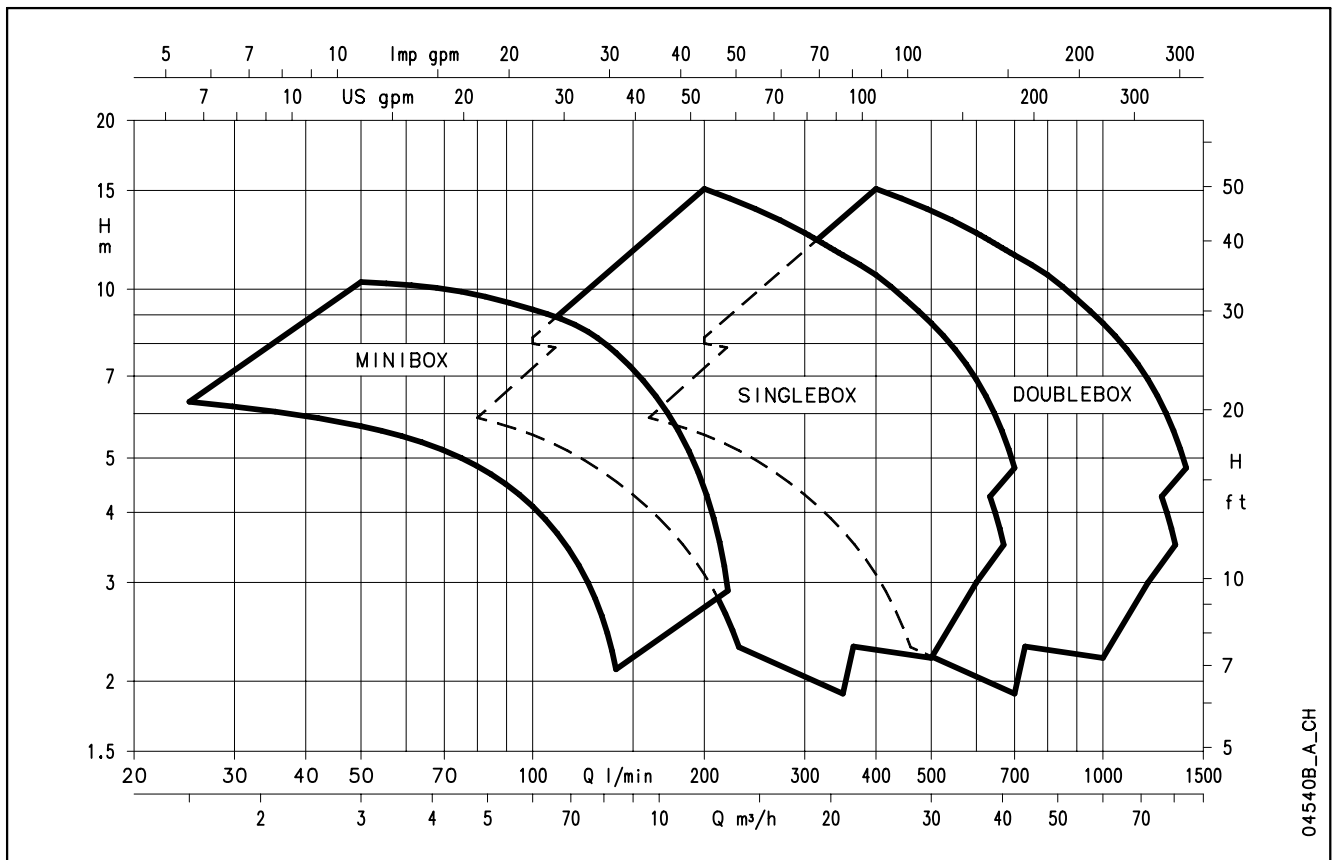


**PREFABRICATED
LIFTING STATIONS
FOR SOLID-
LADEN
WASTE
WATER**



60 Hz

**MINIBOX-SINGLEBOX-DOUBLEBOX
SERIES**



EDITION 03-2004

04540B_A_CH

Lowara



ITT Industries
Engineered for life

Pre-fabricated Lifting Stations for Clear Water

MINIBOX Series



MARKET SECTORS

RESIDENTIAL

APPLICATIONS

- Removal of clear water (WC excluded) where gravity drainage is impractical.



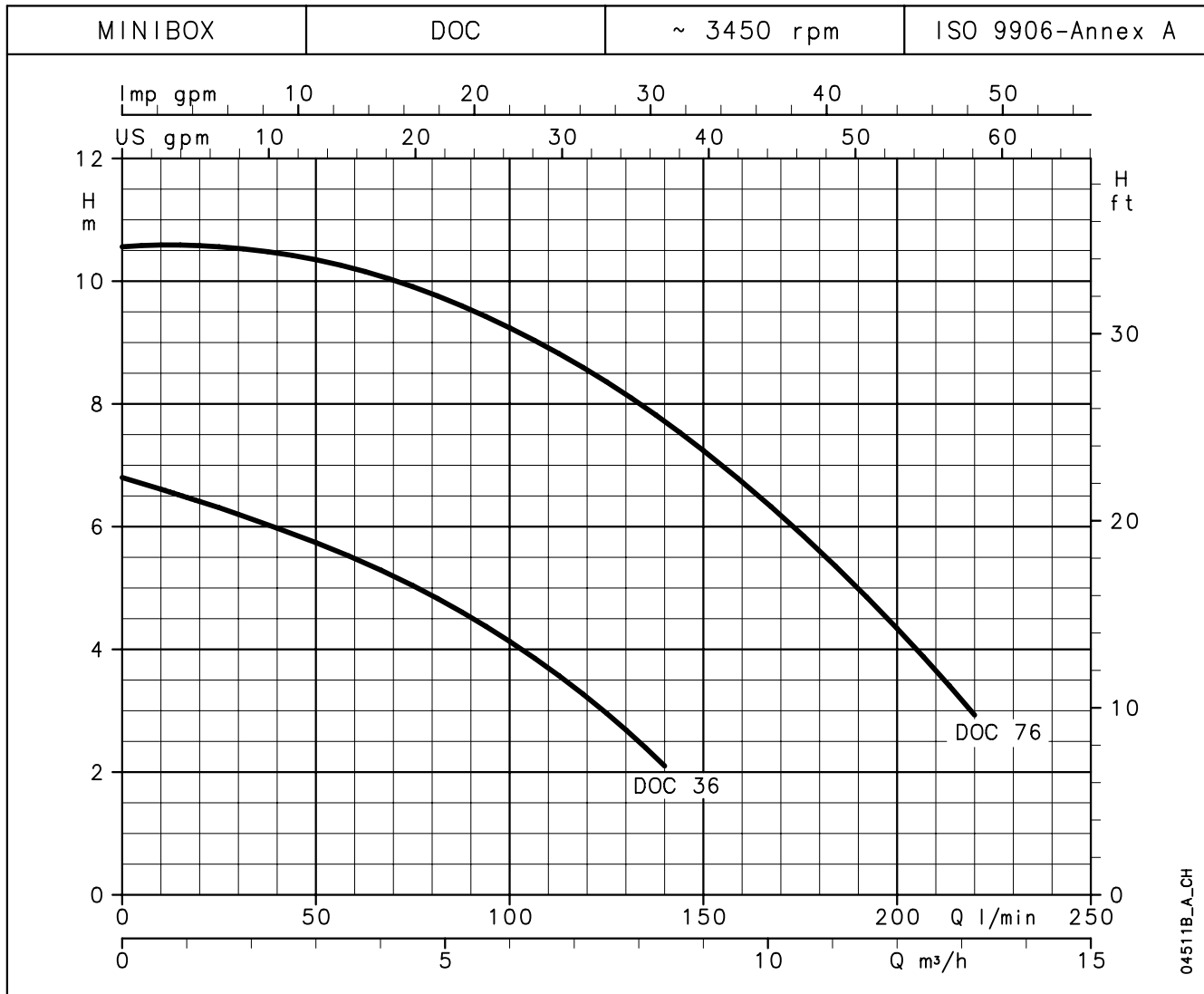
SPECIFICATIONS

- 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-litre 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** pump (0.55 kW).
- **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.

MINIBOX SERIES OPERATING CHARACTERISTICS AT 3450 rpm, 60 Hz



HYDRAULIC PERFORMANCE TABLE AT 60 Hz

| PUMP TYPE | RATED POWER | | Q = DELIVERY | | | | | | | | | |
|-----------|-------------|------|---------------------------------------|-----|------|-----|-----|-----|-----|-----|------|------|
| | | | l/min | 0 | 25 | 50 | 75 | 100 | 125 | 140 | 180 | 220 |
| | | | m ³ /h | 0 | 1,5 | 3 | 4,5 | 6 | 7,5 | 8,4 | 10,8 | 13,2 |
| | kW | HP | H = TOTAL HEAD METRES COLUMN OF WATER | | | | | | | | | |
| DOC36 | 0,25 | 0,33 | 6,8 | 6,3 | 5,7 | 5 | 4,1 | 3,0 | 2,1 | - | - | - |
| DOC76 | 0,55 | 0,75 | 10,6 | - | 10,3 | 9,9 | 9,2 | 8,4 | 7,7 | 5,6 | 2,9 | - |

These performances are valid for liquids with density $\rho = 1.0\text{kg/dm}^3$ and kinematic viscosity $\nu = 1\text{mm}^2/\text{sec}$

