	H max (m)	Impeller type	Control panel	Float pre-assembled on pump	Float (10 m cable)	Standard with ring nut	Ring nut, non-return valve and gate valve	Standard	With non-return valve																									
<b>DOUBLEBOX PLUS</b>  DATA REFERS TO 2 PUMPS RUNNING SIMULTANEOUSLY		<b>FIXED PVC PIPE FITTINGS</b>											SINGLE-PHASE	2x0,55	2x0,75	640	10,7	TWIN CHANNEL		X		X	X															
														2x0,55	2x0,75	520	9,1	VORTEX		X		X	X															
														2x0,75	2x1	1000	10,1	TWIN CHANNEL		X		X	X															
														2x0,75	2x1	800	7,7	VORTEX		X		X	X															
														2x1,1	2x1,5	1200	12,7	TWIN CHANNEL		X		X	X															
														2x1,1	2x1,5	900	9,1	VORTEX		X		X	X															
														2x1,1	2x1,5	220	25	GRINDER		X		X	X															
													2x0,55	2x0,75	640	10,7	TWIN CHANNEL	X		X	X	X																
													2x0,55	2x0,75	520	9,1	VORTEX	X		X	X	X																
													2x0,75	2x1	1000	10,1	TWIN CHANNEL	X		X	X	X																
													2x0,75	2x1	800	7,7	VORTEX	X		X	X	X																
													2x1,1	2x1,5	1200	12,7	TWIN CHANNEL	X		X	X	X																
													2x1,1	2x1,5	900	9,1	VORTEX	X		X	X	X																
													2x1,5	2x2	1340	14,8	TWIN CHANNEL	X		X	X	X																
													2x1,5	2x2	1100	11	VORTEX	X		X	X	X																
													2x1,1	2x1,5	220	25	GRINDER	X		X	X	X																
													<b>DOUBLEBOX PLUS</b>  DATA REFERS TO 2 PUMPS RUNNING SIMULTANEOUSLY		<b>LOWERING DEVICE</b>											SINGLE-PHASE	2x0,75	2x1	1000	10,1	TWIN CHANNEL		X				X	X
																											2x0,75	2x1	800	7,7	VORTEX		X				X	X
																											2x1,1	2x1,5	1200	12,7	TWIN CHANNEL		X				X	X
																											2x1,1	2x1,5	900	9,1	VORTEX		X				X	X
2x1,1	2x1,5	220	25	GRINDER		X				X	X																											
2x0,75	2x1	1000	10,1	TWIN CHANNEL	X		X			X	X																											
2x0,75	2x1	800	7,7	VORTEX	X		X			X	X																											
2x1,1	2x1,5	1200	12,7	TWIN CHANNEL	X		X			X	X																											
2x1,1	2x1,5	900	9,1	VORTEX	X		X			X	X																											
2x1,5	2x2	1340	14,8	TWIN CHANNEL	X		X			X	X																											
2x1,5	2x2	1100	11	VORTEX	X		X			X	X																											
2x1,1	2x1,5	220	25	GRINDER	X		X			X	X																											
2x0,6	2x0,8	700	7,6	SINGLE CHANNEL		X				X	X																											
2x0,6	2x0,8	900	9,7	SINGLE CHANNEL		X				X	X																											
2x0,6	2x0,8	600	7,2	VORTEX		X				X	X																											
2x1,1	2x1,5	1200	18,3	SINGLE CHANNEL		X				X	X																											
2x1,1	2x1,5	1000	10,6	VORTEX		X				X	X																											
2x0,6	2x0,8	700	7,6	SINGLE CHANNEL	X		X			X	X																											
2x0,6	2x0,8	900	9,7	SINGLE CHANNEL	X		X			X	X																											
2x0,6	2x0,8	600	7,2	VORTEX	X		X			X	X																											
2x1,1	2x1,5	1000	14,1	SINGLE CHANNEL	X		X			X	X																											
2x1,1	2x1,5	1200	18,3	SINGLE CHANNEL	X		X			X	X																											
2x1,1	2x1,5	1000	10,6	VORTEX	X		X			X	X																											
2x1,1	2x1,5	1000	8,4	VORTEX	X		X			X	X																											
2x1,5	2x2	1400	21,9	SINGLE CHANNEL	X		X			X	X																											
2x1,5	2x2	1200	13,1	VORTEX	X		X			X	X																											

dbxplus\_modelli-en\_c\_sc

### Notes

Single-phase pumps come with start capacitor, overload protection and float switch. Versions with control panel and accessories are available on request.

## DOUBLEBOX PLUS WITH DOMO-DOMO VX ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

DOMO	PUMP TYPE	RATED POWER		Q = DELIVERY												
				H = TOTAL HEAD METRES COLUMN OF WATER												
				l/min	0	100	200	300	400	500	600	640	800	1000	1200	1340
				m <sup>3</sup> /h	0	6	12	18	24	30	36	38,4	48	60	72	80,4
		kW	HP													
	DOMO 7(T)	2x0,55	2x0,75		10,7	8,9	7,5	6,3	5,2	4,1	2,7	2,1				
	DOMO 10(T)	2x0,75	2x1		10,1	9,2	8,5	7,8	7,2	6,6	6,0	5,8	4,7	3,2		
	DOMO 15(T)	2x1,1	2x1,5		12,7	11,8	11,0	10,2	9,5	8,8	8,0	7,8	6,6	5,2	3,6	
	DOMO 20T	2x1,5	2 x 2		14,8	14,0	13,2	12,4	11,7	10,9	10,2	9,9	8,7	7,1	5,4	4,2

DOMO VX	PUMP TYPE	RATED POWER		Q = DELIVERY												
				H = TOTAL HEAD METRES COLUMN OF WATER												
				l/min	0	160	200	300	350	400	450	520	600	800	900	1100
				m <sup>3</sup> /h	0	9,6	12	18	21	24	27	31,2	36	48	54	66
		kW	HP													
	DOMO 7VX(T)	2x0,55	2x0,75		9,1	7,1	6,6	5,1	4,4	3,7	3,0	2,0				
	DOMO 10VX(T)	2x0,75	2x1		7,7	7,3	7,1	6,7	6,5	6,2	5,9	5,4	4,8	3,1		
	DOMO 15VX(T)	2x1,1	2x1,5		9,1	8,8	8,6	8,3	8,0	7,8	7,5	7,1	6,5	4,8	3,7	
	DOMO 20VXT	2x1,5	2 x 2		11,0	10,6	10,5	10,2	9,9	9,7	9,5	9,1	8,6	7,0	6,1	3,8

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ . dbox\_domo-domovx-2p50-en\_a\_th

### ELECTRICAL DATA TABLE

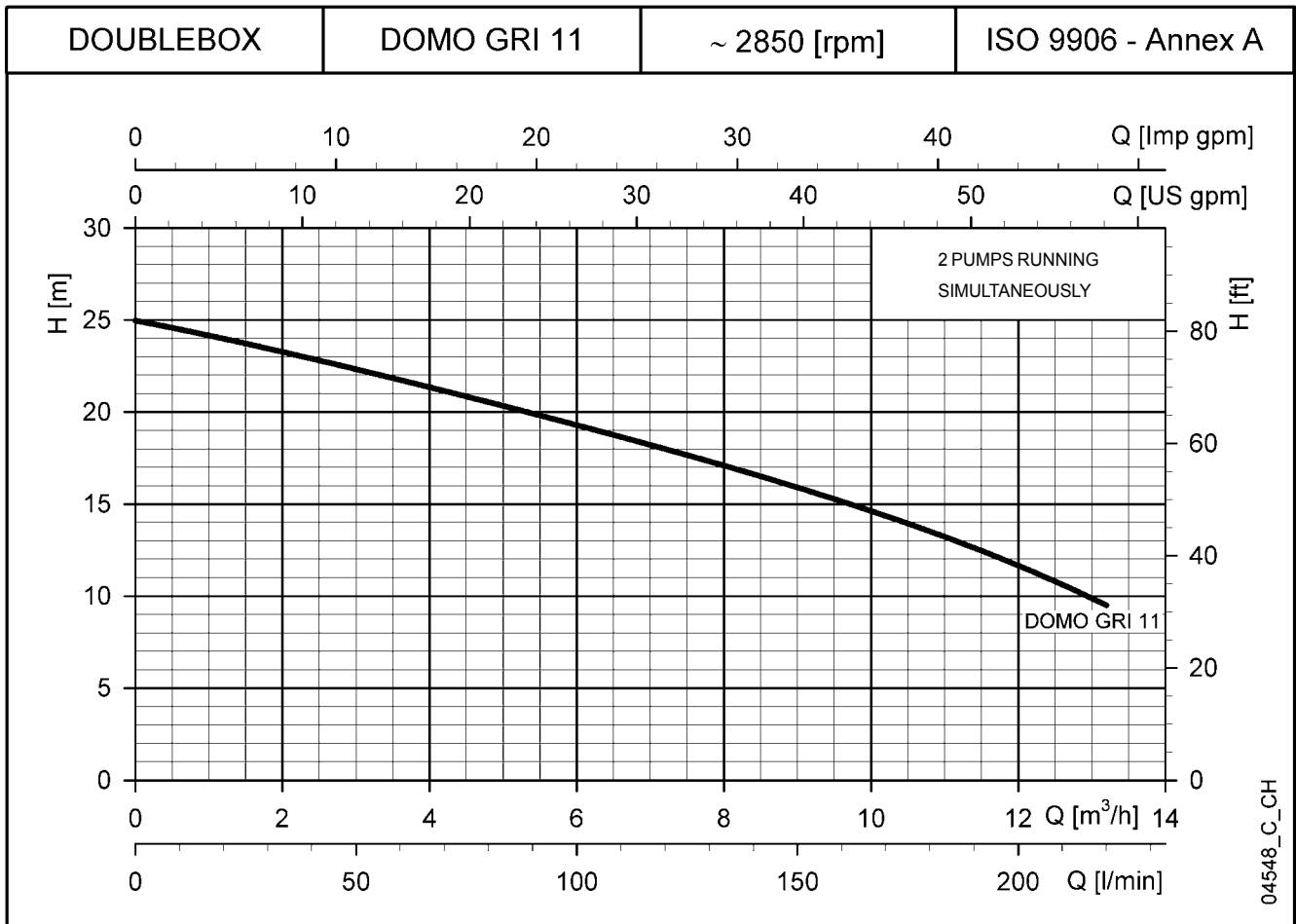
PUMP TYPE	ABSORBED POWER*		CAPACITOR
	SINGLE-PHASE		
	kW	A	$\mu\text{F} / 450 \text{ V}$
DOMO 7	2x0,8	2x3,94	2x16
DOMO 10	2x1,14	2x5,84	2x22
DOMO 15	2x1,58	2x7,02	2x30
-	-	-	-
DOMO 7VX	2x0,79	2x3,91	2x16
DOMO 10VX	2x1,15	2x5,88	2x22
DOMO 15VX	2x1,36	2x6,11	2x30
-	-	-	-

PUMP TYPE	ABSORBED POWER*		
	THREE PHASE		
	kW	A	A
DOMO 7T	2x0,73	2x2,58	2x1,49
DOMO 10T	2x1,09	2x4,09	2x2,36
DOMO 15T	2x1,49	2x4,73	2x2,73
DOMO 20T	2x1,96	2x6,6	2x3,81
DOMO 7VXT	2x0,71	2x2,56	2x1,48
DOMO 10VXT	2x1,1	2x4,09	2x2,36
DOMO 15VXT	2x1,26	2x4,31	2x2,49
DOMO 20VXT	2x1,74	2x6,22	2x3,59

\*Maximum values within operating range.

dbox\_domo-domovx-2p50-en\_a\_te

## DOUBLEBOX PLUS WITH DOMO GRI ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

DOMO GRI	PUMP TYPE	RATED POWER		Q = DELIVERY														
				kW		HP		l/min	30	60	80	100	120	140	160	180	200	220
				0	30	60	80	100	120	140	160	180	200	220				
				25,0	23,5	21,7	20,5	19,3	18,0	16,6	15,2	13,5	11,7	9,5				

H = TOTAL HEAD METRES COLUMN OF WATER

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

dbox\_domo-gri-2p50-en\_b\_th

### ELECTRICAL DATA TABLE

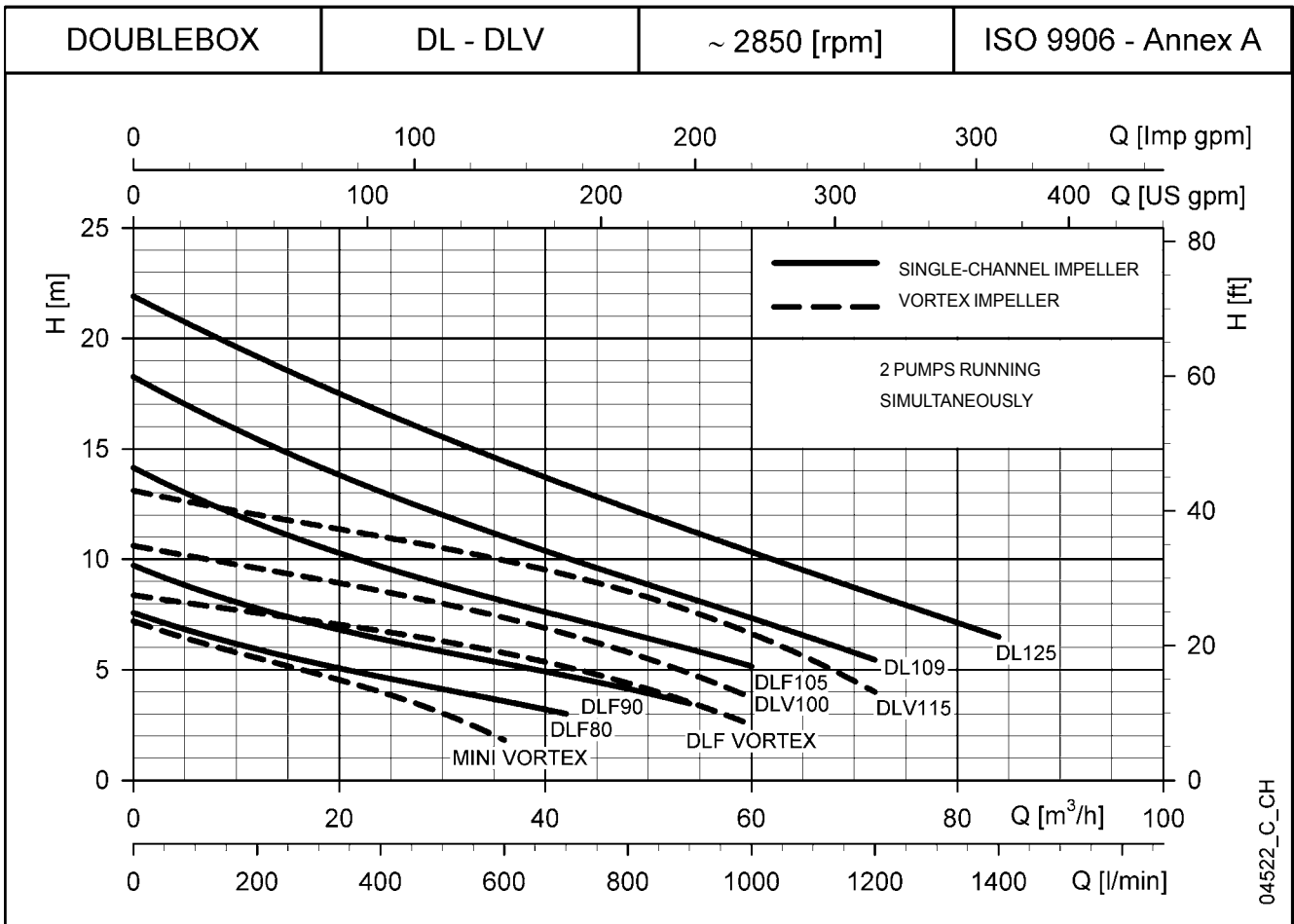
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	CAPACITOR
SINGLE-PHASE	kW	220-240 V A	$\mu\text{F} / 450 \text{ V}$
DOMO GRI11	2x1,5	2x6,84	2x30