mbox_doc-2p60-en_a_th

ELECTRICAL DATA (60Hz, 3450 rpm) MINIBOX SERIES

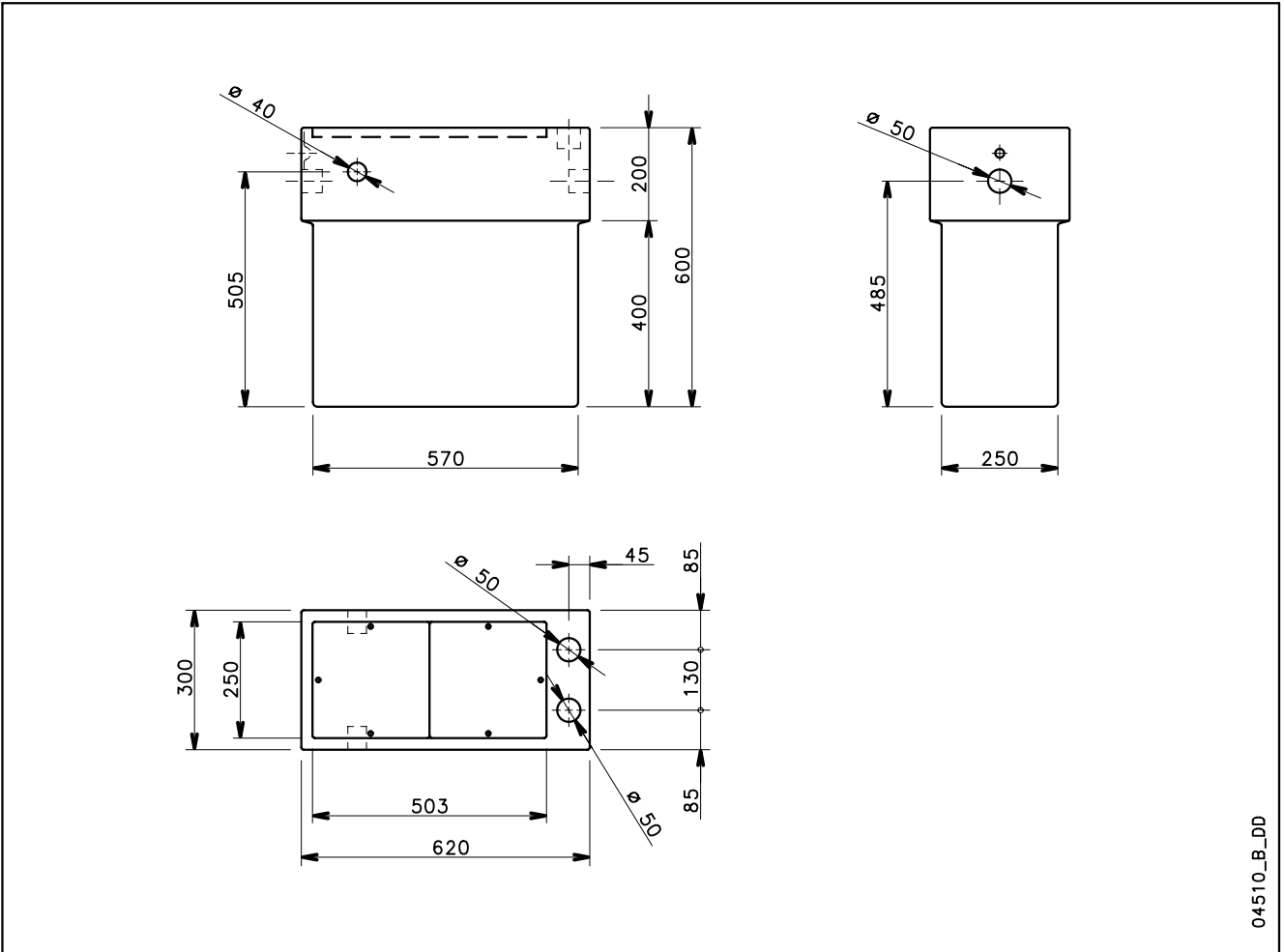
| PUMP TYPE | INPUT POWER* | INPUT CURRENT* | CAPACITOR |
|--------------|--------------|----------------|------------------------------|
| SINGLE-PHASE | | 220-230 V | |
| | kW | A | $\mu\text{F} / 450\text{ V}$ |
| DOC36 | 0,32 | 1,47 | 6,3 |
| DOC76 | 0,76 | 3,45 | 16 |

*Maximum value in specified range

| PUMP TYPE | INPUT POWER* | INPUT CURRENT* | INPUT CURRENT* |
|-------------|--------------|----------------|----------------|
| THREE-PHASE | | 220-230 V | 380-400 V |
| | kW | A | A |
| - | - | - | - |
| - | - | - | - |

mbox_doc-2p60-en_a_te

**MINIBOX SERIES
DIMENSIONS AND WEIGHTS**



Pre-fabricated Sewage Lifting Stations

SINGLEBOX Series



MARKET SECTORS

RESIDENTIAL

APPLICATIONS

- Suitable for delivering sewage to main sewer lines located at a higher level, or where gravity drainage is impractical.



SPECIFICATIONS

- The station is equipped with:
 - **230-litre** high-density polyethylene **basin** featuring screw down lid and removable lid in two versions, with vents or sealed.
 - **Cable glands** for power supply cables (and floats).
 - **2"** delivery **pipe**.
 - **Six inlets** for entry or ventilation, **110 and 125 mm** diameter.
 - **DOMO or DL submersible pump**, vortex or channel type. Grinder version is also available (pump without float or control panel).
 - **Lowering device**.
 - **Vent** or emergency drain plug, ready for installation.
 - **Control panel** QDR type for three-phase versions.

- Versions with **vortex impeller** suitable for:
 - clean water, effluent, sewage containing suspended solids and fibres but not chemically aggressive substances or sand.
- Version with **single or twin-channel impeller** suitable for:
 - clean water, effluent, sewage containing suspended solids but not chemically aggressive substances or sand.
- **Singlebox** can be installed on the floor or buried in a suitable structure.
- **Installation is quick and easy**: for the single-phase versions, just connect the pipes and the power cord; for the three-phase versions, connect also the control panel.
- The **bottom is inclined** to aid pump suction.
- **Easy maintenance**: the pump can be completely extracted from outside.

ACCESSORIES

- Available accessories:
 - Ball-type **check valve**.
 - Emergency **float switch**.
 - **Siren**.
 - **Flashing light**.

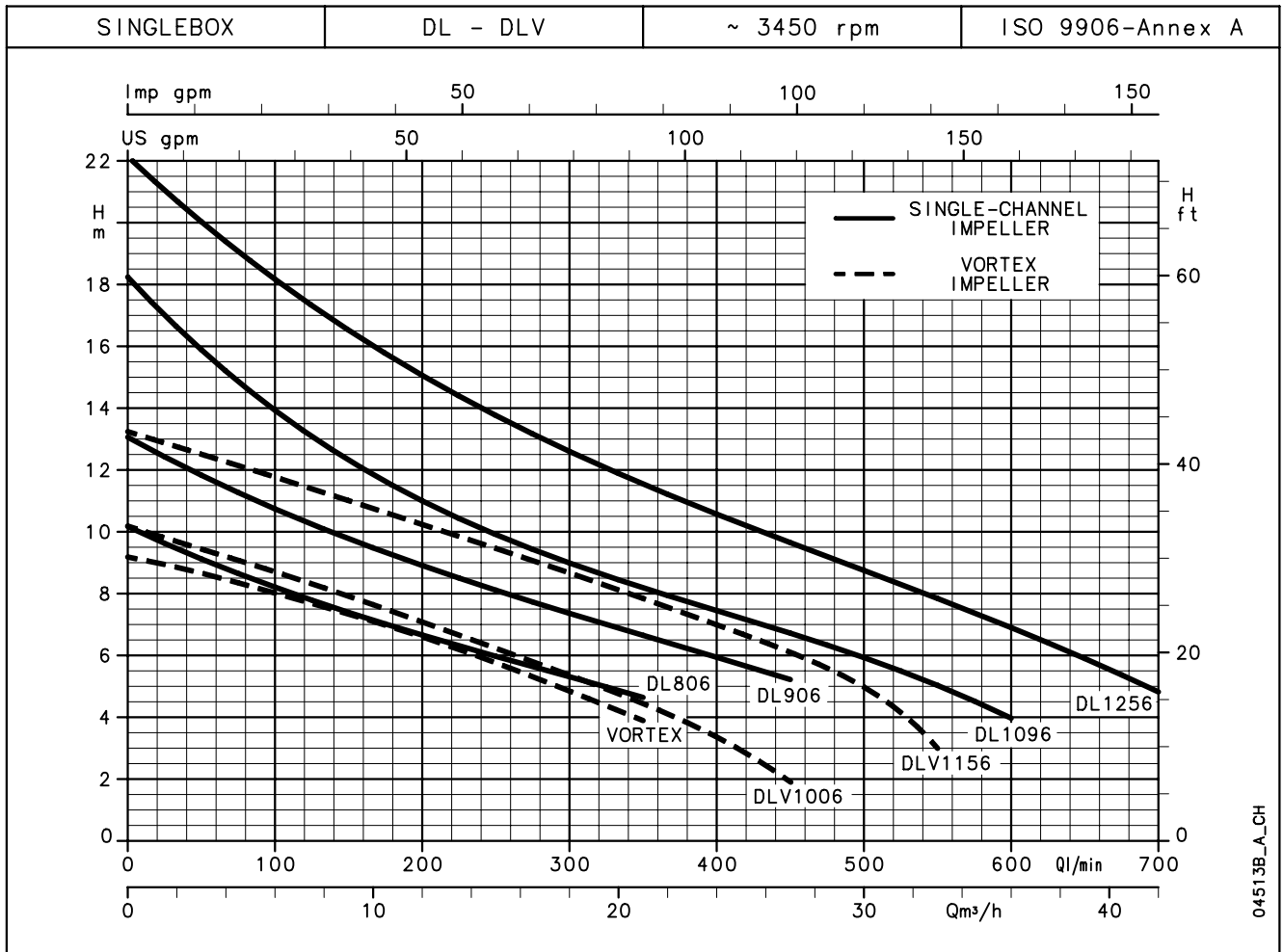
SINGLEBOX TABLE AT 60 Hz

| SINGLEBOX | | CHARACTERISTICS | | | | | FAETURED COMPONENTS | | | ACCESSORIES | | | | | |
|-------------------------|-------------------|-----------------------|---------------------|---------------|-----------|----------------|---------------------|------------------------------------|-------------------------|------------------|------------------------|--------------------------|--------------------------|--|--|
| | | kw | HP | Q max (l/min) | H max (m) | Impeller type | Control pannel QDR | Float switch pre-assembled on pump | Float switch (5m cable) | Non-return valve | Emergency float switch | Siren | Flashing light | | |
| FIXED PVC PIPE FITTINGS | SINGLE-PHASE | SINGLEBOX DOMO S76 | 0.55 | 0.75 | 280 | 10,5 | TWIN CHANNEL | | X | | X | Check with sales network | | | |
| | | SINGLEBOX DOMO S76VX | 0.55 | 0.75 | 230 | 8 | VORTEX | | X | | X | | | | |
| | | SINGLEBOX DOMO106 | 0.75 | 1 | 500 | 8,8 | TWIN CHANNEL | | X | | X | | | | |
| | | SINGLEBOX DOMO106VX | 0.75 | 1 | 350 | 7,4 | VORTEX | | X | | X | | | | |
| | | SINGLEBOX DOMO156 | 1.1 | 1.5 | 600 | 12,4 | TWIN CHANNEL | | X | | X | | | | |
| | | SINGLEBOX DOMO156VX | 1.1 | 1.5 | 400 | 10 | VORTEX | | X | | X | | | | |
| | THREE-PHASE | SINGLEBOX DOMO S76T | 0.55 | 0.75 | 280 | 10,5 | TWIN CHANNEL | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO S76VXT | 0.55 | 0.75 | 230 | 8 | VORTEX | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO106T | 0.75 | 1 | 500 | 8,8 | TWIN CHANNEL | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO106VXT | 0.75 | 1 | 350 | 7,4 | VORTEX | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO156T | 1.1 | 1.5 | 600 | 12,4 | TWIN CHANNEL | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO156VXT | 1.1 | 1.5 | 400 | 10 | VORTEX | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO206T | 1.5 | 2 | 670 | 14,5 | TWIN CHANNEL | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO206VXT | 1.5 | 2 | 500 | 11,8 | VORTEX | X | | X | X | X | X | | |
| | LIFTING DEVICE | SINGLE-PHASE | SINGLEBOX DOMO106 | 0.75 | 1 | 500 | 8,8 | TWIN CHANNEL | | X | | X | Check with sales network | | |
| | | | SINGLEBOX DOMO106VX | 0.75 | 1 | 350 | 7,4 | VORTEX | | X | | X | | | |
| | | | SINGLEBOX DOMO156 | 1.1 | 1.5 | 600 | 12,4 | TWIN CHANNEL | | X | | X | | | |
| | | | SINGLEBOX DOMO156VX | 1.1 | 1.5 | 400 | 10 | VORTEX | | X | | X | | | |
| THREE-PHASE | | SINGLEBOX DOMO106T | 0.75 | 1 | 500 | 8,8 | TWIN CHANNEL | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO106VXT | 0.75 | 1 | 350 | 7,4 | VORTEX | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO156T | 1.1 | 1.5 | 600 | 12,4 | TWIN CHANNEL | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO156VXT | 1.1 | 1.5 | 400 | 10 | VORTEX | X | | X | X | X | X | | |
| THREE-PHASE | | SINGLEBOX DOMO206T | 1.5 | 2 | 670 | 14,5 | TWIN CHANNEL | X | | X | X | X | X | | |
| | | SINGLEBOX DOMO206VXT | 1.5 | 2 | 500 | 11,8 | VORTEX | X | | X | X | X | X | | |
| | | SINGLE-PHASE | SINGLEBOX DLM806 | 0.6 | 0.8 | 350 | 10,2 | SINGLE CHANNEL | | X | | X | Check with sales network | | |
| | | | SINGLEBOX DLM1096 | 1.1 | 1.5 | 600 | 18,2 | SINGLE CHANNEL | | X | | X | | | |
| SINGLEBOX DLVM1006 | | | 1.1 | 1.5 | 450 | 10,2 | VORTEX | | X | | X | | | | |
| THREE-PHASE | | SINGLEBOX DL806 | 0.6 | 0.8 | 350 | 10,2 | MONOCANALE | X | | X | X | X | X | | |
| | | SINGLEBOX DL906 | 1.1 | 1.5 | 450 | 13,1 | SINGLE CHANNEL | X | | X | X | X | X | | |
| | | SINGLEBOX DL1096 | 1.1 | 1.5 | 600 | 18,2 | SINGLE CHANNEL | X | | X | X | X | X | | |
| | | SINGLEBOX DLV1006 | 1.1 | 1.5 | 450 | 10,2 | VORTEX | X | | X | X | X | X | | |
| | | SINGLEBOX VORTEX6 | 1.1 | 1.5 | 350 | 9,2 | VORTEX | X | | X | X | X | X | | |
| | SINGLEBOX DL1256 | 1.5 | 2 | 700 | 22,1 | SINGLE CHANNEL | X | | X | X | X | X | | | |
| | SINGLEBOX DLV1156 | 1.5 | 2 | 550 | 13,2 | VORTEX | X | | X | X | X | X | | | |

sbox_models6_a_sc

| | |
|--------------|---|
| Notes | <p>Single-phase model pumps come with start capacitor, overload protection, float switch and cord with plug.</p> <p>Versions with control panel and accessories are available on request.</p> |
|--------------|---|

DL-DLV SINGLEBOX SERIES OPERATING CHARACTERISTICS AT 3450 rpm, 60 Hz



HYDRAULIC PERFORMANCE TABLE AT 60 Hz

| DL | PUMP TYPE | RATED POWER | | Q = DELIVERY | | | | | | | | | | | | |
|----|------------|-------------|-----|---------------------------------------|------|-----|------|------|------|------|-----|-----|-----|-----|-----|--|
| | | | | H = TOTAL HEAD METRES COLUMN OF WATER | | | | | | | | | | | | |
| | | | | l/min | 0 | 100 | 150 | 200 | 300 | 350 | 400 | 450 | 500 | 600 | 700 | |
| | | kW | HP | m ³ /h | 0 | 6 | 9 | 12 | 18 | 21 | 24 | 27 | 30 | 36 | 42 | |
| | DL(M) 806 | 0,6 | 0,8 | 10,2 | 8,2 | 7,4 | 6,7 | 5,3 | 4,6 | - | - | - | - | - | - | |
| | DL906 | 1,1 | 1,5 | 13,1 | 10,7 | 9,8 | 8,9 | 7,4 | 6,6 | 5,9 | 5,2 | - | - | - | - | |
| | DL(M) 1096 | 1,1 | 1,5 | 18,2 | - | - | 11 | 9 | 8,2 | 7,5 | 6,7 | 5,9 | 4 | - | - | |
| | DL1256 | 1,5 | 2 | 22,1 | - | - | 15,1 | 12,6 | 11,5 | 10,6 | 9,6 | 8,7 | 6,9 | 4,8 | - | |

| DLV | 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 | 550 | |
| | | kW | HP | m ³ /h | 0 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | |
| | VORTEX6 | 1,1 | 1,5 | 9,2 | 8 | 7,3 | 6,6 | 5,8 | 4,8 | 3,9 | - | - | - | - | - | |
| | DLV(M) 1006 | 1,1 | 1,5 | 10,2 | - | 8 | 7,1 | 6,2 | 5,4 | 4,4 | 3,4 | 2 | - | - | - | |
| | DLV1156 | 1,5 | 2 | 13,2 | - | - | 10,2 | 9,5 | 8,7 | 7,8 | 7 | 6,1 | 5 | 3 | - | |

These performances are valid for liquids with density $\rho = 1.0 \text{ kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$

sbox_dl-dlv-2p60-en_a_th

ELECTRICAL DATA (60 Hz, 3450 rpm) SINGLEBOX SERIES

| PUMP TYPE | INPUT POWER* | INPUT CURRENT* | CAPACITOR |
|--------------|--------------|----------------|-------------------------------|
| SINGLE-PHASE | kW | 220-230 V A | $\mu\text{F} / 450 \text{ V}$ |
| DLM806 | 1,13 | 5,31 | 25 |
| - | - | - | - |
| DLM1096 | 1,72 | 7,93 | 35 |
| - | - | - | - |
| - | - | - | - |
| DLVM1006 | 1,71 | 7,91 | 35 |
| - | - | - | - |

| PUMP TYPE | INPUT POWER* | INPUT CURRENT* | INPUT CURRENT* |
|-------------|--------------|----------------|----------------|
| THREE-PHASE | kW | 220-230 V A | 380-400 V A |
| DL806 | 1,05 | 3,32 | 1,92 |
| DL906 | 1,33 | 4,02 | 2,32 |
| DL1096 | 1,63 | 4,92 | 2,84 |
| DL1256 | 1,95 | 5,77 | 3,33 |
| VORTEX6 | 1,65 | 4,85 | 2,80 |
| DLV 1006 | 1,62 | 4,90 | 2,83 |
| DLV 1156 | 2,23 | 6,49 | 3,75 |

*Maximum value in specified range

sbox_dl-dlv-2p60-en_a_th

Pre-fabricated Sewage Lifting Stations

DOUBLEBOX Series



MARKET SECTORS

RESIDENTIAL

APPLICATIONS

- Suitable for delivering sewage to main sewer lines located at a higher level, or where gravity drainage is impractical.



SPECIFICATIONS

- The station is equipped with:
 - **450-litre** high-density polyethylene **basin** featuring screw down lid and removable lid in two versions, with vents or sealed.
 - **Cable glands** for power supply cables (and floats).
 - **2" delivery pipe.**
 - **Nine inlets** for entry or ventilation, **110 and 125 mm** diameter.
 - **DOMO or DL submersible pump**, vortex or channel type. **GRINDER version is also available** (pump without float or control panel).
 - **Lowering device.**
 - **Vent** or emergency drain plug, ready for installation.
 - **Control panel**, 9QDR2 type for three-phase versions.
- Version with **vortex impeller**

suitable for:

- clean water, effluent, sewage containing suspended solids and filaments but not chemically aggressive substances or sand

- Versions with **single or twin-channel impeller** suitable for:
 - clean water, effluent, sewage containing suspended solids but not chemically aggressive substances or sand.
- **Singlebox** can be installed on the floor or buried in a suitable structure.
- **Installation is quick and easy:** for the single-phase versions, just connect the pipes and the power cord; for the three-phase versions, connect also the control panel.
- The **bottom is inclined** to aid pump suction.
- **Easy maintenance:** the pump can be completely extracted from outside.

ACCESSORIES

- Available accessories:
 - Ball-type **check valve.**
 - Emergency **float switch.**
 - **Siren.**
 - **Flashing light.**