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	ABSORBED CURRENT*
THREE-PHASE	kW	220-240 V A	380-415 V A
DOMO GRI11T	2x1,39	2x4,55	2x2,63

\*Maximum values within operating range.

dbox\_domo-gri-2p50-en\_a\_te

## DOUBLEBOX PLUS WITH DL-DLV ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

DL	PUMP TYPE	RATED POWER		Q = DELIVERY													
				H = TOTAL HEAD METRES COLUMN OF WATER													
				l/min	0	200	300	400	500	600	700	800	900	1000	1200	1400	
		kW	HP	m³/h	0	12	18	24	30	36	42	48	54	60	72	84	
	DLF(M) 80	2x0,6	2x0,8	7,6	5,9	5,3	4,7	4,1	3,6	3,0							
	DLF(M) 90	2x0,6	2x0,8	9,7	7,8	7,0	6,4	5,8	5,3	4,7	4,1	3,5					
	DLF 105	2x1,1	2x1,5	14,1	11,6	10,6	9,7	8,9	8,1	7,4	6,7	5,9	5,2				
	DL(M) 109	2x1,1	2x1,5	18,3	15,4	14,2	13,1	12,0	11,0	10,1	9,2	8,2	7,3	5,4			
	DL 125	2x1,5	2x2	21,9	19,2	17,9	16,7	15,5	14,4	13,4	12,3	11,3	10,3	8,4	6,5		

DLV	PUMP TYPE	RATED POWER		Q = DELIVERY												
				H = TOTAL HEAD METRES COLUMN OF WATER												
				l/min	0	100	200	300	400	500	600	700	800	900	1000	1200
		kW	HP	m³/h	0	6	12	18	24	30	36	42	48	54	60	72
	MINI VORTEX(M)	2x0,6	2x0,8	7,2	6,3	5,5	4,8	4,0	3,0	1,8						
	DLF VORTEX	2x1,1	2x1,5	8,4	8,0	7,6	7,2	6,8	6,3	5,8	5,1	4,4	3,5	2,5		
	DLV(M) 100	2x1,1	2x1,5	10,6	10,1	9,6	9,1	8,6	8,0	7,4	6,6	5,8	4,8	3,7		
	DLV 115	2x1,5	2x2	13,1	12,5	12,0	11,5	11,0	10,5	9,9	9,3	8,5	7,7	6,6	4,0	

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

dbox\_dl-dlv-2p50-en\_b\_th

### ELECTRICAL DATA TABLE

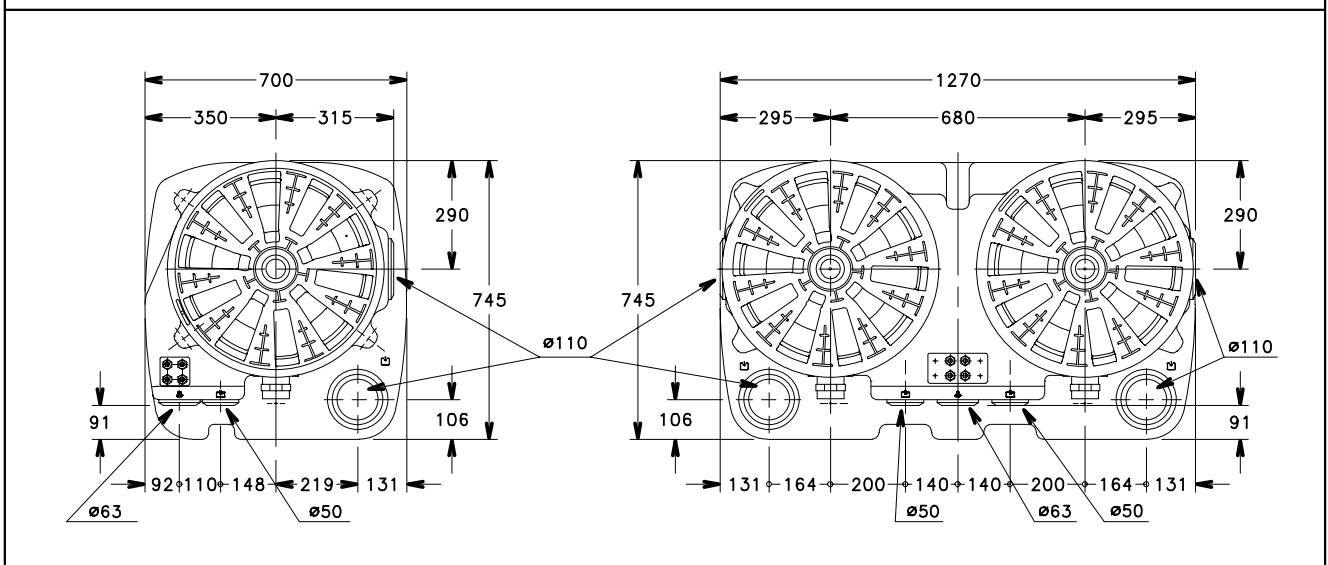
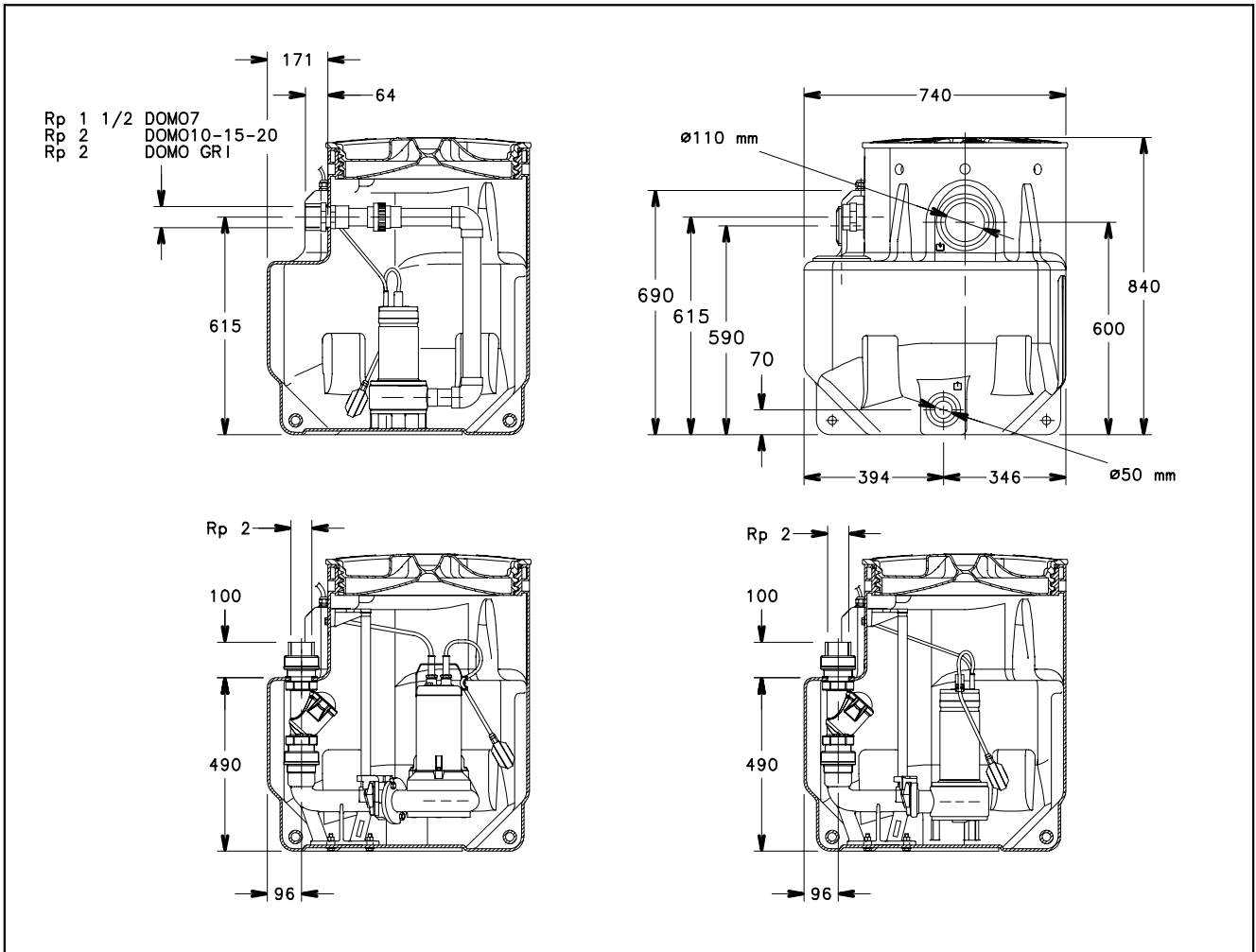
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	CAPACITOR
<b>SINGLE-PHASE</b>	<b>kW</b>	<b>A</b>	
DLFM 80	2x0,79	2x3,91	2x25
DLFM 90	2x0,89	2x4,27	2x25
-	-	-	-
DLM109	2x1,55	2x6,87	2x35
-	-	-	-
MINI VORTEX M	2x1,05	2x4,82	2x25
-	-	-	-
DLVM100	2x1,64	2x7,3	2x35
-	-	-	-

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	ABSORBED CURRENT*
<b>THREE-PHASE</b>	<b>kW</b>	<b>A</b>	<b>A</b>
DLF 80	2x0,8	-	2x2,09
DLF 90	2x0,92	2x3,81	2x2,2
DLF 105	2x1,43	2x4,66	2x2,69
DL 109	2x1,54	2x5,44	2x3,14
DL 125	2x2,14	2x6,58	2x3,8
MINI VORTEX	2x1,1	-	2x2,36
DLF VORTEX	2x1,66	2x5,11	2x2,95
DLV 100	2x1,65	2x5,63	2x3,25
DLV 115	2x2,25	2x6,81	2x3,93

\*Maximum values within operating range.

dbox\_dl-dlv-2p50-en\_b\_te

## SINGLEBOX PLUS - DOUBLEBOX PLUS SERIES DIMENSIONS AND WEIGHTS



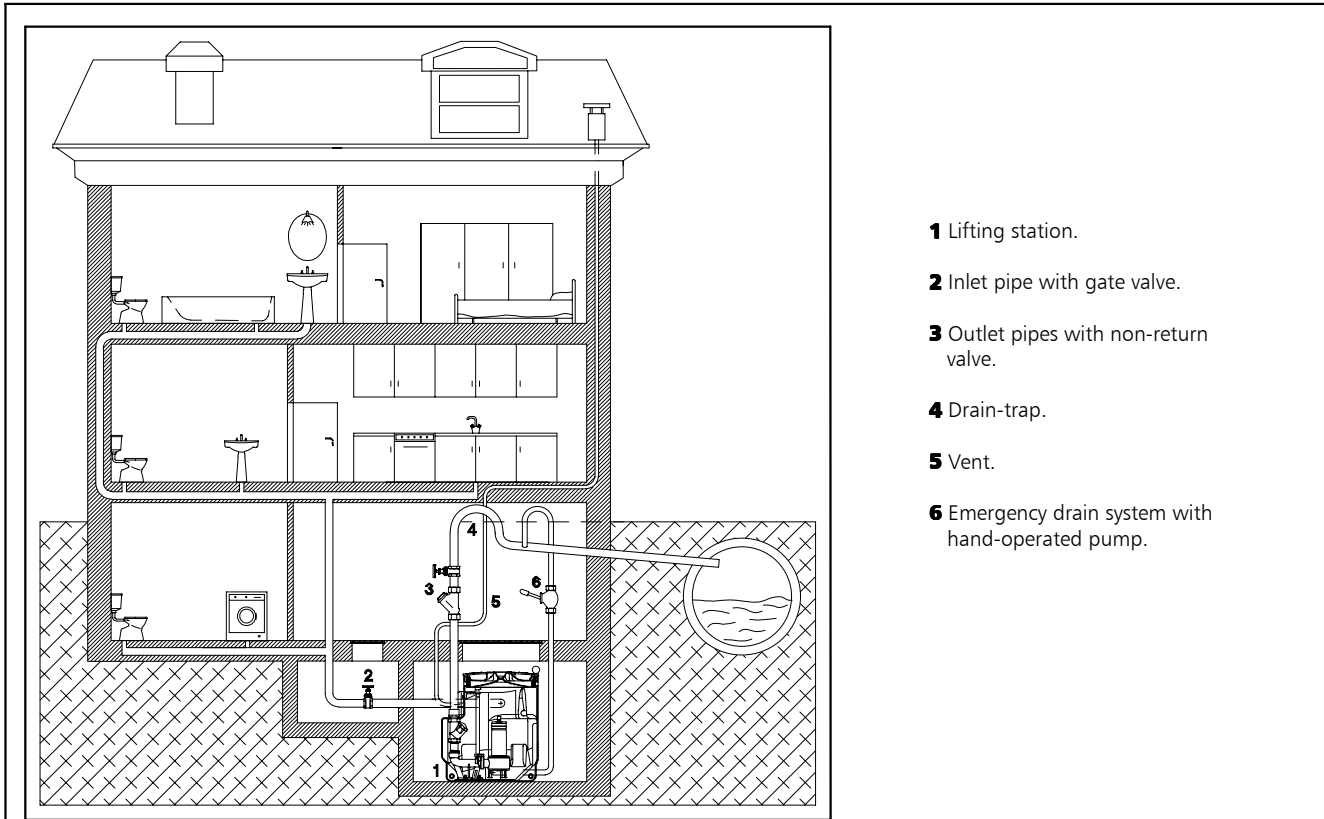
MODEL	WEIGHT (kg)			
	PVC	PVC BV	SL	SL BV
SINGLEBOX PLUS	23	27	32	36
DOUBLEBOX PLUS	44	51	62	69