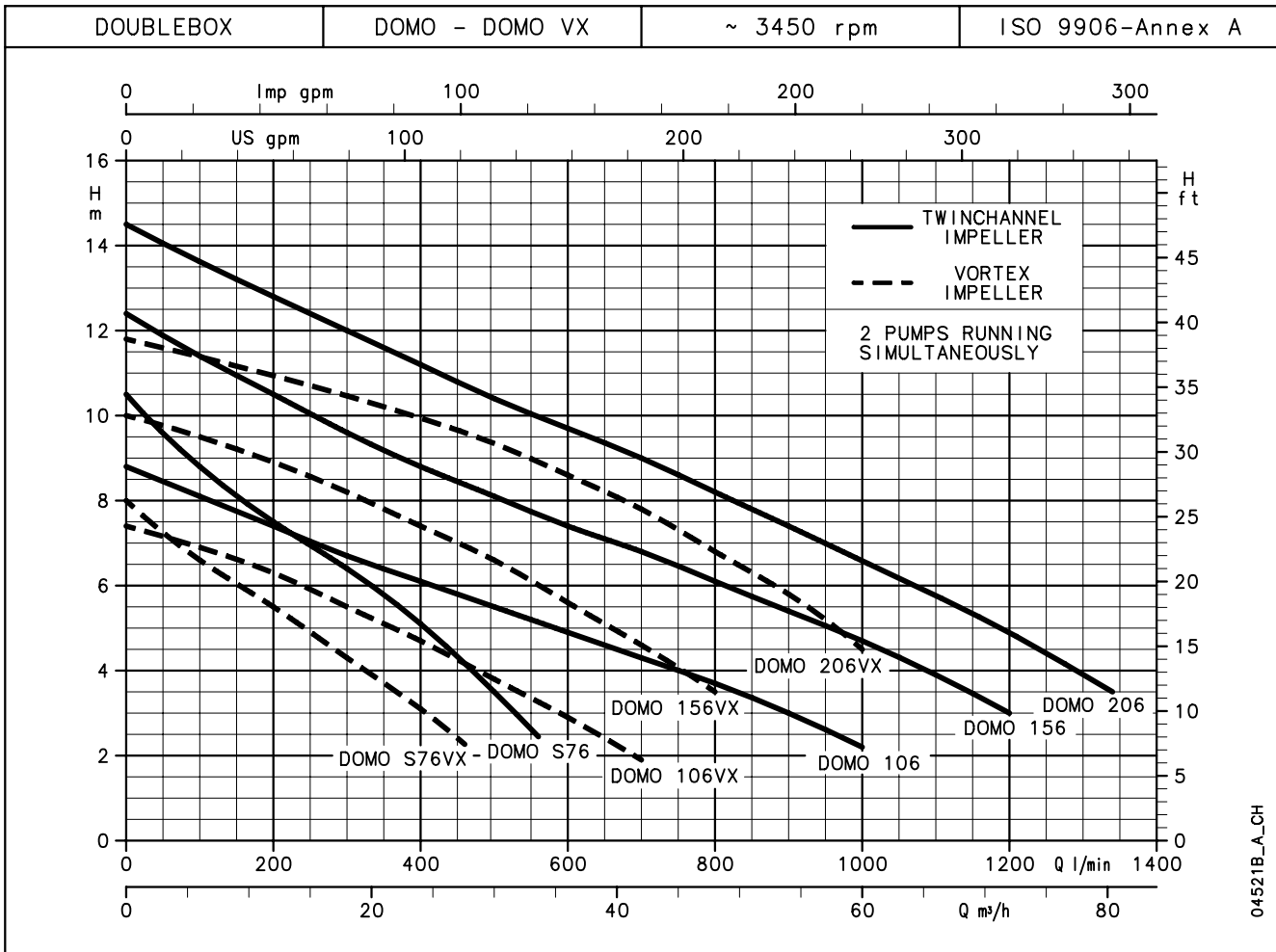
DOUBLEBOX TABLE AT 60 Hz

| DOUBLEBOX | | CHARACTERISTICS | | | | | FAETURED COMPONENTS | | | ACCESSORIES | | | | | | | | | |
|--|-----|--------------------------------|------|---------------------|-----------|----------------|---------------------|------------------------------------|-------------------------|------------------|------------------------|-------|----------------|---|---------------------------------|---|---|---|---|
| | | kw | HP | Q max (l/min) | H max (m) | Impeller type | * Control pannel | Float switch pre-assembled on pump | Float switch (5m cable) | Non-return valve | Emergency float switch | Siren | Flashing light | | | | | | |
| DATA REFERS TO 2 PUMPS RUNNING SIMULTANEOUSLY | | FIXED PVC PIPE FITTINGS | | SINGLE-PHASE | | 0.55 | 0.75 | 560 | 10,5 | TWIN CHANNEL | | X | | X | Check with sales network | | | | |
| | | | | | | 0.55 | 0.75 | 460 | 8 | VORTEX | | X | | X | | | | | |
| | | | | | | 0.75 | 1 | 1000 | 8,8 | TWIN CHANNEL | | X | | X | | | | | |
| | | | | | | 0.75 | 1 | 700 | 7,4 | VORTEX | | X | | X | | | | | |
| | | | | | | 1.1 | 1.5 | 1200 | 12,4 | TWIN CHANNEL | | X | | X | | | | | |
| | | | | | | 1.1 | 1.5 | 800 | 10 | VORTEX | | X | | X | | | | | |
| | | | | THREE-PHASE | | 0.55 | 0.75 | 560 | 10,5 | TWIN CHANNEL | X | | X | X | X | X | X | X | X |
| | | | | | | 0.55 | 0.75 | 460 | 8 | VORTEX | X | | X | X | X | X | X | X | |
| | | | | | | 0.75 | 1 | 1000 | 8,8 | TWIN CHANNEL | X | | X | X | X | X | X | X | |
| | | | | | | 0.75 | 1 | 700 | 7,4 | VORTEX | X | | X | X | X | X | X | X | |
| | | | | | | 1.1 | 1.5 | 1200 | 12,4 | TWIN CHANNEL | X | | X | X | X | X | X | X | |
| | | | | | | 1.1 | 1.5 | 800 | 10 | VORTEX | X | | X | X | X | X | X | X | |
| | | | | | | 1.5 | 2 | 1340 | 14,5 | TWIN CHANNEL | X | | X | X | X | X | X | X | |
| | | | | | | 1.5 | 2 | 1000 | 11,8 | VORTEX | X | | X | X | X | X | X | X | |
| | | LIFTING DEVICE | | SINGLE-PHASE | | 0.75 | 1 | 1000 | 8,8 | TWIN CHANNEL | | X | | X | Check with sales network | | | | |
| | | | | | | 0.75 | 1 | 700 | 7,4 | VORTEX | | X | | X | | | | | |
| | | | | | | 1.1 | 1.5 | 1200 | 12,4 | TWIN CHANNEL | | X | | X | | | | | |
| | | | | | | 1.1 | 1.5 | 800 | 10 | VORTEX | | X | | X | | | | | |
| | | | | THREE-PHASE | | 0.75 | 1 | 1000 | 8,8 | TWIN CHANNEL | X | | X | X | X | X | X | | |
| | | | | | | 0.75 | 1 | 700 | 7,4 | VORTEX | X | | X | X | X | X | X | | |
| 1.1 | 1.5 | | | | | 1200 | 12,4 | TWIN CHANNEL | X | | X | X | X | X | X | | | | |
| 1.1 | 1.5 | | | | | 800 | 10 | VORTEX | X | | X | X | X | X | X | | | | |
| 1.5 | 2 | | | | | 1340 | 14,5 | TWIN CHANNEL | X | | X | X | X | X | X | | | | |
| 1.5 | 2 | | | | | 1000 | 11,8 | VORTEX | X | | X | X | X | X | X | | | | |
| SINGLE-PHASE | | | | | | 0.6 | 0.8 | 700 | 10,2 | SINGLE CHANNEL | X | | X | X | X | X | X | | |
| | | | | | | 1.1 | 1.5 | 1200 | 18,2 | SINGLE CHANNEL | X | | X | X | X | X | X | | |
| | | | | 1.1 | 1.5 | 900 | 10,2 | VORTEX | X | | X | X | X | X | X | | | | |
| | | | | THREE-PHASE | | 0.6 | 0.8 | 700 | 10,2 | MONOCANALE | X | | X | X | X | X | X | | |
| 1.1 | 1.5 | | | | | 900 | 13,1 | SINGLE CHANNEL | X | | X | X | X | X | X | | | | |
| 1.1 | 1.5 | | | | | 1200 | 18,2 | SINGLE CHANNEL | X | | X | X | X | X | X | | | | |
| 1.1 | 1.5 | 900 | 10,2 | | | VORTEX | X | | X | X | X | X | X | | | | | | |
| 1.1 | 1.5 | 700 | 9,2 | | | VORTEX | X | | X | X | X | X | X | | | | | | |
| 1.5 | 2 | 1400 | 22,1 | | | SINGLE CHANNEL | X | | X | X | X | X | X | | | | | | |
| 1.5 | 2 | 1100 | 13,2 | | | VORTEX | X | | X | X | X | X | X | | | | | | |

dbox_model6_a_sc

| | |
|--------------|--|
| Notes | Single-phase model pumps come with start capacitor, overload protection, float switch and cord with plug. |
| | Versions with control panel and accessories are available on request.* The panel for the single-phase versions is 9QDRM2. The panel for the three-phase versions is 9QDR2. |

DOMO-DOMO VX DOUBLEBOX SERIES OPERATING CHARACTERISTICS AT 3450 rpm, 60 Hz



HYDRAULIC PERFORMANCE TABLE AT 60 Hz

| DOMO | PUMP TYPE | RATED POWER | | Q = DELIVERY | | | | | | | | | | | |
|------|-------------|-------------|--------|---------------------------------------|-----|-----|------|------|-----|------|-----|-----|------|------|------|
| | | | | l/min | 0 | 200 | 300 | 400 | 500 | 560 | 700 | 800 | 1000 | 1200 | 1340 |
| | | | | m³/h | 0 | 12 | 18 | 24 | 30 | 33,6 | 42 | 48 | 60 | 72 | 80,4 |
| | | kW | HP | H = TOTAL HEAD METRES COLUMN OF WATER | | | | | | | | | | | |
| | DOMO S76(T) | 2x0.55 | 2x0.75 | 10,5 | 7,5 | 6,4 | 5,1 | 3,5 | 2,4 | - | - | - | - | - | |
| | DOMO106(T) | 2x0.75 | 2x 1.0 | 8,8 | 7,4 | 6,7 | 6,1 | 5,5 | 5,1 | 4,3 | 3,7 | 2,2 | - | - | |
| | DOMO156(T) | 2x 1.1 | 2x 1.5 | 12,4 | - | 9,6 | 8,8 | 8,1 | 7,7 | 6,8 | 6,1 | 4,7 | 3 | - | |
| | DOMO206T | 2x 1.5 | 2x 2.0 | 14,5 | - | - | 11,2 | 10,4 | 10 | 9 | 8,2 | 6,6 | 4,9 | 3,5 | |

| DOMO VX | PUMP TYPE | RATED POWER | | Q = DELIVERY | | | | | | | | | | | |
|---------|---------------|-------------|--------|---------------------------------------|-----|-----|------|-----|-----|------|-----|-----|-----|-----|------|
| | | | | l/min | 0 | 160 | 200 | 300 | 400 | 460 | 600 | 700 | 800 | 900 | 1000 |
| | | | | m³/h | 0 | 9,6 | 12 | 18 | 24 | 27,6 | 36 | 42 | 48 | 54 | 60 |
| | | kW | HP | H = TOTAL HEAD METRES COLUMN OF WATER | | | | | | | | | | | |
| | DOMO S76VX(T) | 2x0.55 | 2x0.75 | 8 | 5,9 | 5,5 | 4,3 | 3,1 | 2,3 | - | - | - | - | - | |
| | DOMO106VX(T) | 2x0.75 | 2x 1.0 | 7,4 | - | 6,3 | 5,5 | 4,7 | 4,2 | 2,9 | 1,9 | - | - | - | |
| | DOMO156VX(T) | 2x 1.1 | 2x 1.5 | 10 | - | 8,8 | 8,2 | 7,4 | 6,9 | 5,6 | 4,6 | 3,5 | - | - | |
| | DOMO206VXT | 2x 1.5 | 2x 2.0 | 11,8 | - | - | 10,5 | 9,9 | 9,6 | 8,6 | 7,8 | 6,8 | 4,6 | 4,5 | |

These performances are valid for liquids with density $\rho = 1.0 \text{ kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$

dbox_domo-domovx-2p60-en_a_th

ELECTRICAL DATA (60 Hz, 3450 rpm) DOUBLEBOX SERIES

| PUMP TYPE | INPUT POWER* | | CAPACITOR |
|------------|--------------|----------------------------------|-------------------------------|
| | SINGLE-PHASE | | |
| | kW | INPUT CURRENT* 220-230 V A | $\mu\text{F} / 450 \text{ V}$ |
| DOMO S76 | 2x0.84 | 2x4.21 | 2x20 |
| DOMO106 | 2x 1.1 | 2x5.39 | 2x22 |
| DOMO156 | 2x1.56 | 2x7.03 | 2x30 |
| - | - | - | - |
| DOMO S76VX | 2x0.84 | 2x4.22 | 2x20 |
| DOMO106VX | 2x 1.1 | 2x5.40 | 2x22 |
| DOMO156VX | 2x1.57 | 2x7.08 | 2x30 |
| - | - | - | - |

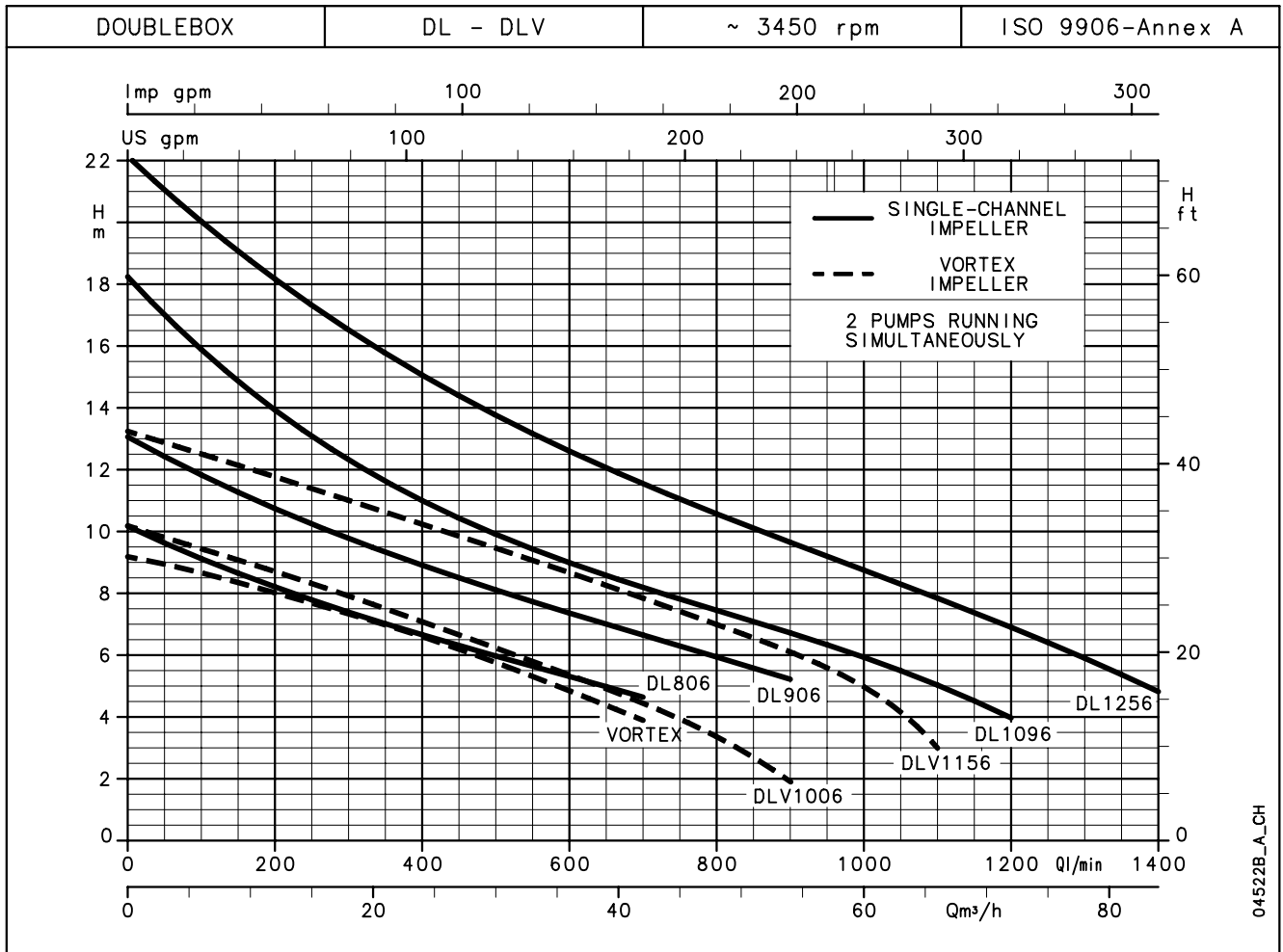
| PUMP TYPE | INPUT POWER* | | INPUT CURRENT* 220-230 V A (1) | INPUT CURRENT* 380-400 V A |
|-------------|--------------|--------------------------------------|--------------------------------------|----------------------------------|
| | THREE-PHASE | | | |
| | kW | INPUT CURRENT* 220-230 V A (1) | INPUT CURRENT* 380-400 V A | INPUT CURRENT* 380-400 V A |
| DOMO S76T | 2x0.73 | - | - | 2x1.32 |
| DOMO106T | 2x1.05 | - | - | 2x1.97 |
| DOMO156T | 2x1.45 | - | - | 2x2.54 |
| DOMO206T | 2x1.79 | - | - | 2x3.23 |
| DOMO S76VXT | 2x0.73 | - | - | 2x1.33 |
| DOMO106VXT | 2x1.05 | - | - | 2x1.98 |
| DOMO156VXT | 2x1.46 | - | - | 2x2.56 |
| DOMO206VXT | 2x1.84 | - | - | 2x3.30 |

*Maximum value in specified range

(1) Available on request

dbox_domo-domovx-2p60-en_a_te

DL-DLV DOUBLEBOX SERIES OPERATING CHARACTERISTICS AT 3450 rpm, 60 Hz



HYDRAULIC PERFORMANCE TABLE AT 60 Hz

| DL | PUMP TYPE | RATED POWER | | Q = DELIVERY | | | | | | | | | | | |
|----|------------|-------------|-------|---------------------------------------|------|-----|------|------|------|------|-----|-----|------|------|------|
| | | | | l/min | 0 | 200 | 300 | 400 | 600 | 700 | 800 | 900 | 1000 | 1200 | 1400 |
| | | | | m³/h | 0 | 12 | 18 | 24 | 36 | 42 | 48 | 54 | 60 | 72 | 84 |
| | | | | H = TOTAL HEAD METRES COLUMN OF WATER | | | | | | | | | | | |
| | DL(M) 806 | 2x0.6 | 2x0.8 | 10,2 | 8,2 | 7,4 | 6,7 | 5,3 | 4,6 | - | - | - | - | - | |
| | DL906 | 2x1.1 | 2x1.5 | 13,1 | 10,7 | 9,8 | 8,9 | 7,4 | 6,6 | 5,9 | 5,2 | - | - | - | |
| | DL(M) 1096 | 2x1.1 | 2x1.5 | 18,2 | - | - | 11 | 9 | 8,2 | 7,5 | 6,7 | 5,9 | 4 | - | |
| | DL1256 | 2x1.5 | 2x2.0 | 22,1 | - | - | 15,1 | 12,6 | 11,5 | 10,6 | 9,6 | 8,7 | 6,9 | 4,8 | |

| DLV | PUMP TYPE | RATED POWER | | Q = DELIVERY | | | | | | | | | | | |
|-----|-------------|-------------|-------|---------------------------------------|---|-----|------|-----|-----|-----|-----|-----|-----|------|------|
| | | | | l/min | 0 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 |
| | | | | m³/h | 0 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 |
| | | | | H = TOTAL HEAD METRES COLUMN OF WATER | | | | | | | | | | | |
| | VORTEX6 | 2x1.1 | 2x1.5 | 9,2 | 8 | 7,3 | 6,6 | 5,8 | 4,8 | 3,9 | - | - | - | - | |
| | DLV(M) 1006 | 2x1.1 | 2x1.5 | 10,2 | - | 8 | 7,1 | 6,2 | 5,4 | 4,4 | 3,4 | 2 | - | - | |
| | DLV1156 | 2x1.5 | 2x2.0 | 13,2 | - | - | 10,2 | 9,5 | 8,7 | 7,8 | 7 | 6,1 | 5 | 3 | |

These performances are valid for liquids with density $\rho = 1.0\text{kg/dm}^3$ and kinematic viscosity $\nu = 1\text{mm}^2/\text{sec}$

dbox_dl-dlv-2p60-en_a_th

ELECTRICAL DATA (60 Hz, 3450 rpm) DOUBLEBOX SERIES

| PUMP TYPE | INPUT POWER* | INPUT CURRENT* | CAPACITOR |
|--------------|--------------|----------------|------------------------------|
| SINGLE-PHASE | kW | 220-230 V A | $\mu\text{F} / 450\text{ V}$ |
| DLM806 | 2x1.13 | 2x5.31 | 2x25 |
| - | - | - | - |
| DLM1096 | 2x1.72 | 2x7.93 | 2x35 |
| - | - | - | - |
| - | - | - | - |
| DLVM1006 | 2x1.71 | 2x7.91 | 2x35 |
| - | - | - | - |

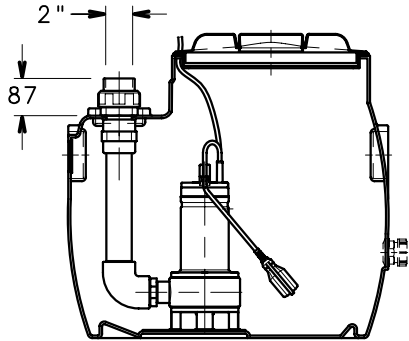
| PUMP TYPE | INPUT POWER* | INPUT CURRENT* | INPUT CURRENT* |
|-------------|--------------|----------------|----------------|
| THREE-PHASE | kW | 220-230 V A | 380-400 V A |
| DL806 | 2x1.05 | 2x3.32 | 2x1.92 |
| DL906 | 2x1.33 | 2x4.02 | 2x2.32 |
| DL1096 | 2x1.63 | 2x4.92 | 2x2.84 |
| DL1256 | 2x1.95 | 2x5.77 | 2x3.33 |
| VORTEX6 | 2x1.65 | 2x4.85 | 2x2.80 |
| DLV 1006 | 2x1.62 | 2x4.90 | 2x2.83 |
| DLV 1156 | 2x2.23 | 2x6.49 | 2x3.75 |