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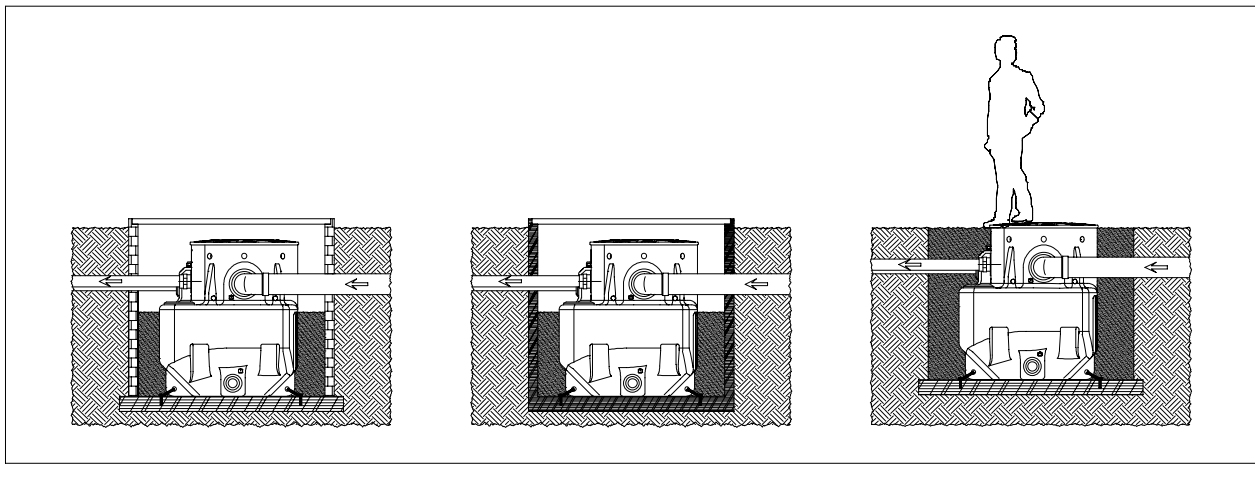
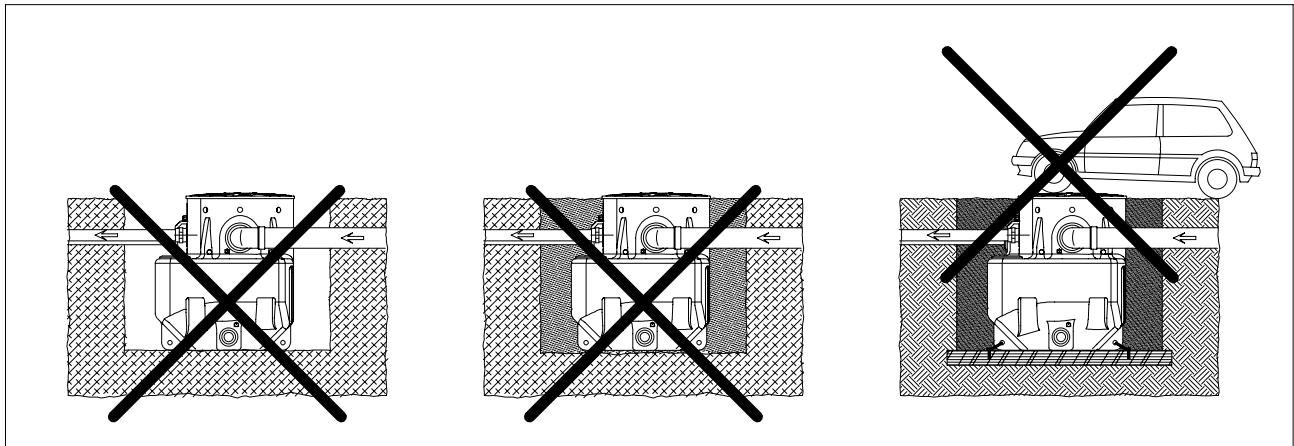
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**SINGLEBOX PLUS - DOUBLEBOX PLUS SERIES  
APPLICATION EXAMPLES**



- 1** Lifting station.
- 2** Inlet pipe with gate valve.
- 3** Outlet pipes with non-return valve.
- 4** Drain-trap.
- 5** Vent.
- 6** Emergency drain system with hand-operated pump.



04543\_B\_SC

## SINGLEBOX PLUS - DOUBLEBOX PLUS SERIES CERTIFICATION

# MINIBOX MIDIBOX SINGLEBOX PLUS DOUBLEBOX PLUS

Station	Use
MINIBOX DOC3	Clean water
MINIBOX DOC7	Clean water
MINIBOX DOC7VX	Clean water
MIDIBOX DOC3	Clean water
MIDIBOX DOC7	Clean water
MIDIBOX DOC7T	Clean water
MIDIBOX DOC7VX	EN 12050 - 2
MIDIBOX DOC7VXT	EN 12050 - 2
MIDIBOX DOMO7	EN 12050 - 2
MIDIBOX DOMO7T	EN 12050 - 2
MIDIBOX DOMO7VX	EN 12050 - 2
MIDIBOX DOMO7VXT	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 7	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 7T	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 7VX	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 7VXT	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 10	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 10T	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 10VX	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 10VXT	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 15	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 15T	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 15VX	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 15VXT	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 20T	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO 20VXT	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO GRI 11	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DOMO GRI 11T	EN 12050 - 1
SINGLEBOX PLUS / DOUBLEBOX PLUS DLFM 80	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DLF 80	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DLFM 90	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DLF 90	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS MINI VORTEX M	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS MINI VORTEX	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DLF 105	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DLM 109	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DL 109	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DLVM 100	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DLV 100	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DLF VORTEX	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DL 125	EN 12050 - 2
SINGLEBOX PLUS / DOUBLEBOX PLUS DLV 115	EN 12050 - 2

## Prefabricated tanks for lifting stations for wastewater handling according to EN 12050-1 standard

### MAXIBOX PLUS Series



#### MARKET SECTORS

DOMESTIC, COMMERCIAL, INDUSTRIAL.

#### APPLICATIONS

- Suitable for delivering gray water and wastewater to main sewer lines located at a higher level, or where gravity drainage is not possible.

#### SPECIFICATIONS

- The standard tank is equipped with the following components, already assembled:
  - polyethylene **basin** with a capacity of 1200 or 1900 litres.
  - Threaded **cover**.
  - 2 1/2" or 2" **delivery pipes**.
  - **2** DN65 or DN50 **sliding device systems**.
  - **2** ball check **valves**.
  - **2** gate **valves**.
  - Float switches **bracket**.

The supply includes also:

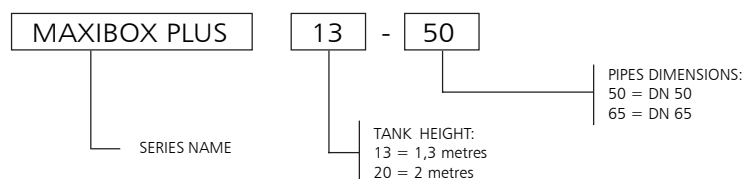
- **Cable glands** for power supply cables and floats.
- **1 rubber seal** for DN160 inlet connection.
- The standard tank doesn't include the pumps, so it **must be completed with**:
  - 2 submersible pumps DOMO, DOMO-GRI, DL, GLS 50/65, GLV 50/65. that have to be ordered separately.
  - Sliding devices guideclaws.
- Selecting the right pump:
  - The pumps with Vortex, Self-cleaning or Grinder impellers are suitable for clean water, effluent and sewage handling that contain suspended solids and fiber materials.
  - The pumps with single or twin channel impellers are suitable for clean water, effluent and sewage handling that contain suspended solids but not fibres.

- Maxibox Plus **must be installed buried** outside the building according to the indications in the installation and operating instructions manual.
- **Ecological solution**:
  - tank made of 100% recyclable polyethylene.
  - watertight anti-pollution tank, according to the EN 12050-1 European standard.
- **Easy maintenance and repair** thanks to the sliding device systems.

#### ACCESSORIES

- Available accessories:
  - Cover clamping system.
  - Float switches.
  - Control panels.
  - Collar extension h 350 mm.
  - Chains.
  - Shackles.
  - Seal kit for DN110 inlet connection.

#### IDENTIFICATION CODE



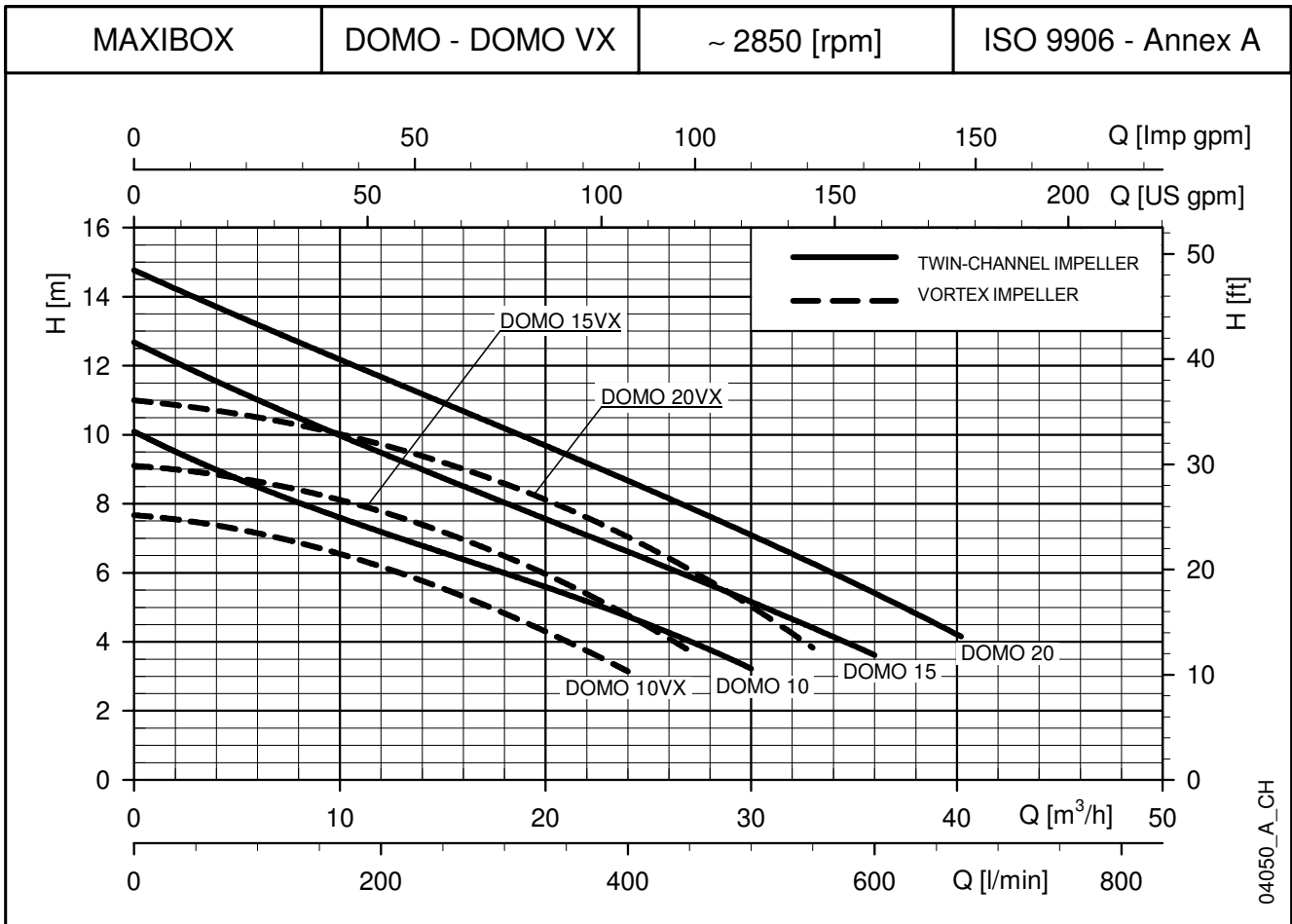
EXAMPLE : MAXIBOX PLUS 13 - 50  
MAXIBOX PLUS series tank, tank height 1,3 metres, pipe dimension DN 50.

**MAXIBOX PLUS SERIES  
CHART**

MAXIBOX PLUS	DN	kW	Q max (l/min)	H max (m)	Impeller type	Single-phase pumps in version with / without pre-assembled float switch	Maxibox Plus		
							Maxibox Plus 13 - 50	Maxibox Plus 20 - 50	Maxibox Plus 20 - 65
DOMO 10(T)	50	0,75	500	10,1	TWIN CHANNEL	X	X	X	
DOMO 10VX(T)	50	0,75	400	7,7	VORTEX	X	X	X	
DOMO 15(T)	50	1,1	600	12,7	TWIN CHANNEL	X	X	X	
DOMO 15VX(T)	50	1,1	450	9,1	VORTEX	X	X	X	
DOMO 20T	50	1,5	670	14,8	TWIN CHANNEL		X	X	
DOMO 20VXT	50	1,5	550	11	VORTEX		X	X	
DOMO GRI 11(T)	50	1,1	110	25	GRINDER	X	X	X	
DLF(M) 80	50	0,6	350	7,6	SINGLE CHANNEL	X	X	X	
DLF(M) 90	50	0,6	450	9,7	SINGLE CHANNEL	X	X	X	
MINI VORTEX (M)	50	0,6	300	7,2	VORTEX	X	X	X	
DLF 105	50	1,1	500	14,1	SINGLE CHANNEL		X	X	
DL(M) 109	50	1,1	600	18,3	SINGLE CHANNEL	X	X	X	
DLV(M) 100	50	1,1	500	10,6	VORTEX	X	X	X	
DLF VORTEX	50	1,1	500	8,4	VORTEX		X	X	
DL 125	50	1,5	700	21,9	SINGLE CHANNEL		X	X	
DLV 115	50	1,5	600	13,1	VORTEX		X	X	
GLS 50-15-251-P	50	1,5	900	15,8	SINGLE CHANNEL		X	X	
GLS 50-16-253-P	50	1,6	900	16	SINGLE CHANNEL		X	X	
GLS 50-20-253-P	50	2	900	19	SINGLE CHANNEL		X	X	
GLS 50-24-253-P	50	2,4	900	23,8	SINGLE CHANNEL		X	X	
GLS 65-15-251	65	1,5	900	15	SINGLE CHANNEL				X
GLS 65-16-253	65	1,6	900	15,1	SINGLE CHANNEL				X
GLS 65-20-253	65	2	900	17,4	SINGLE CHANNEL				X
GLS 65-24-253	65	2,4	900	20,9	SINGLE CHANNEL				X
GLS 65-32-253	65	3,2	1500	25	SELF-CLEANING				X
GLS 65-42-253	65	4,2	1500	29,8	SELF-CLEANING				X
GLV 50-12-251-P	50	1,2	480	10,3	VORTEX		X	X	
GLV 50-15-251-P	50	1,5	480	13,4	VORTEX		X	X	
GLV 50-16-253-P	50	1,6	480	10,4	VORTEX		X	X	
GLV 50-20-253-P	50	2	480	13,6	VORTEX		X	X	
GLV 50-24-253-P	50	2,4	600	17,1	VORTEX		X	X	
GLV 65-15-251	65	1,5	600	9	VORTEX				X
GLV 65-16-253	65	1,6	600	9,1	VORTEX				X
GLV 65-20-253	65	2	750	11,7	VORTEX				X
GLV 65-24-253	65	2,4	900	14,6	VORTEX				X
GLV 65-32-253	65	3,2	900	16,9	VORTEX				X
GLV 65-42-253	65	4,2	1200	20,3	VORTEX				X

maxibox\_modelli-en\_b\_sc

## MAXIBOX PLUS COUPLED TO DOMO-DOMO VX ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

DOMO	PUMP TYPE	RATED POWER		Q = DELIVERY													
				l/min	0	50	100	150	200	250	300	320	400	500	600	670	
				m³/h	0	3	6	9	12	15	18	19,2	24	30	36	40,2	
				H = TOTAL HEAD METRES COLUMN OF WATER													
	DOMO 10(T)	0,75	1	10,1	9,2	8,5	7,8	7,2	6,6	6,0	5,8	4,7	3,2				
	DOMO 15(T)	1,1	1,5	12,7	11,8	11,0	10,2	9,5	8,8	8,0	7,8	6,6	5,2	3,6			
	DOMO 20T	1,5	2	14,8	14,0	13,2	12,4	11,7	10,9	10,2	9,9	8,7	7,1	5,4	4,2		