*Maximum value in specified range

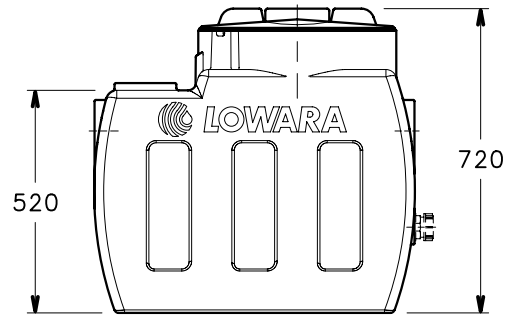
dbox_dl-dlv-2p60-en_a_te

**SINGLEBOX-DOUBLEBOX SERIES
DIMENSIONS AND VERSIONS**

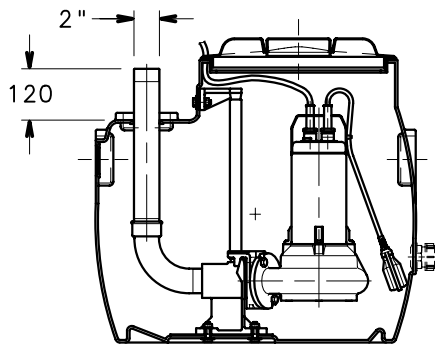
BOX + DELIVERY KIT FOR "DOMO"



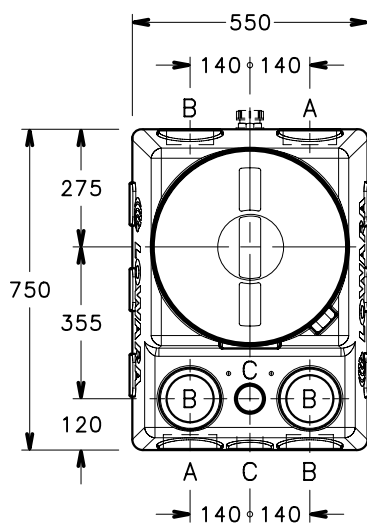
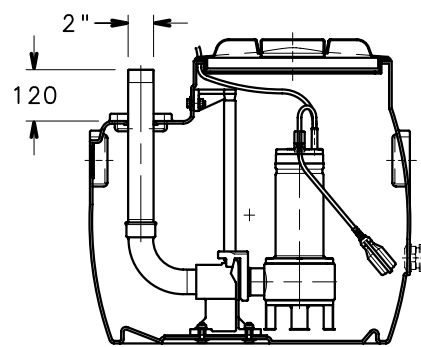
BOX



BOX + LOWERING DEVICE FOR "DL"

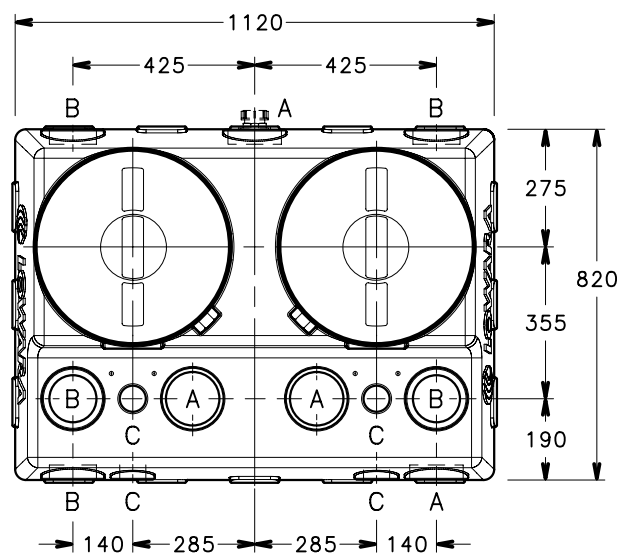


BOX + LOWERING DEVICE FOR "DOMO"



SINGLEBOX

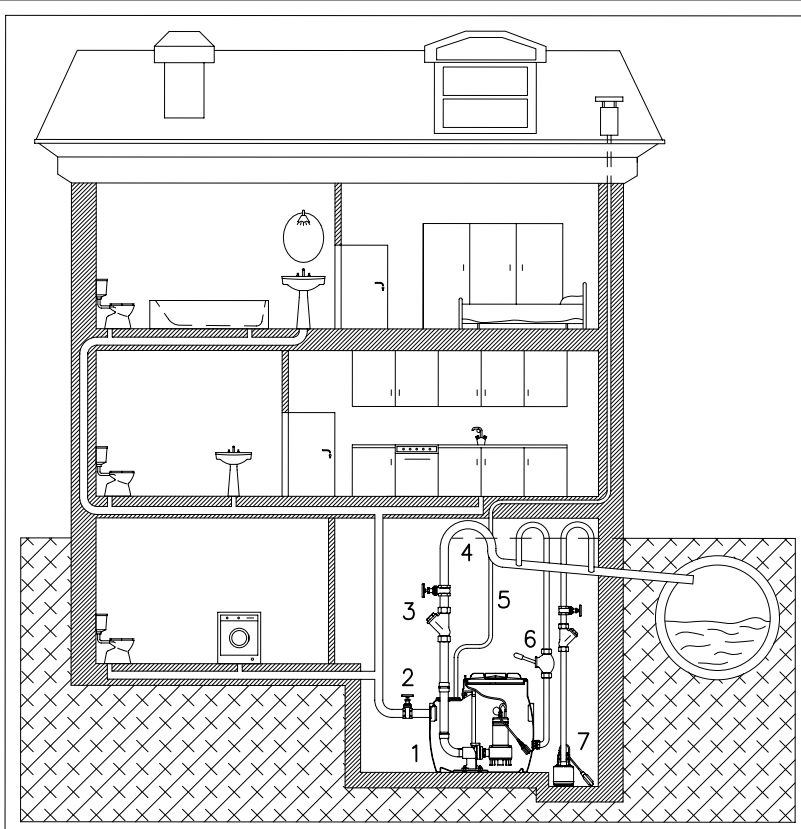
A=∅125
B=∅110
C= ∅61



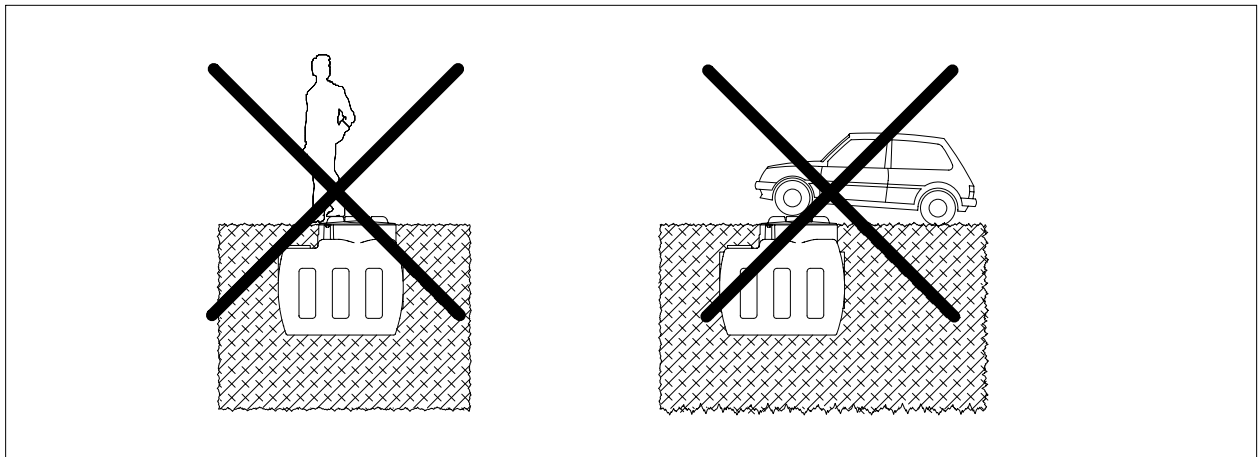
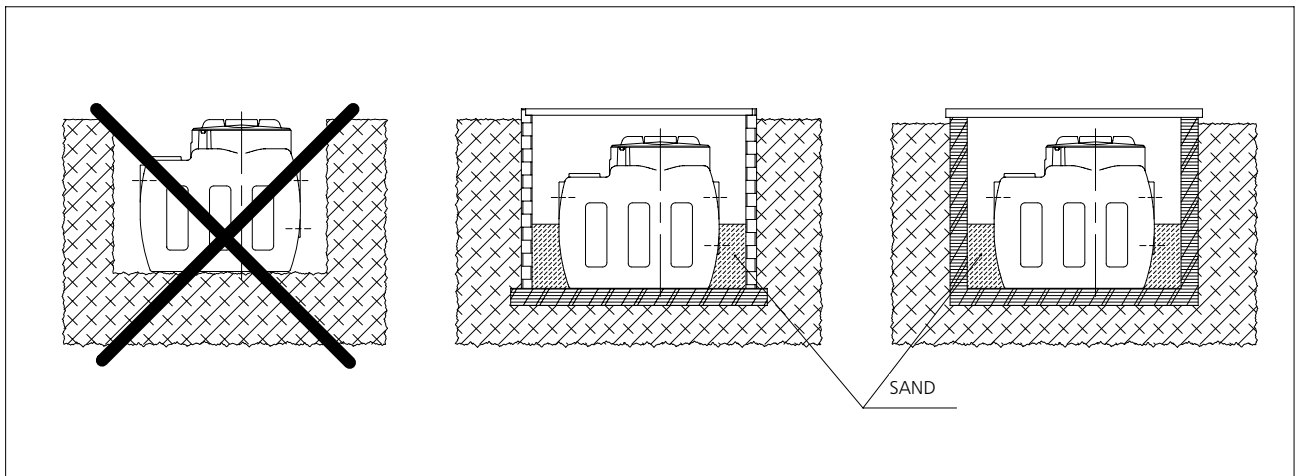
DOUBLEBOX