DOMO VX	PUMP TYPE	RATED POWER		Q = DELIVERY												
				l/min	0	80	100	150	175	200	225	260	300	400	450	550
				m³/h	0	4,8	6	9	10,5	12	13,5	15,6	18	24	27	33
				H = TOTAL HEAD METRES COLUMN OF WATER												
	DOMO 10VX(T)	0,75	1	7,7	7,3	7,1	6,7	6,5	6,2	5,9	5,4	4,8	3,1			
	DOMO 15VX(T)	1,1	1,5	9,1	8,8	8,6	8,3	8,0	7,8	7,5	7,1	6,5	4,8	3,7		
	DOMO 20VXT	1,5	2	11,0	10,6	10,5	10,2	9,9	9,7	9,5	9,1	8,6	7,0	6,1	3,8	

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

maxibox\_domo-domovx-2p50-en\_a\_th

### ELECTRICAL DATA TABLE

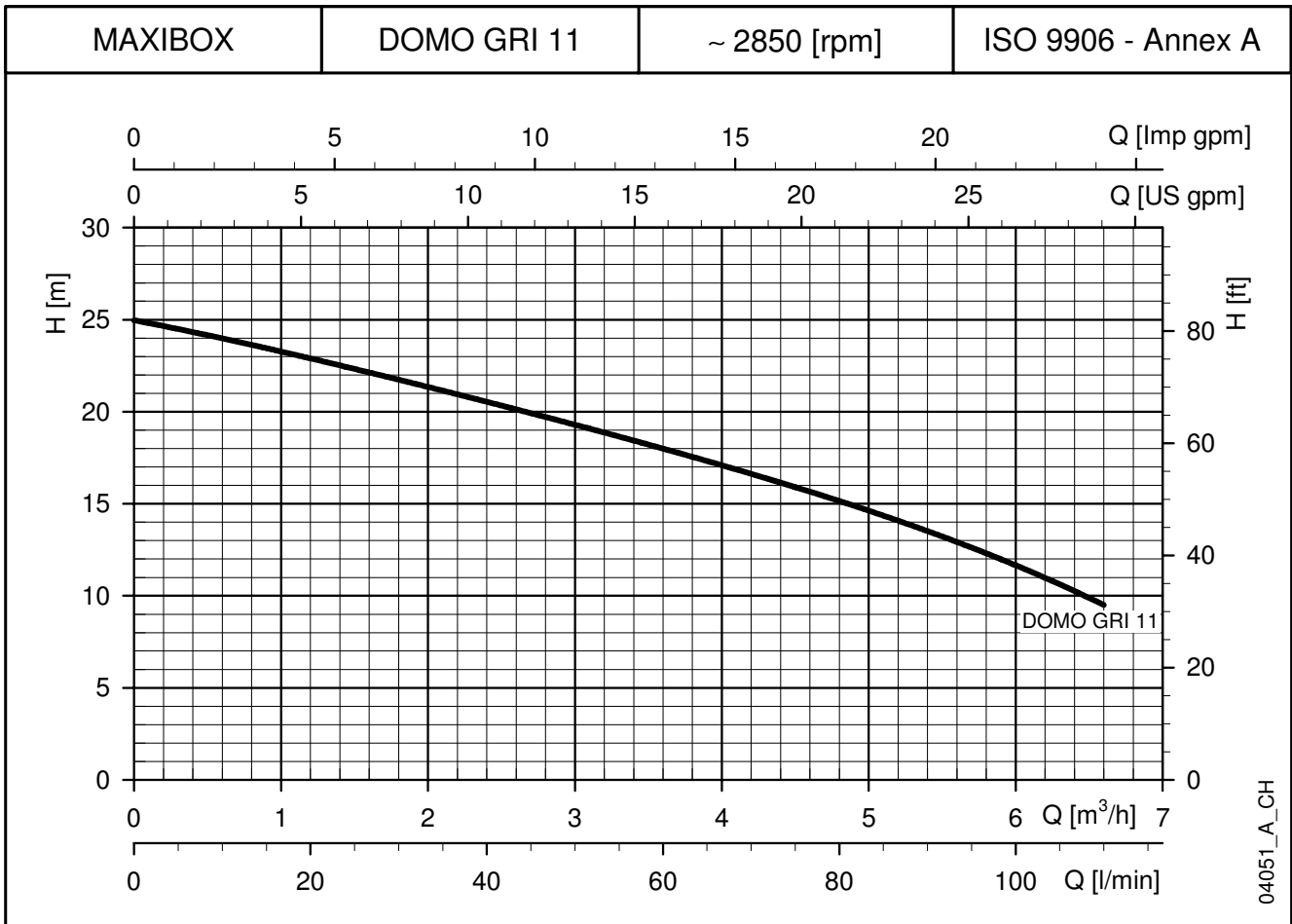
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	CAPACITOR
SINGLE-PHASE	kW	220-240 V A	$\mu\text{F} / 450 \text{ V}$
DOMO 10	1,14	5,84	22
DOMO 15	1,58	7,02	30
-	-	-	-
DOMO 10VX	1,15	5,88	22
DOMO 15VX	1,36	6,11	30
-	-	-	-

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	ABSORBED CURRENT*
THREE-PHASE	kW	220-240 V A	380-415 V A
DOMO 10T	1,09	4,09	2,36
DOMO 15T	1,49	4,73	2,73
DOMO 20T	1,96	6,6	3,81
DOMO 10VXT	1,1	4,09	2,36
DOMO 15VXT	1,26	4,31	2,49
DOMO 20VXT	1,74	6,22	3,59

\*Maximum values within operating range.

maxiboxplus\_domo-domovx-2p50-en\_a\_te

## MAXIBOX PLUS COUPLED TO DOMO GRI ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

DOMO GRI	PUMP TYPE	RATED POWER		Q = DELIVERY												
				H = TOTAL HEAD METRES COLUMN OF WATER												
				l/min	0	15	30	40	50	60	70	80	90	100	110	
				m <sup>3</sup> /h	0	0,9	1,8	2,4	3	3,6	4,2	4,8	5,4	6	6,6	
		kW	HP													
	DOMO GRI 11	1,1	1,5	25,0	23,5	21,7	20,5	19,3	18,0	16,6	15,2	13,5	11,7	9,5		
	DOMO GRI 11T															

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

maxibox\_domo-gri-2p50-en\_a\_th

### ELECTRICAL DATA TABLE

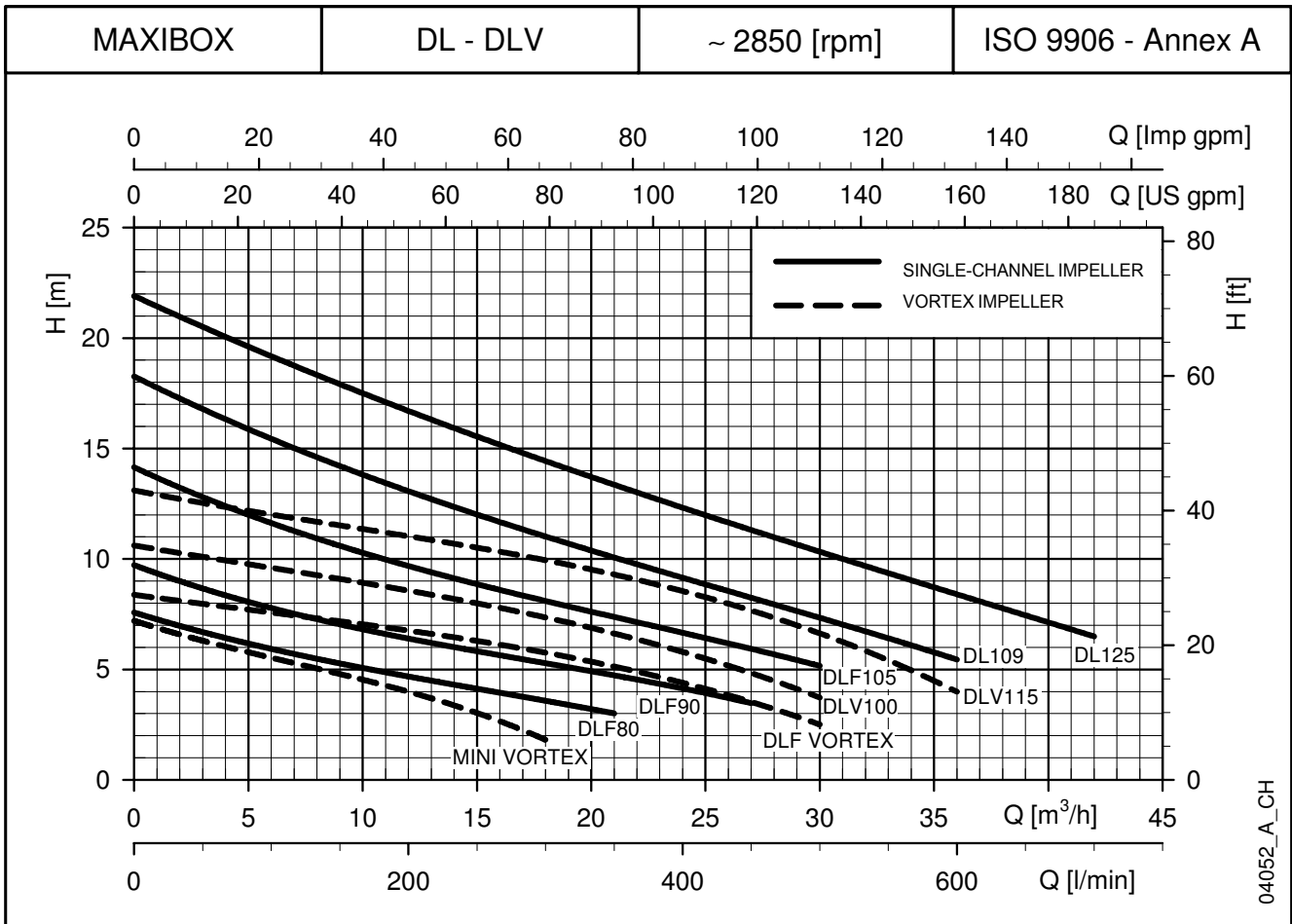
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	CAPACITOR
SINGLE-PHASE	kW	220-240 V A	$\mu\text{F} / 450 \text{ V}$
DOMO GRI 11	1,5	6,84	30

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	ABSORBED CURRENT*
THREE-PHASE	kW	220-240 V A	380-415 V A
DOMO GRI 11T	1,39	4,55	2,63

\*Maximum values within operating range.

maxibox\_domo-gri-2p50-en\_a\_te

## MAXIBOX PLUS COUPLED TO DL-DLV ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



04052\_A\_CH

### HYDRAULIC PERFORMANCE TABLE

DL	PUMP TYPE	RATED POWER		Q = DELIVERY													
				H = TOTAL HEAD METRES COLUMN OF WATER													
				l/min	0	100	150	200	250	300	350	400	450	500	600	700	
				m <sup>3</sup> /h	0	6	9	12	15	18	21	24	27	30	36	42	
	DLF(M) 80	0,6	0,8		7,6	5,9	5,3	4,7	4,1	3,6	3,0						
	DLF(M) 90	0,6	0,8		9,7	7,8	7,0	6,4	5,8	5,3	4,7	4,1	3,5				
	DLF 105	1,1	1,5		14,1	11,6	10,6	9,7	8,9	8,1	7,4	6,7	5,9	5,2			
	DL(M) 109	1,1	1,5		18,3	15,4	14,2	13,1	12,0	11,0	10,1	9,2	8,2	7,3	5,4		
	DL 125	1,5	2		21,9	19,2	17,9	16,7	15,5	14,4	13,4	12,3	11,3	10,3	8,4	6,5	

DLV	PUMP TYPE	RATED POWER		Q = DELIVERY												
				H = TOTAL HEAD METRES COLUMN OF WATER												
				l/min	0	50	100	150	200	250	300	350	400	450	500	600
				m <sup>3</sup> /h	0	3	6	9	12	15	18	21	24	27	30	36
	MINI VORTEX(M)	0,6	0,8		7,2	6,3	5,5	4,8	4,0	3,0	1,8					
	DLF VORTEX	1,1	1,5		8,4	8,0	7,6	7,2	6,8	6,3	5,8	5,1	4,4	3,5	2,5	
	DLV(M) 100	1,1	1,5		10,6	10,1	9,6	9,1	8,6	8,0	7,4	6,6	5,8	4,8	3,7	
	DLV 115	1,5	2		13,1	12,5	12,0	11,5	11,0	10,5	9,9	9,3	8,5	7,7	6,6	4,0

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

maxibox\_dl-dlv-2p50-en\_a\_te

### ELECTRICAL DATA TABLE

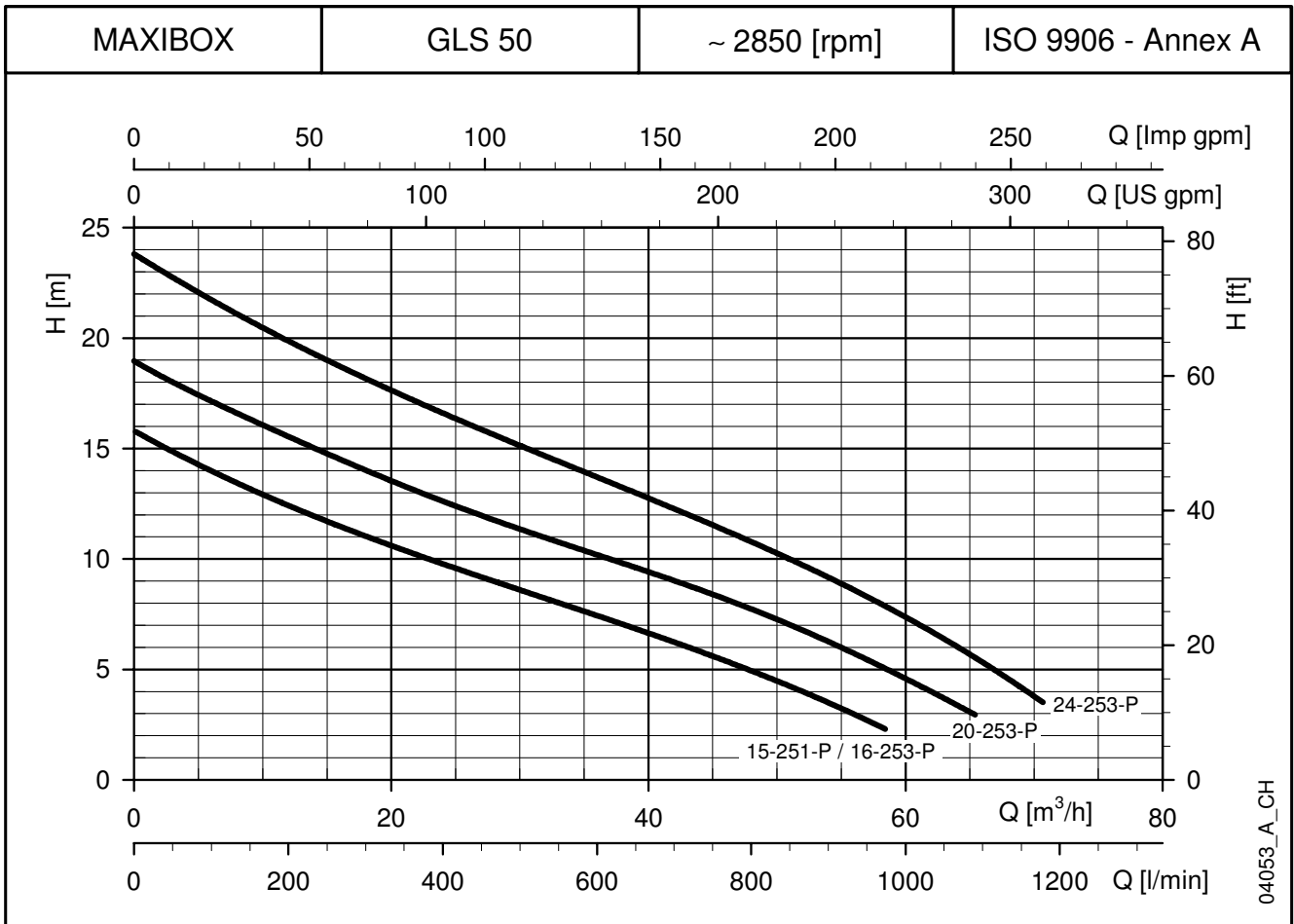
PUMP TYPE	ABSORBED POWER*		CAPACITOR
	ABSORBED POWER*	ABSORBED CURRENT*	
SINGLE-PHASE	kW	220-240 V	$\mu\text{F} / 450 \text{ V}$
DLFM 80	0,79	3,91	25
DLFM 90	0,89	4,27	25
-	-	-	-
DLM109	1,55	6,87	35
-	-	-	-
MINI VORTEX M	1,05	4,82	25
-	-	-	-
DLVM100	1,64	7,3	35
-	-	-	-

PUMP TYPE	ABSORBED POWER*		ABSORBED CURRENT*
	ABSORBED POWER*	ABSORBED CURRENT*	
THREE-PHASE	kW	220-240 V	380-415 V
DLF 80	0,80	-	2,09
DLF 90	0,92	3,81	2,20
DLF 105	1,43	4,66	2,69
DL 109	1,54	5,44	3,14
DL 125	2,14	6,58	3,80
MINI VORTEX	1,10	-	2,36
DLF VORTEX	1,66	5,11	2,95
DLV 100	1,65	5,63	3,25
DLV 115	2,25	6,81	3,93

\*Maximum values within operating range.

maxibox\_dl-dlv-2p50-en\_a\_te

## MAXIBOX PLUS COUPLED TO GLS 50 ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

GLS	PUMP TYPE	RATED POWER	Q = DELIVERY									
			l/s	0	2	4	6	8	10	15	20	25
			m <sup>3</sup> /h	0	7,2	14,4	21,6	28,8	36	54	72	90
		kW	H = TOTAL HEAD METRES COLUMN OF WATER									
	GLS 50-15-251-P	1,5	15,8	13,7	11,8	10,3	8,8	7,4	3,5			
	GLS 50-16-253-P	1,6	16,0	13,8	12,0	10,5	9,1	7,7	3,8			
	GLS 50-20-253-P	2	19,0	16,8	14,9	13,2	11,6	10,2	6,3			
	GLS 50-24-253-P	2,4	23,8	21,3	19,2	17,2	15,4	13,7	9,2			

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

maxibox\_gls50-en\_a\_th

### ELECTRICAL DATA TABLE

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	RUNNING CAPACITOR	STARTING CAPACITOR
SINGLE-PHASE		230 V		
	kW	A	$\mu\text{F/V}$	$\mu\text{F/V}$
GLS 50-15-251-P	2	8,4	35 / 400	100 / 330
-	-	-	-	-
-	-	-	-	-

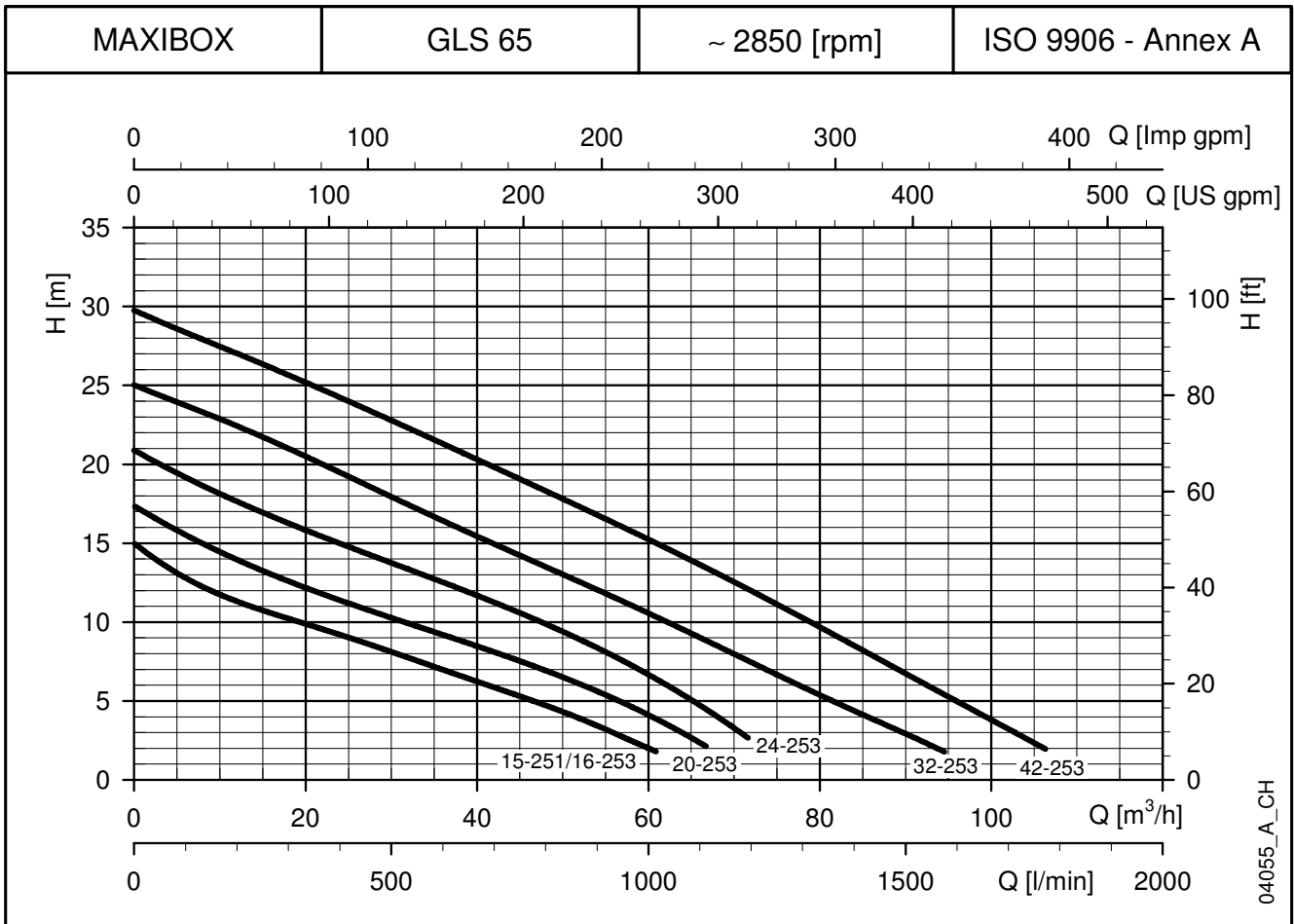
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*
THREE-PHASE		400 V
	kW	A
GLS 50-16-253-P	1,9	3,6
GLS 50-20-253-P	2,4	4,3
GLS 50-24-253-P	3,2	5,1

\* Maximum values within operating range.

maxibox\_gls50-en\_a\_te



## MAXIBOX PLUS COUPLED TO GLS 65 ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

	PUMP TYPE	RATED POWER	Q = DELIVERY									
			l/s	0	2	4	6	8	10	15	20	25
			m³/h	0	7,2	14,4	21,6	28,8	36	54	72	90
		kW	H = TOTAL HEAD METRES COLUMN OF WATER									
GLS	GLS 65-15-251	1,5	15,0	12,4	10,9	9,6	8,3	7,0	3,4			
	GLS 65-16-253	1,6	15,1	12,7	11,0	9,7	8,5	7,3	3,6			
	GLS 65-20-253	2	17,4	15,2	13,4	11,9	10,5	9,2	5,6			
	GLS 65-24-253	2,4	20,9	18,9	17,1	15,5	14,0	12,5	8,4			
	GLS 65-32-253	3,2	25,0	23,5	21,9	20,1	18,3	16,4	12,1	7,5	2,9	
	GLS 65-42-253	4,2	29,8	28,1	26,5	24,8	23,1	21,3	16,8	12,0	6,7	

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

maxibox\_gls65-en\_a\_th

### ELECTRICAL DATA TABLE

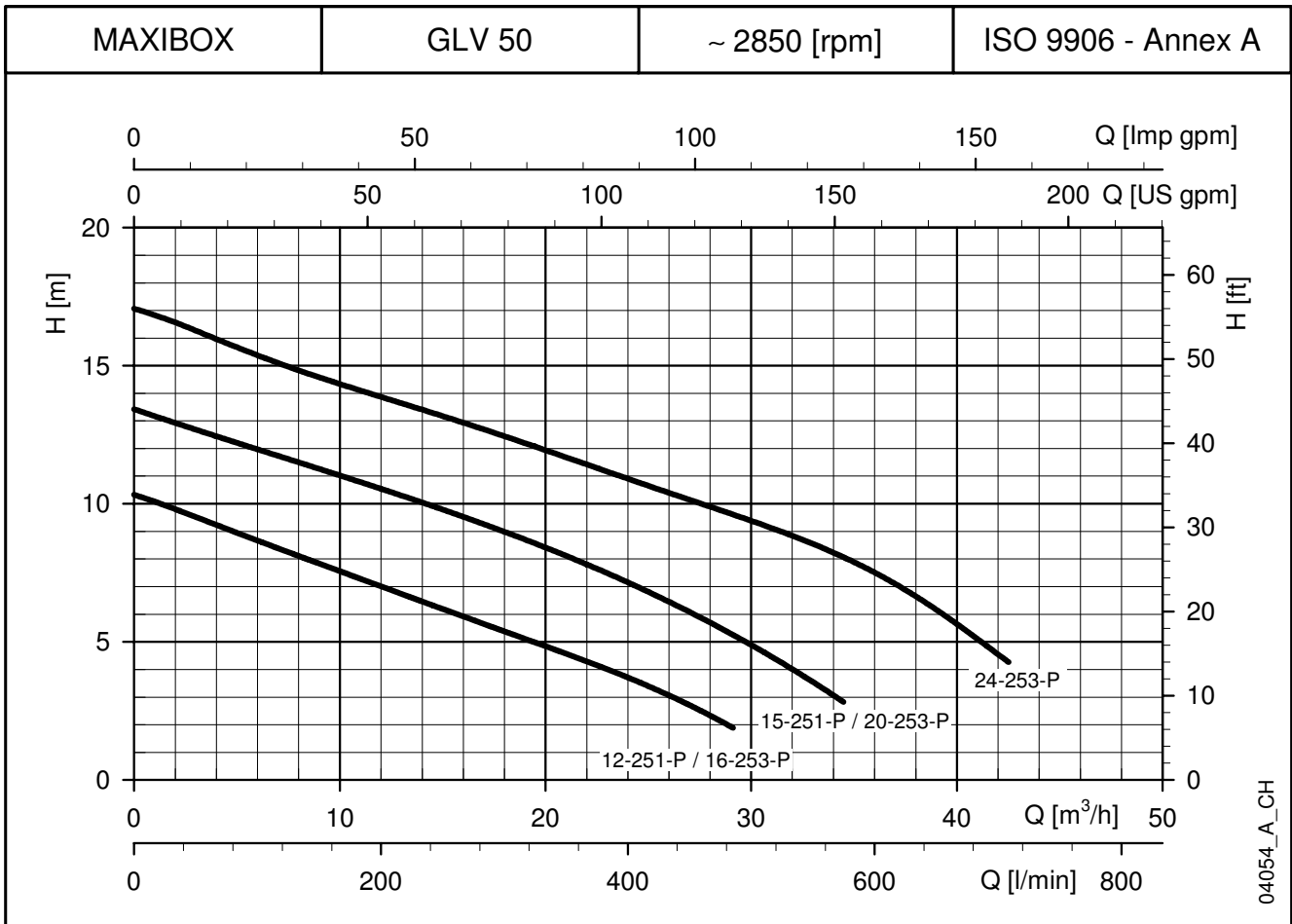
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	RUNNING CAPACITOR	STARTING CAPACITOR
SINGLE-PHASE	kW	230 V A	$\mu\text{F} / \text{V}$	$\mu\text{F} / \text{V}$
GLS 65-15-251	2	8,4	35 / 400	100 / 330
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*
THREE-PHASE	kW	400 V A
GLS 65-16-253	1,9	3,6
GLS 65-20-253	2,4	4,3
GLS 65-24-253	3,2	5,1
GLS 65-32-253	3,9	6,1
GLS 65-42-253	5,3	8,2

\* Maximum values within operating range.

maxibox\_gls65-en\_a\_te

## MAXIBOX PLUS COUPLED TO GLV 50 ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

GLV	PUMP TYPE	RATED POWER	Q = DELIVERY										
			l/s	0	2	4	6	8	10	12,5	15	20	
			m <sup>3</sup> /h	0	7,2	14,4	21,6	28,8	36	45	54	72	
		kW	H = TOTAL HEAD METRES COLUMN OF WATER										
	GLV 50-12-251-P	1,2	10,3	8,3	6,4	4,4	2,0						
	GLV 50-15-251-P	1,5	13,4	11,7	9,9	7,9	5,4						
	GLV 50-16-253-P	1,6	10,4	8,4	6,5	4,5	2,2						
	GLV 50-20-253-P	2	13,6	11,8	10,2	8,2	5,6						
	GLV 50-24-253-P	2,4	17,1	15,0	13,3	11,5	9,7	7,5					