04514_A_DD

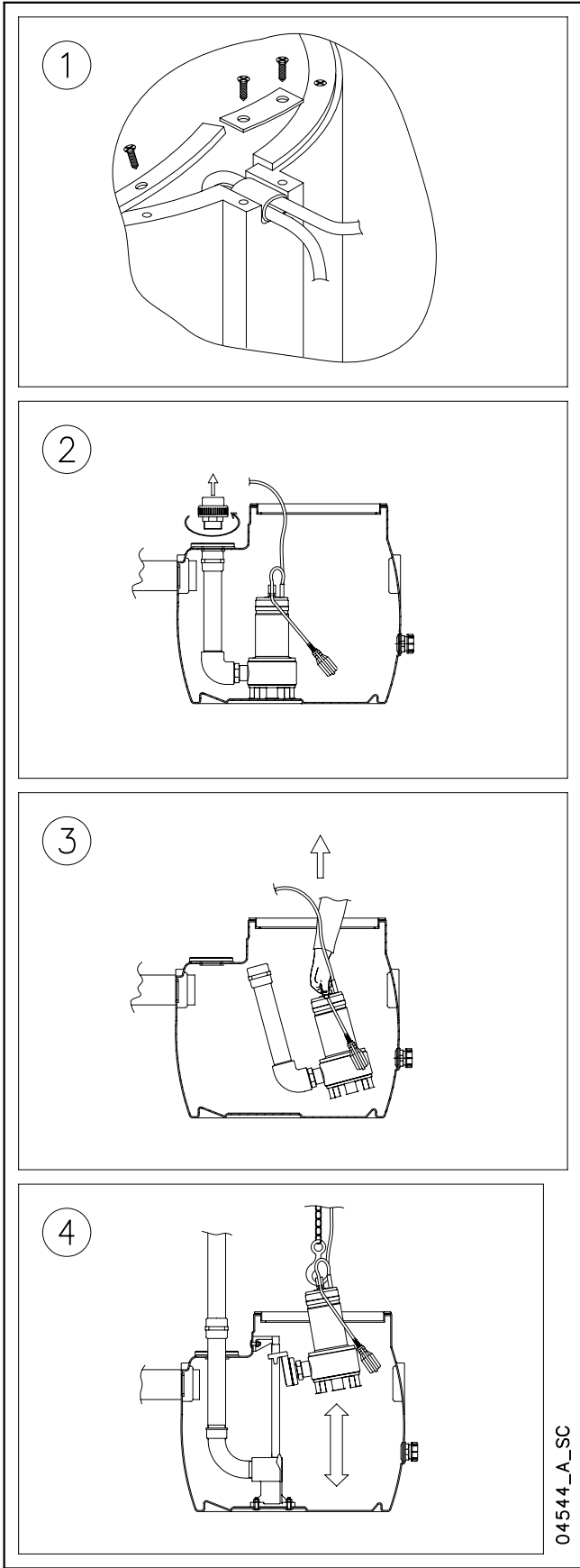
INSTALLATION EXAMPLES



- 1** Lifting station
- 2** Inlet pipe with on-off valve, flexible couplings or pipes, pipe supports
- 3** Outlet pipes with on-off valve, check valve, flexible couplings or pipes, pipe supports
- 4** Trap
- 5** Vent with flexible couplings or pipes, pipe supports
- 6** Emergency drain system with hand-operated diaphragm pump, flexible couplings or pipes, pipe supports
- 7** Auxiliary drain pump with on-off valve, check valve, flexible couplings or pipes and pipe supports



04543_A_SC

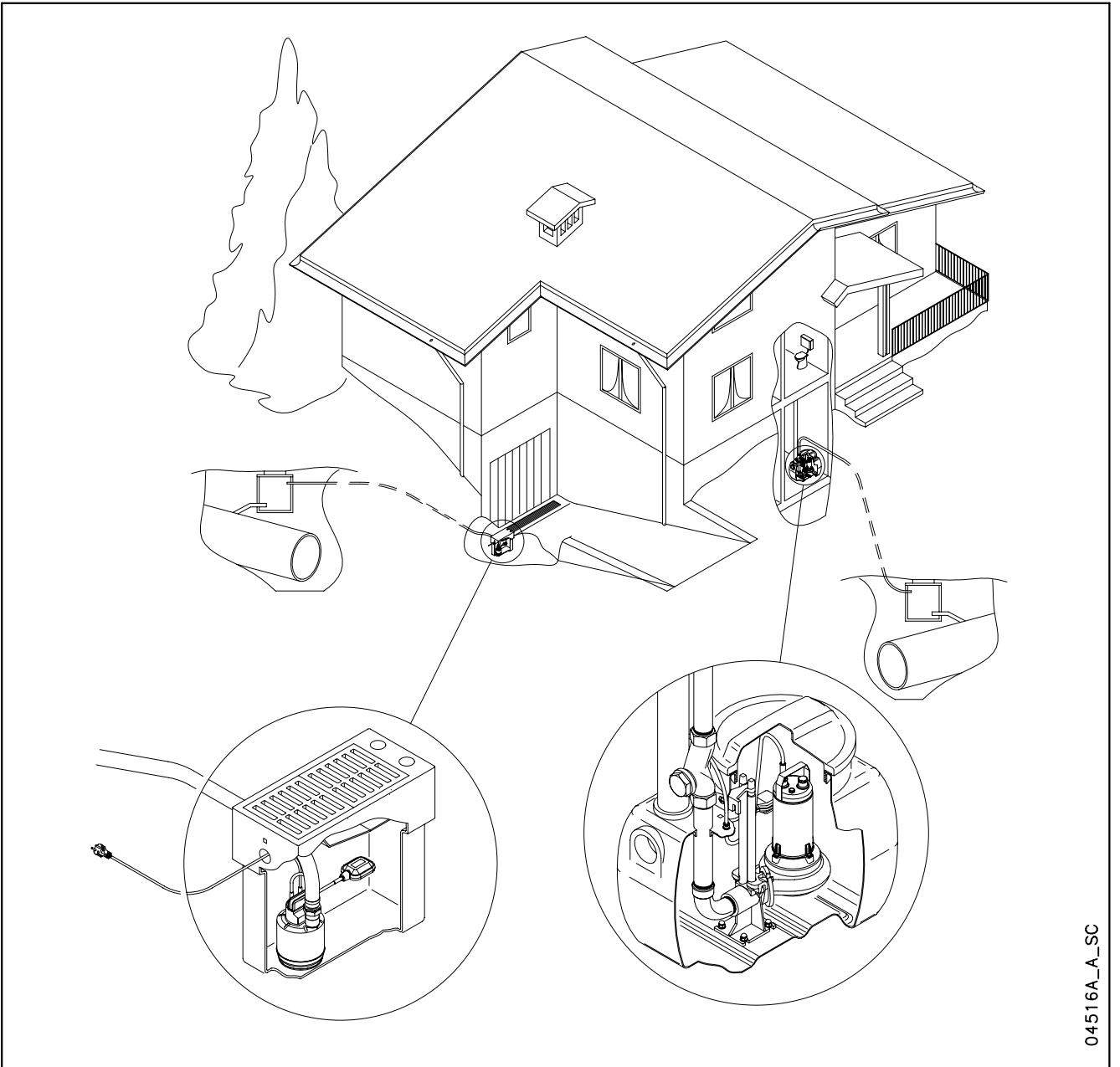


① Innovative system for cable removal from the outside

② ③ Easy pump extraction in systems featuring fixed pipe fittings, involving few operations performed from the outside

④ Easy pump extraction with slide systems

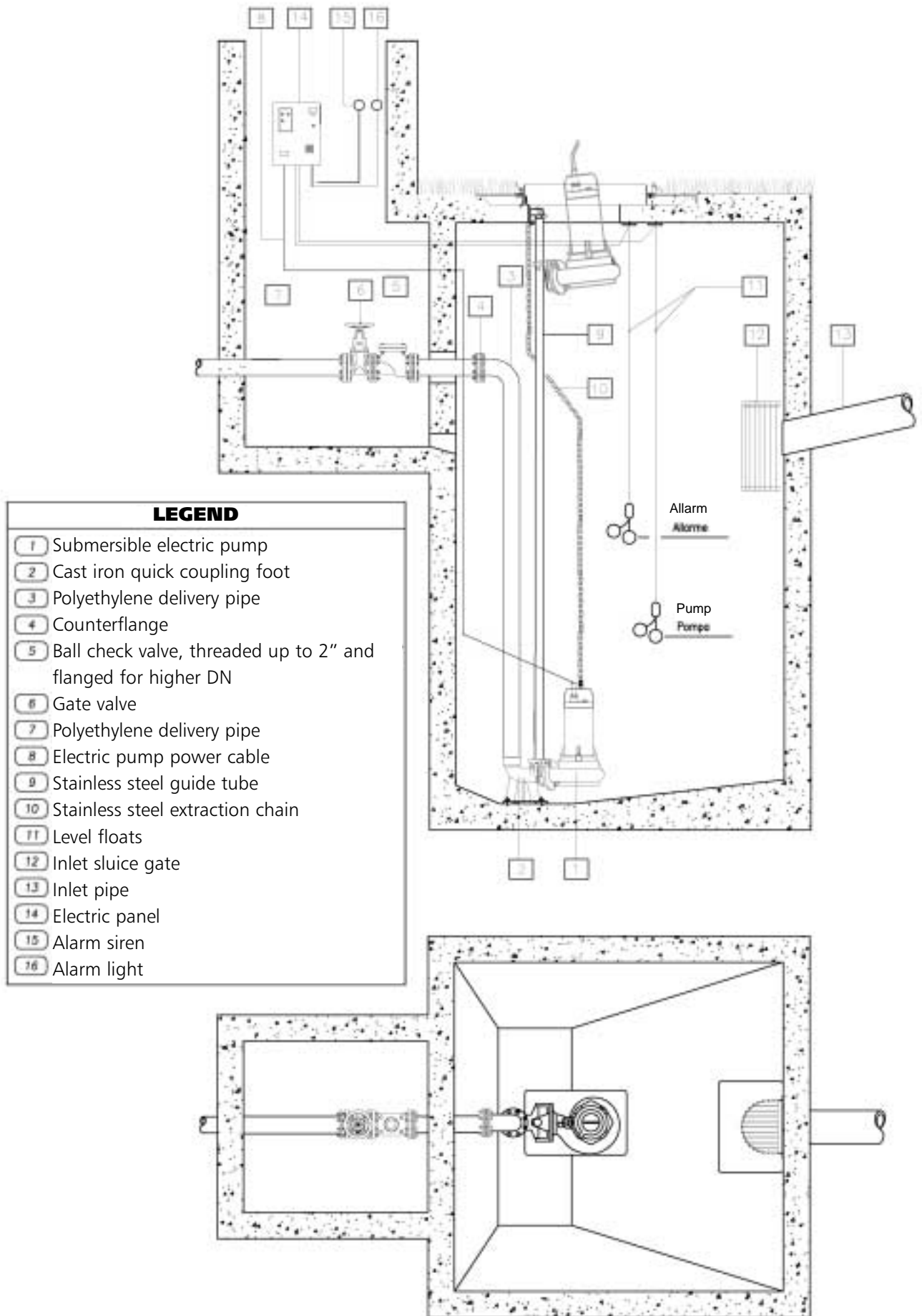
Note: for correct installation see instruction manuals.