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

maxibox\_glv50-en\_a\_th

### ELECTRICAL DATA TABLE

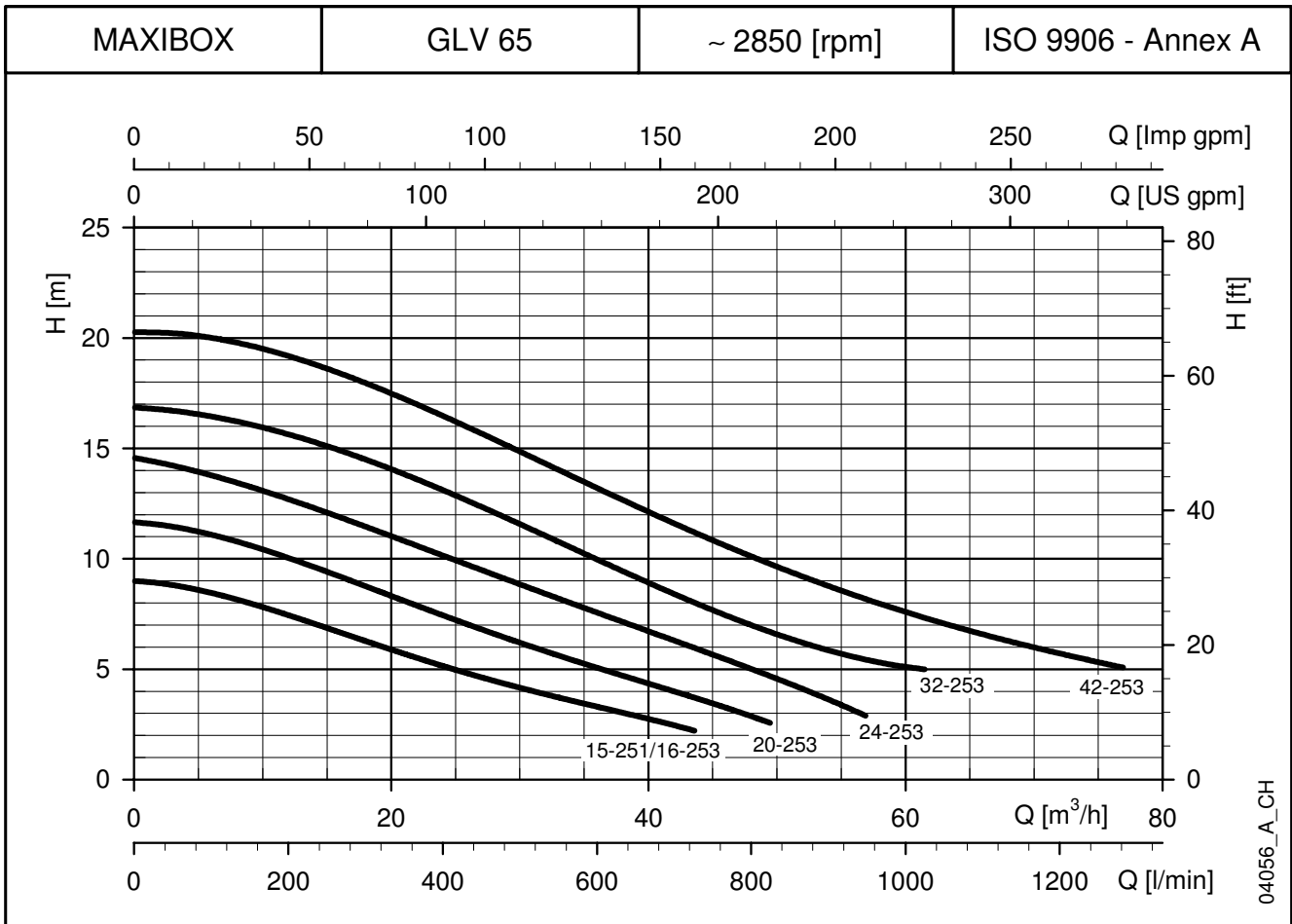
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	RUNNING CAPACITOR	STARTING CAPACITOR
SINGLE-PHASE	kW	230 V A	$\mu\text{F/V}$	$\mu\text{F/V}$
GLV 50-12-251-P	1,5	6,7	35 / 400	100 / 330
GLV 50-15-251-P	2	8,4	35 / 400	100 / 330
-	-	-	-	-
-	-	-	-	-

\* Maximum values within operating range.

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*
THREE-PHASE	kW	400 V A
-	-	-
GLV 50-16-253-P	1,9	3,6
GLV 50-20-253-P	2,6	4,3
GLV 50-24-253-P	3,2	5,1

maxibox\_glv50-en\_a\_te

## MAXIBOX PLUS COUPLED TO GLV 65 ELECTRIC PUMPS OPERATING CHARACTERISTICS AT 50 Hz



### HYDRAULIC PERFORMANCE TABLE

	PUMP TYPE	RATED POWER	Q = DELIVERY											
			H = TOTAL HEAD METRES COLUMN OF WATER											
			l/s	2	4	6	8	10	12,5	15	20			
		kW	m <sup>3</sup> /h	7,2	14,4	21,6	28,8	36	45	54	72			
GLV	GLV 65-15-251	1,5	9,0	8,3	7,0	5,6	4,3	3,3						
	GLV 65-16-253	1,6	9,1	8,4	7,1	5,7	4,5	3,4						
	GLV 65-20-253	2	11,7	10,9	9,5	8,0	6,4	5,1	3,5					
	GLV 65-24-253	2,4	14,6	13,6	12,2	10,7	9,1	7,6	5,7	3,6				
	GLV 65-32-253	3,2	16,9	16,3	15,2	13,7	11,9	10,0	7,7	5,9				
	GLV 65-42-253	4,2	20,3	19,9	18,7	17,1	15,2	13,2	10,8	8,8	5,7			

These performances (referred to the single pump) are valid for liquids with density  $\rho = 1,0 \text{ kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{s}$ .

maxibox\_glv65-en\_a\_th

### ELECTRICAL DATA TABLE

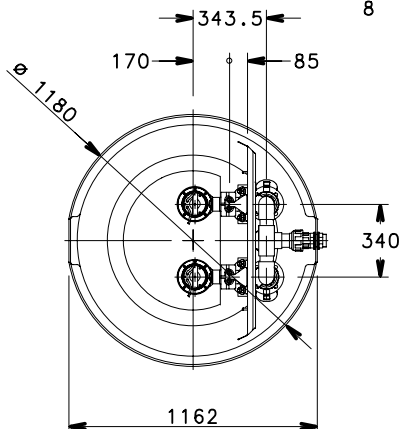
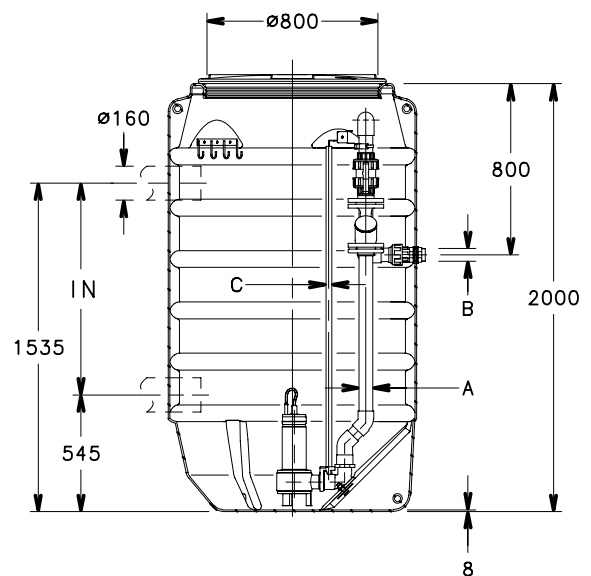
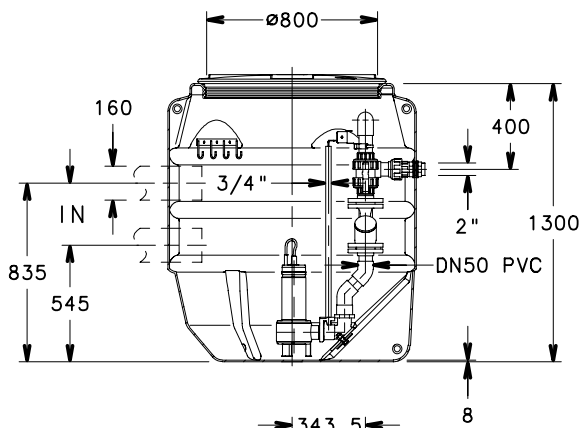
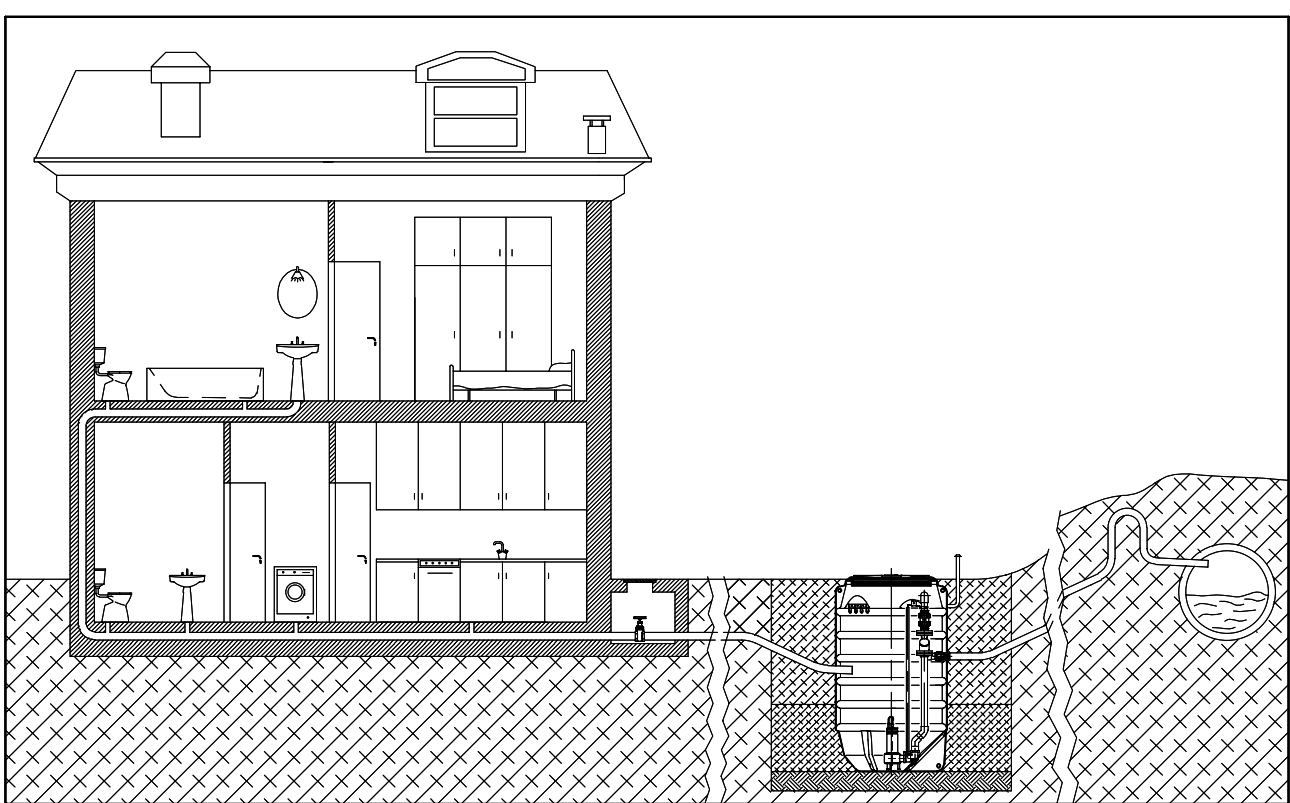
PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*	RUNNING CAPACITOR	STARTING CAPACITOR
SINGLE-PHASE	kW	230 V A	$\mu\text{F} / \text{V}$	$\mu\text{F} / \text{V}$
GLV 65-15-251	2	8,4	35 / 400	100 / 330
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

PUMP TYPE	ABSORBED POWER*	ABSORBED CURRENT*
THREE-PHASE	kW	400 V A
GLV 65-16-253	2	3,6
GLV 65-20-253	2,5	4,3
GLV 65-24-253	3,2	5,1
GLV 65-32-253	3,8	6,1
GLV 65-42-253	5,3	8,2

\* Maximum values within operating range.

maxibox\_glv65-en\_a\_te

**MAXIBOX PLUS SERIES  
DIMENSIONS AND WEIGHTS**



A	B	C
DN50	2"	3/4"
DN65	2 1/2"	2"

04050\_B\_DD

# **TECHNICAL APPENDIX**

## WATER REQUIREMENTS IN CIVIL USES

Determination of the water requirement depends on the type of users and contemporaneity factor. The calculation may be subject to regulations, standards or customs that may vary from country to country. The calculation method shown below is an example based on practical experience, designed to provide a reference value and not a substitute for detailed analytical calculation.

### Water requirements in condominiums.

The **consumption table** shows the maximum values for each delivery point, depending on the plumbing amenities.

### MAXIMUM CONSUMPTION FOR EACH DELIVERY POINT

TYPE	CONSUMPTION (l/min)
Sink	9
Dishwasher	10
Washing machine	12
Shower	12
Bathtub	15
Washbasin	6
Bidet	6
Flush tank WC	6
Controlled flushing system WC	90

G-at-cm-en\_a\_th

The **sum of the water consumption values** of each delivery point determines the maximum theoretical requirement, which must be reduced according to the **contemporaneity coefficient**, because in actual fact the delivery points are never used all together.

$$f = \frac{1}{\sqrt{(0,857 \times Nr \times Na)}} \quad \text{Coefficient for apartments with one bathroom and flush tank WC}$$

$$f = \frac{1}{\sqrt{(0,857 \times Nr \times Na)}} \quad \text{Coefficient for apartments with one bathroom and controlled flushing system WC}$$

$$f = \frac{1,03}{\sqrt{(0,545 \times Nr \times Na)}} \quad \text{Coefficient for apartments with two bathrooms and flush tank WC}$$

$$f = \frac{0,8}{\sqrt{(0,727 \times Nr \times Na)}} \quad \text{Coefficient for apartments with two bathrooms and controlled flushing system WC}$$

f = coefficient; Nr = number of delivery points; Na = number of apartments

The **table of water requirements in civil uses** shows the maximum contemporaneity flow-rate values based on the **number of apartments** and the type of WC for apartments with one bathroom and two bathrooms.

As regards apartments with one bathroom, 7 drawing points have been taken into consideration, while 11 points have been considered for apartments with two bathrooms. If the number of drawing points or apartments is different, use the formulas to **calculate** the requirement.

## TABLE OF WATER REQUIREMENTS IN CIVIL USES

NUMBER OF APARTMENTS	WITH FLUSH TANK WC		WITH CONTROLLED FLUSHING SYSTEM WC	
	1	2	1	2
	FLOW RATE (l/min)			
1	32	40	60	79
2	45	56	85	111
3	55	68	105	136
4	63	79	121	157
5	71	88	135	176
6	78	97	148	193
7	84	105	160	208
8	90	112	171	223
9	95	119	181	236
10	100	125	191	249
11	105	131	200	261
12	110	137	209	273
13	114	143	218	284
14	119	148	226	295
15	123	153	234	305
16	127	158	242	315
17	131	163	249	325
18	134	168	256	334
19	138	172	263	343
20	142	177	270	352
21	145	181	277	361
22	149	185	283	369
23	152	190	290	378
24	155	194	296	386
25	158	198	302	394
26	162	202	308	401
27	165	205	314	409
28	168	209	320	417
29	171	213	325	424
30	174	217	331	431
35	187	234	357	466
40	200	250	382	498
45	213	265	405	528
50	224	280	427	557
55	235	293	448	584
60	245	306	468	610
65	255	319	487	635
70	265	331	506	659
75	274	342	523	682
80	283	354	540	704
85	292	364	557	726
90	301	375	573	747
95	309	385	589	767
100	317	395	604	787
120	347	433	662	863
140	375	468	715	932
160	401	500	764	996
180	425	530	811	1056
200	448	559	854	1114

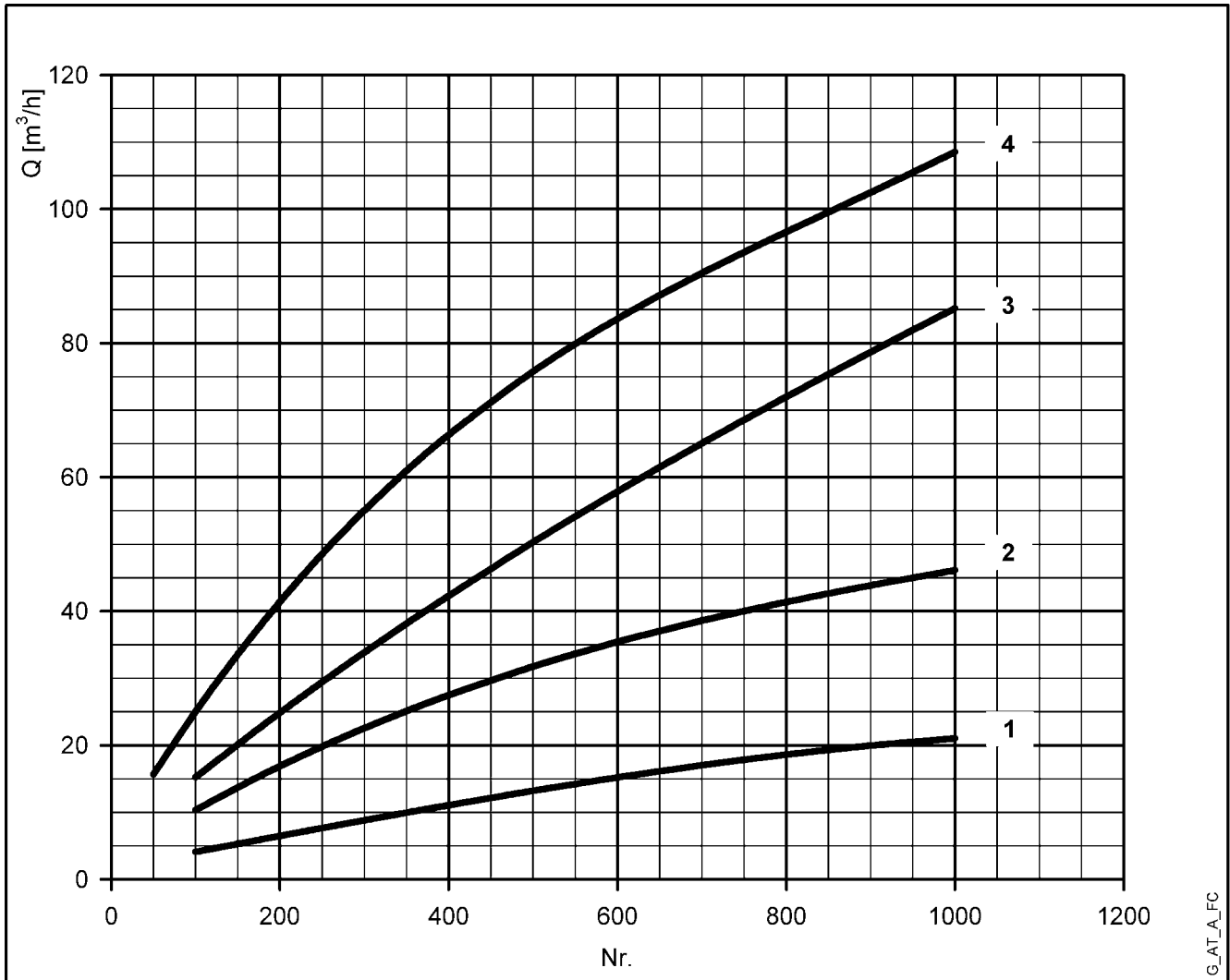
For seaside resorts, a flow rate increased by at least 20% must be considered.

G-at-fi-en\_a\_th

## WATER REQUIREMENTS FOR COMMUNITY BUILDINGS

The requirements of buildings intended for specific uses, such as **offices, residential units, hotels, department stores, nursing homes** and so on, are different from those of condominiums, and both their global daily water consumption and the maximum contemporaneity flow rate usually greater. The **diagram of water requirements for community buildings** shows the maximum contemporaneity flow rate of some types of communities, for guidance.

These requirements must be determined case by case with the utmost accuracy, using analytical calculation methods according to particular needs and local provisions.



For seaside resorts, the flow rate must be increased by at least 20%.

- 1 = Offices (Nr. of people)
- 2 = Department stores (Nr. of people)
- 3 = Nursing homes (Nr. of beds)
- 4 = Hotels, residences (Nr. of beds)



## NPSH

The minimum operating values that can be reached at the pump suction end are limited by the onset of cavitation.

Cavitation is the formation of vapour-filled cavities within liquids where the pressure is locally reduced to a critical value, or where the local pressure is equal to, or just below the vapour pressure of the liquid.

The vapour-filled cavities flow with the current and when they reach a higher pressure area the vapour contained in the cavities condenses. The cavities collide, generating pressure waves that are transmitted to the walls. These, being subjected to stress cycles, gradually become deformed and yield due to fatigue. This phenomenon, characterized by a metallic noise produced by the hammering on the pipe walls, is called incipient cavitation.

The damage caused by cavitation may be magnified by electrochemical corrosion and a local rise in temperature due to the plastic deformation of the walls. The materials that offer the highest resistance to heat and corrosion are alloy steels, especially austenitic steel. The conditions that trigger cavitation may be assessed by calculating the total net suction head, referred to in technical literature with the acronym NPSH (Net Positive Suction Head).

The NPSH represents the total energy (expressed in m.) of the liquid measured at suction under conditions of incipient cavitation, excluding the vapour pressure (expressed in m.) that the liquid has at the pump inlet.

To find the static height  $h_z$  at which to install the machine under safe conditions, the following formula must be verified:

$$h_p + h_z \geq (\text{NPSH}_r + 0.5) + h_f + h_{pv} \quad \textcircled{1}$$

where:

- $h_p$**  is the absolute pressure applied to the free liquid surface in the suction tank, expressed in m. of liquid;  $h_p$  is the quotient between the barometric pressure and the specific weight of the liquid.
- $h_z$**  is the suction lift between the pump axis and the free liquid surface in the suction tank, expressed in m.;  $h_z$  is negative when the liquid level is lower than the pump axis.
- $h_f$**  is the flow resistance in the suction line and its accessories, such as: fittings, foot valve, gate valve, elbows, etc.
- $h_{pv}$**  is the vapour pressure of the liquid at the operating temperature, expressed in m. of liquid.  $h_{pv}$  is the quotient between the Pv vapour pressure and the liquid's specific weight.
- 0,5** is the safety factor.

The maximum possible suction head for installation depends on the value of the atmospheric pressure (i.e. the elevation above sea level at which the pump is installed) and the temperature of the liquid.

To help the user, with reference to water temperature (4° C) and to the elevation above sea level, the following tables show the drop in hydraulic pressure head in relation to the elevation above sea level, and the suction loss in relation to temperature.

<b>Water temperature (°C)</b>	20	40	60	80	90	110	120
<b>Suction loss (m)</b>	0,2	0,7	2,0	5,0	7,4	15,4	21,5

<b>Elevation above sea level (m)</b>	500	1000	1500	2000	2500	3000
<b>Suction loss (m)</b>	0,55	1,1	1,65	2,2	2,75	3,3

Friction loss is shown in the tables at pages 43-44 of this catalogue. To reduce it to a minimum, especially in cases of high suction head (over 4-5 m.) or within the operating limits with high flow rates, we recommend using a suction line having a larger diameter than that of the pump's suction port. It is always a good idea to position the pump as close as possible to the liquid to be pumped.

Make the following calculation:

Liquid: water at ~15°C  $\gamma = 1 \text{ kg/dm}^3$

Flow rate required: 30 m<sup>3</sup>/h

Head for required delivery: 43 m.

Suction lift: 3,5 m.

The selection is an FHE 40-200/75 pump whose NPSH required value is, at 30 m<sup>3</sup>/h, di 2,5 m.

For water at 15 °C

$$h_p = P_a / \gamma = 10,33\text{m}, h_{pv} = P_v / \gamma = 0,174\text{m} (0,01701 \text{ bar})$$

The  $H_f$  flow resistance in the suction line with foot valves is ~ 1,2 m.

By substituting the parameters in formula  $\textcircled{1}$  with the numeric values above, we have:

$$10,33 + (-3,5) \geq (2,5 + 0,5) + 1,2 + 0,17$$

from which we have: 6,8 > 4,4

The relation is therefore verified.

**VAPOUR PRESSURE**  
**VAPOUR PRESSURE ps AND ρ DENSITY OF WATER TABLE**

t	T	ps	ρ	t	T	ps	ρ	t	T	ps	ρ
°C	K	bar	kg/dm <sup>3</sup>	°C	K	bar	kg/dm <sup>3</sup>	°C	K	bar	kg/dm <sup>3</sup>
0	273,15	0,00611	0,9998	55	328,15	0,15741	0,9857	120	393,15	1,9854	0,9429
1	274,15	0,00657	0,9999	56	329,15	0,16511	0,9852	122	395,15	2,1145	0,9412
2	275,15	0,00706	0,9999	57	330,15	0,17313	0,9846	124	397,15	2,2504	0,9396
3	276,15	0,00758	0,9999	58	331,15	0,18147	0,9842	126	399,15	2,3933	0,9379
4	277,15	0,00813	1,0000	59	332,15	0,19016	0,9837	128	401,15	2,5435	0,9362
5	278,15	0,00872	1,0000	60	333,15	0,1992	0,9832	130	403,15	2,7013	0,9346
6	279,15	0,00935	1,0000	61	334,15	0,2086	0,9826	132	405,15	2,867	0,9328
7	280,15	0,01001	0,9999	62	335,15	0,2184	0,9821	134	407,15	3,041	0,9311
8	281,15	0,01072	0,9999	63	336,15	0,2286	0,9816	136	409,15	3,223	0,9294
9	282,15	0,01147	0,9998	64	337,15	0,2391	0,9811	138	411,15	3,414	0,9276
10	283,15	0,01227	0,9997	65	338,15	0,2501	0,9805	140	413,15	3,614	0,9258
11	284,15	0,01312	0,9997	66	339,15	0,2615	0,9799	145	418,15	4,155	0,9214
12	285,15	0,01401	0,9996	67	340,15	0,2733	0,9793	155	428,15	5,433	0,9121
13	286,15	0,01497	0,9994	68	341,15	0,2856	0,9788	160	433,15	6,181	0,9073
14	287,15	0,01597	0,9993	69	342,15	0,2984	0,9782	165	438,15	7,008	0,9024
15	288,15	0,01704	0,9992	70	343,15	0,3116	0,9777	170	433,15	7,920	0,8973
16	289,15	0,01817	0,9990	71	344,15	0,3253	0,9770	175	448,15	8,924	0,8921
17	290,15	0,01936	0,9988	72	345,15	0,3396	0,9765	180	453,15	10,027	0,8869
18	291,15	0,02062	0,9987	73	346,15	0,3543	0,9760	185	458,15	11,233	0,8815
19	292,15	0,02196	0,9985	74	347,15	0,3696	0,9753	190	463,15	12,551	0,8760
20	293,15	0,02337	0,9983	75	348,15	0,3855	0,9748	195	468,15	13,987	0,8704
21	294,15	0,24850	0,9981	76	349,15	0,4019	0,9741	200	473,15	15,550	0,8647
22	295,15	0,02642	0,9978	77	350,15	0,4189	0,9735	205	478,15	17,243	0,8588
23	296,15	0,02808	0,9976	78	351,15	0,4365	0,9729	210	483,15	19,077	0,8528
24	297,15	0,02982	0,9974	79	352,15	0,4547	0,9723	215	488,15	21,060	0,8467
25	298,15	0,03166	0,9971	80	353,15	0,4736	0,9716	220	493,15	23,198	0,8403
26	299,15	0,03360	0,9968	81	354,15	0,4931	0,9710	225	498,15	25,501	0,8339
27	300,15	0,03564	0,9966	82	355,15	0,5133	0,9704	230	503,15	27,976	0,8273
28	301,15	0,03778	0,9963	83	356,15	0,5342	0,9697	235	508,15	30,632	0,8205
29	302,15	0,04004	0,9960	84	357,15	0,5557	0,9691	240	513,15	33,478	0,8136
30	303,15	0,04241	0,9957	85	358,15	0,5780	0,9684	245	518,15	36,523	0,8065
31	304,15	0,04491	0,9954	86	359,15	0,6011	0,9678	250	523,15	39,776	0,7992
32	305,15	0,04753	0,9951	87	360,15	0,6249	0,9671	255	528,15	43,246	0,7916
33	306,15	0,05029	0,9947	88	361,15	0,6495	0,9665	260	533,15	46,943	0,7839
34	307,15	0,05318	0,9944	89	362,15	0,6749	0,9658	265	538,15	50,877	0,7759
35	308,15	0,05622	0,9940	90	363,15	0,7011	0,9652	270	543,15	55,058	0,7678
36	309,15	0,05940	0,9937	91	364,15	0,7281	0,9644	275	548,15	59,496	0,7593
37	310,15	0,06274	0,9933	92	365,15	0,7561	0,9638	280	553,15	64,202	0,7505
38	311,15	0,06624	0,9930	93	366,15	0,7849	0,9630	285	558,15	69,186	0,7415
39	312,15	0,06991	0,9927	94	367,15	0,8146	0,9624	290	563,15	74,461	0,7321
40	313,15	0,07375	0,9923	95	368,15	0,8453	0,9616	295	568,15	80,037	0,7223
41	314,15	0,07777	0,9919	96	369,15	0,8769	0,9610	300	573,15	85,927	0,7122
42	315,15	0,08198	0,9915	97	370,15	0,9094	0,9602	305	578,15	92,144	0,7017
43	316,15	0,09639	0,9911	98	371,15	0,9430	0,9596	310	583,15	98,70	0,6906
44	317,15	0,09100	0,9907	99	372,15	0,9776	0,9586	315	588,15	105,61	0,6791
45	318,15	0,09582	0,9902	100	373,15	1,0133	0,9581	320	593,15	112,89	0,6669
46	319,15	0,10086	0,9898	102	375,15	1,0878	0,9567	325	598,15	120,56	0,6541
47	320,15	0,10612	0,9894	104	377,15	1,1668	0,9552	330	603,15	128,63	0,6404
48	321,15	0,11162	0,9889	106	379,15	1,2504	0,9537	340	613,15	146,05	0,6102
49	322,15	0,11736	0,9884	108	381,15	1,3390	0,9522	350	623,15	165,35	0,5743
50	323,15	0,12335	0,9880	110	383,15	1,4327	0,9507	360	633,15	186,75	0,5275
51	324,15	0,12961	0,9876	112	385,15	1,5316	0,9491	370	643,15	210,54	0,4518
52	325,15	0,13613	0,9871	114	387,15	1,6362	0,9476	374,15	647,30	221,20	0,3154
53	326,15	0,14293	0,9862	116	389,15	1,7465	0,9460				
54	327,15	0,15002	0,9862	118	391,15	1,8628	0,9445				

G-at\_npsh\_b\_sc



## FLOW RESISTANCE

### TABLE OF FLOW RESISTANCE IN BENDS, VALVES AND GATES

The flow resistance is calculated using the equivalent pipeline length method according to the table below:

ACCESSORY TYPE	DN											
	25	32	40	50	65	80	100	125	150	200	250	300
	Equivalent pipeline length (m)											
45° bend	0,2	0,2	0,4	0,4	0,6	0,6	0,9	1,1	1,5	1,9	2,4	2,8
90° bend	0,4	0,6	0,9	1,1	1,3	1,5	2,1	2,6	3,0	3,9	4,7	5,8
90° smooth bend	0,4	0,4	0,4	0,6	0,9	1,1	1,3	1,7	1,9	2,8	3,4	3,9
Union tee or cross	1,1	1,3	1,7	2,1	2,6	3,2	4,3	5,3	6,4	7,5	10,7	12,8
Gate	-	-	-	0,2	0,2	0,2	0,4	0,4	0,6	0,9	1,1	1,3
Non return valve	1,1	1,5	1,9	2,4	3,0	3,4	4,7	5,9	7,4	9,6	11,8	13,9

G-a-pcv-en\_a\_th

The table is valid for the Hazen Williams coefficient  $C=100$  (cast iron pipework);

for steel pipework, multiply the values by 1,41;

for stainless steel, copper and coated cast iron pipework, multiply the values by 1,85;

When the **equivalent pipeline length** has been determined, the flow resistance is obtained from the table of flow resistance.

The values given are guideline values which are bound to vary slightly according to the model, especially for gate valves and non-return valves, for which it is a good idea to check the values supplied by manufacturers.

## VOLUMETRIC CAPACITY

Litres per minute l/min	Cubic metres per hour m <sup>3</sup> /h	Cubic feet per hour ft <sup>3</sup> /h	Cubic feet per minute ft <sup>3</sup> /min	Imp. gal. per minute Imp. gal./min	US gal. per minute Us gal./min
<b>1,000</b>	0,0600	2,1189	0,0353	0,2200	0,2642
16,6667	<b>1,000</b>	35,3147	0,5886	3,6662	4,4029
0,4719	0,0283	<b>1,000</b>	0,0167	0,1038	<b>0,1247</b>
28,3168	1,6990	60,0000	<b>1,000</b>	6,2288	7,4805
4,5461	0,2728	9,6326	0,1605	<b>1,000</b>	1,2009
3,7854	0,2271	8,0208	0,1337	0,8327	<b>1,000</b>

## PRESSURE AND HEAD

Newton per square metre N/m <sup>2</sup>	kilo Pascal kPa	bar bar	Pound force per square inch psi	metre of water m H <sub>2</sub> O	millimetre of mercury mm Hg
<b>1,000</b>	0,0010	1 x 10 <sup>-5</sup>	1.45 x 10 <sup>-4</sup>	1.02 x 10 <sup>-4</sup>	0,0075
1000,0000	<b>1,000</b>	0,0100	0,1450	0,1020	7,5006
1 x 10 <sup>5</sup>	100,0000	<b>1,000</b>	14,5038	10,1972	750,0638
6894,7570	6,8948	0,0689	<b>1,000</b>	0,7031	51,7151
9806,6500	9,8067	0,0981	1,4223	<b>1,000</b>	73,5561
133,3220	0,1333	0,0013	0,0193	0,0136	<b>1,000</b>

## LENGTH

millimetre mm	centimetre cm	metre m	inch in	foot ft	yard yd
<b>1,000</b>	0,1000	0,0010	0,0394	0,0033	0,0011
10,0000	<b>1,000</b>	0,0100	0,3937	0,0328	0,0109
1000,0000	100,0000	<b>1,000</b>	39,3701	3,2808	1,0936
25,4000	2,5400	0,0254	<b>1,000</b>	0,0833	0,0278
304,8000	30,4800	0,3048	12,0000	<b>1,000</b>	0,3333
914,4000	91,4400	0,9144	36,0000	3,0000	<b>1,000</b>

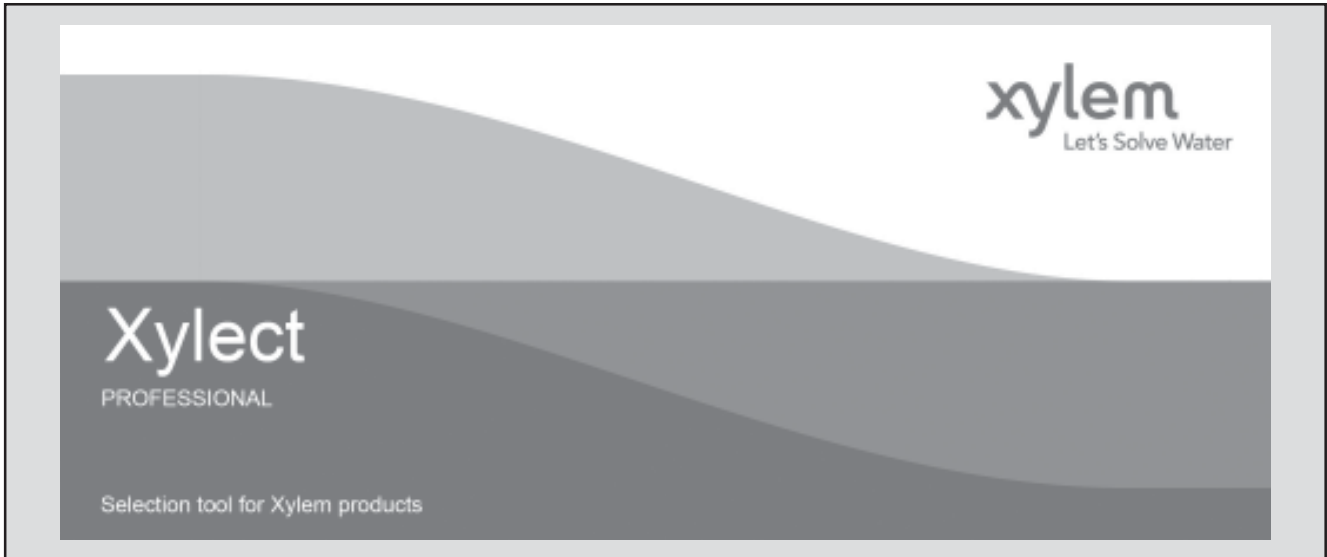
## VOLUME

cubic metre m <sup>3</sup>	litre litro	millilitre ml	imp. Gallon imp. gal.	US gallon US gal.	cubic foot ft <sup>3</sup>
<b>1,000</b>	1000,0000	1 x 10 <sup>6</sup>	219,9694	264,1720	35,3147
0,0010	<b>1,000</b>	1000,0000	0,2200	0,2642	0,0353
1 x 10 <sup>-6</sup>	0,0010	<b>1,000</b>	2.2 x 10 <sup>-4</sup>	2.642 x 10 <sup>-4</sup>	3.53 x 10 <sup>-5</sup>
0,0045	4,5461	4546,0870	<b>1,000</b>	1,2009	0,1605
0,0038	3,7854	3785,4120	0,8327	<b>1,000</b>	0,1337
0,0283	28,3168	28316,8466	6,2288	7,4805	<b>1,000</b>

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## FURTHER PRODUCT SELECTION AND DOCUMENTATION

### Xylect



Xylect is pump solution selection software with an extensive online database of product information across the entire Lowara, and Vogel range of pumps and related products, with multiple search options and helpful project management facilities. The system holds up-to-date product information on thousands of products and accessories.

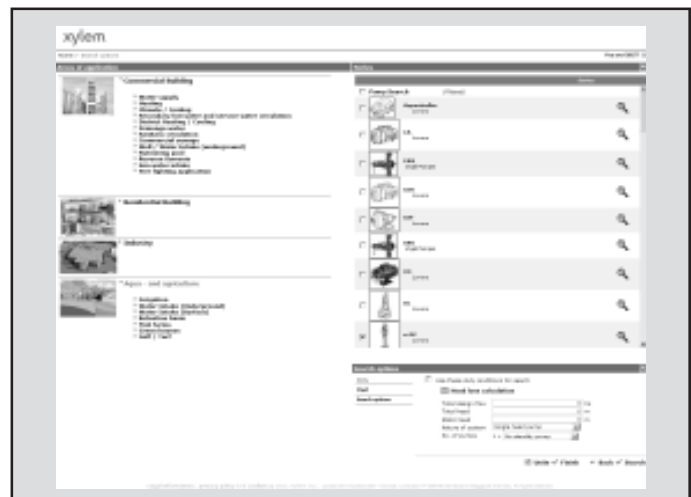
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Lowara and Vogel products.

The search can be made by:

- Application
- Product type
- Duty point

Xylect gives a detailed output:

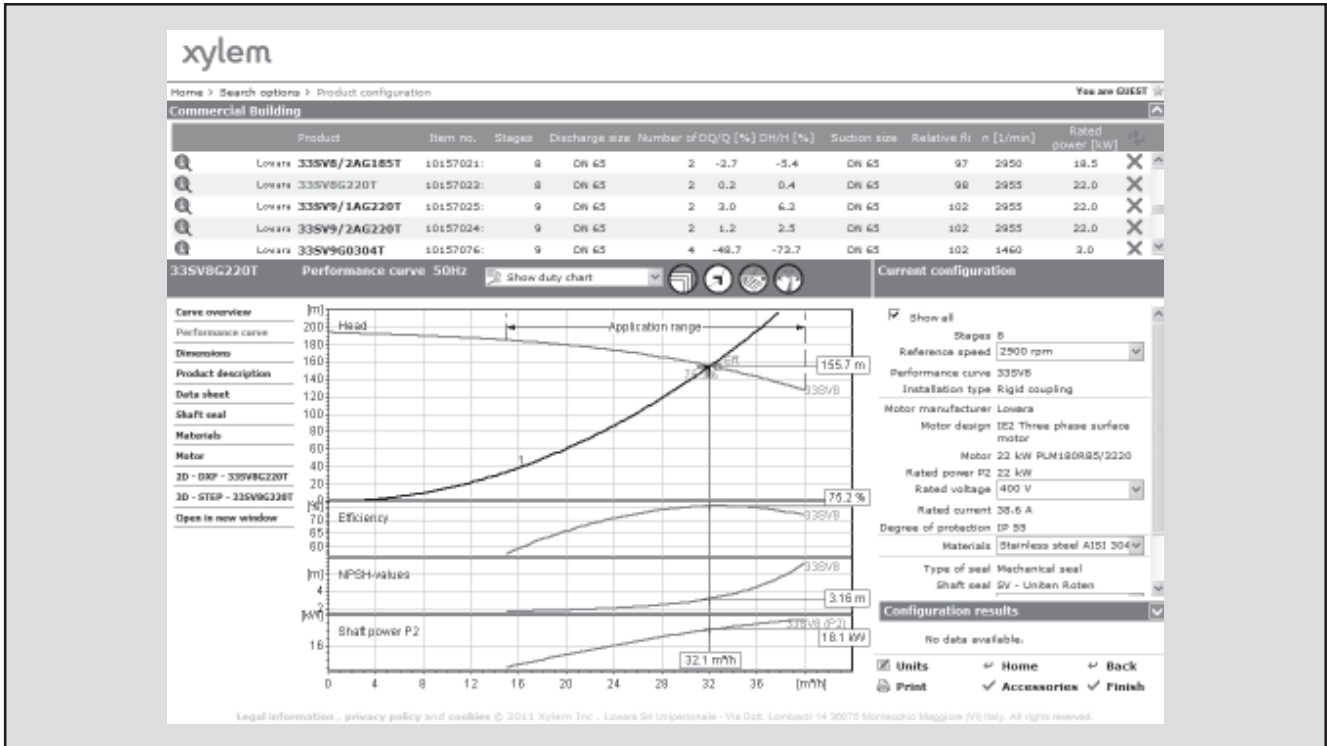
- List with search results
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf files



*The search by application guides users not familiar with the product range to the right choice.*

## FURTHER PRODUCT SELECTION AND DOCUMENTATION

### Xylect



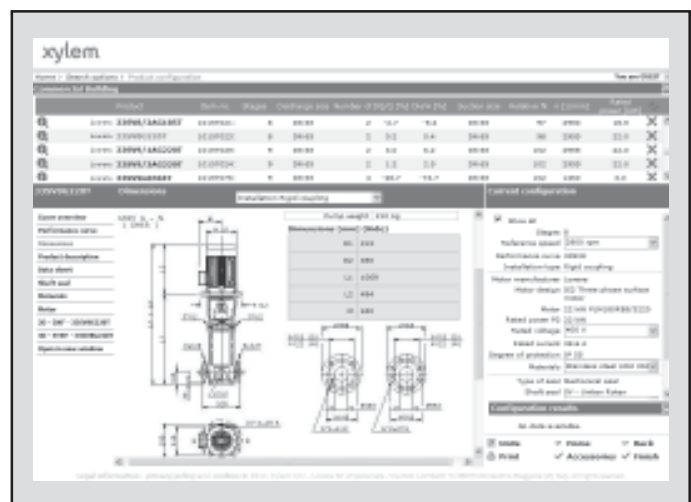
The detailed output makes it easy to select the optimal pump from the given alternatives.

The best way to work with Xylect is to create a personal account. This makes it possible to:

- Set own standard units
- Create and save projects
- Share projects with other Xylect users

Every user has a My Xylect space, where all projects are saved.

For more information about Xylect please contact our sales network or visit [www.xylect.com](http://www.xylect.com).



Dimensional drawings appear on the screen and can be downloaded in dxf format.

# Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're 12,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

**For more information on how Xylem can help you, go to [xylem.com](http://xylem.com).**



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