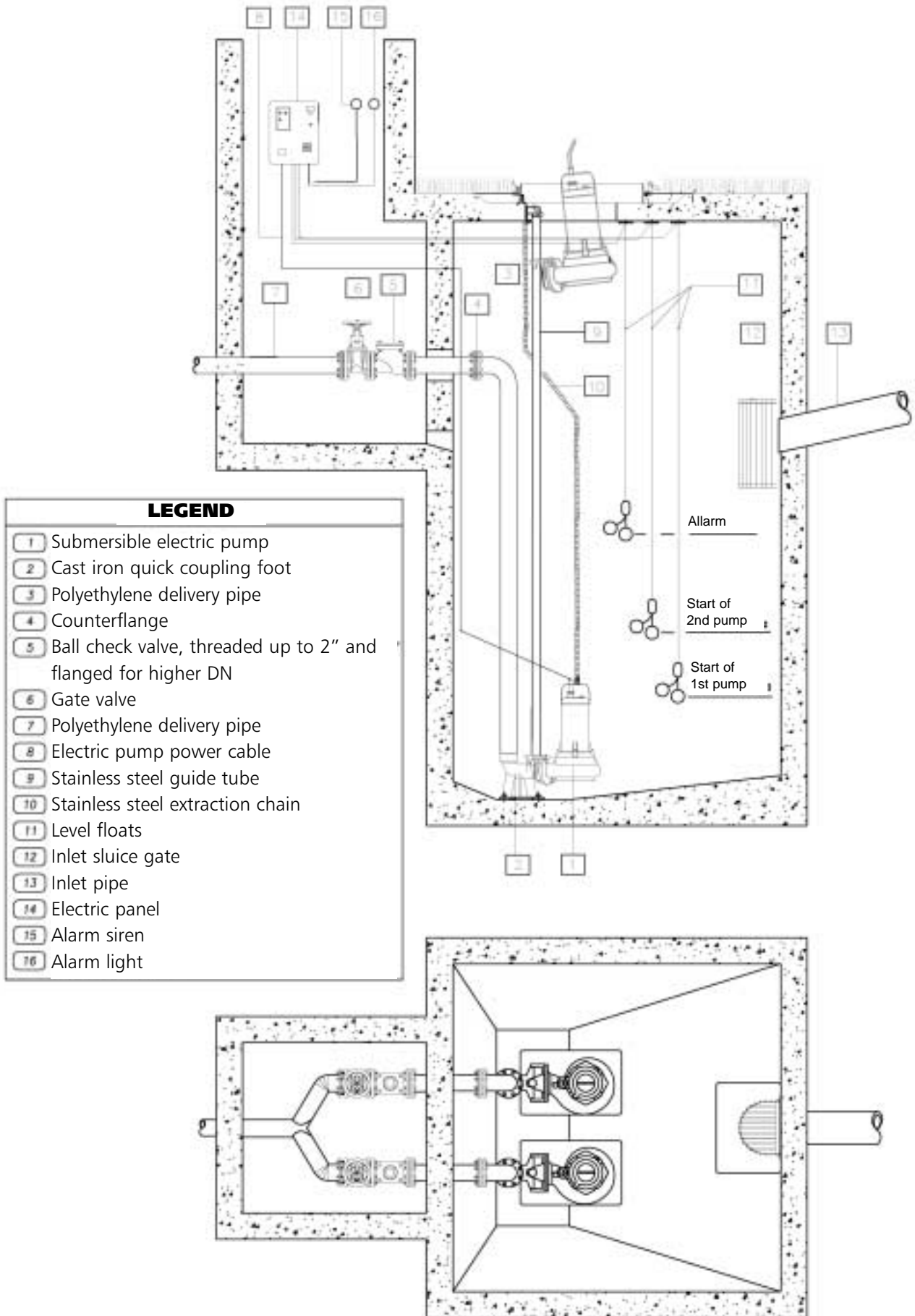
04516A_A_SC

TECHNICAL APPENDIX

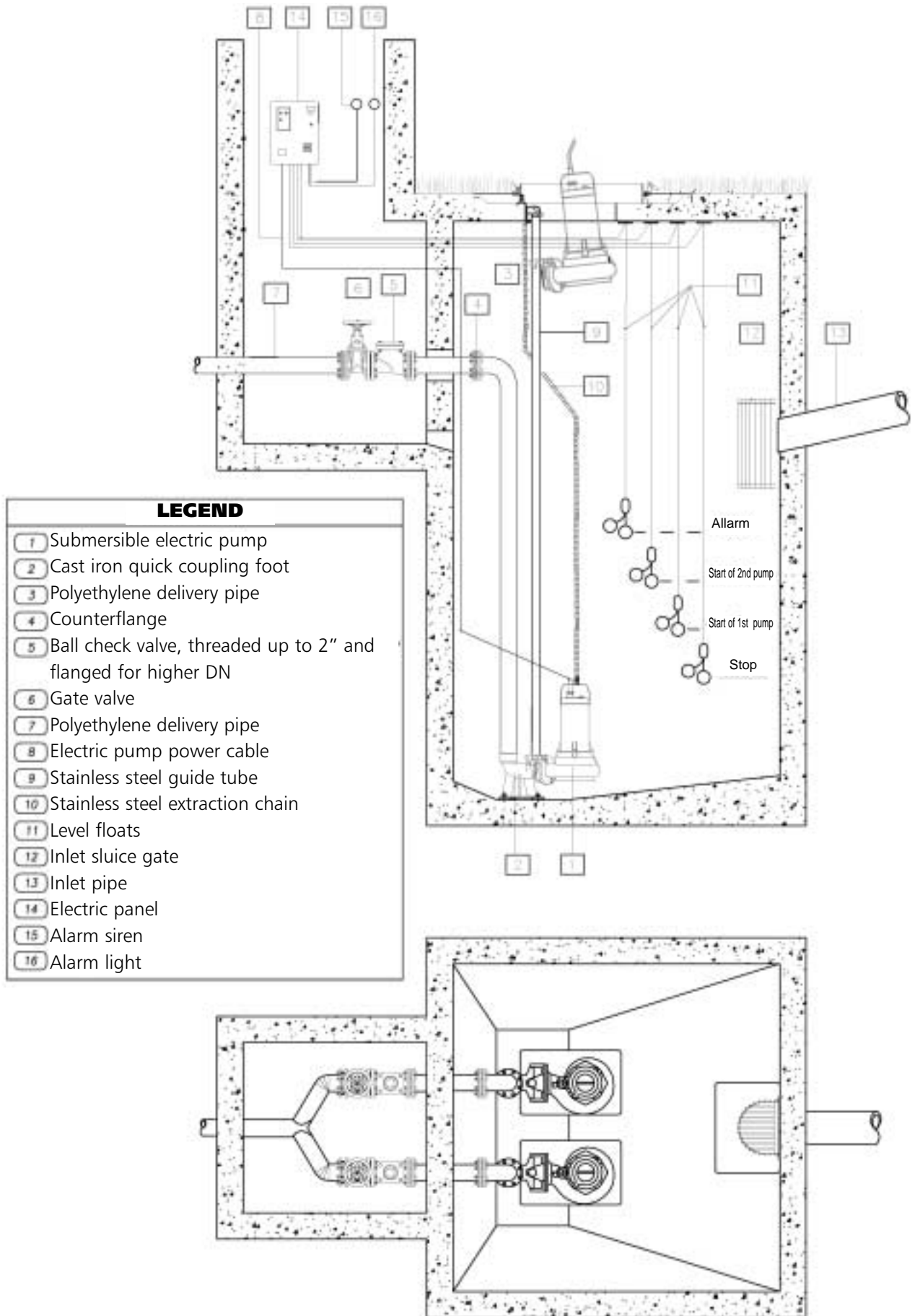
EXAMPLE OF INSTALLATION OF SINGLE-PUMP SYSTEM



EXAMPLE OF INSTALLATION OF TWO-PUMP SYSTEM WITH THREE FLOATS

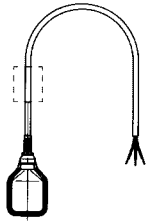


EXAMPLE OF INSTALLATION OF TWO-PUMP SYSTEM WITH FOUR FLOATS



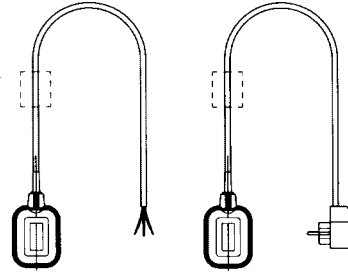
LEVEL CONTROL FLOAT

SMALL MODEL



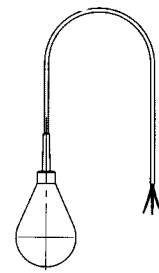
For single function (draining)
 cable length 1.5, 5, 10 m.
 Counterweight available on request for
 version with 5, 10 m cable.

KEY MODEL



For dual function
 (draining/filling)
 cable length 1.5, 5, 10 m.
 Counterweight available on request for
 version with 5, 10 m cable.
 Version with plug and socket for
 single-phase pumps up to 1 kW.

MC MATIC MODEL

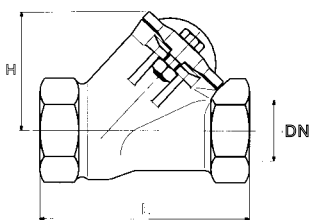


For solids-laden water (without
 mercury).
 Cable length: 15 m.

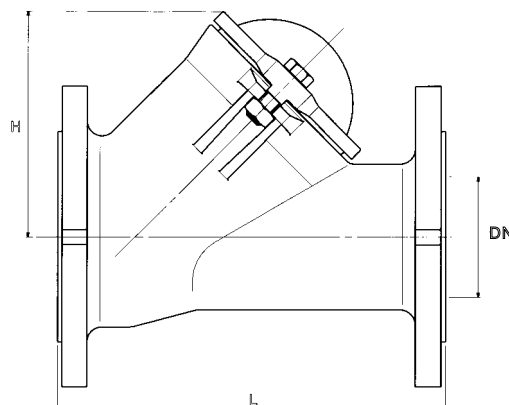
BALL CHECK VALVES FOR SOLIDS-LADEN WATER

No-clog, maximum reliability, low flow resistance.
 Maximum operating pressure: 10 bar.
 Maximum temperature: 85°C.
 Horizontal or vertical operating position.

| MODEL | DIMENSIONS (mm) | | | WEIGHT kg |
|----------|-----------------|-----|-----|--------------|
| | BALL Ø | L | H | |
| Rp 1"1/4 | 48 | 140 | 80 | 2 |
| Rp 1"1/2 | 50 | 140 | 80 | 4 |
| Rp 2" | 60 | 200 | 98 | 5,5 |
| DN 80 | 95 | 260 | 163 | 13 |
| DN 100 | 120 | 300 | 210 | 18 |
| DN 150 | 175 | 400 | 250 | 37 |



MODEL 1"1/4 - 1"1/2 - 2"



MODEL 80 - 100 - 150

FLOW RESISTANCE**TABLE OF FLOW RESISTANCE IN 100 m OF A NEW AND STRAIGHT CAST IRON PIPELINE**

| FLOW RATE | | NOMINAL DIAMETER IN mm AND INCHES | | | | | | | | | | | | | | | | | |
|-------------------|--------|-----------------------------------|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|--|
| m ³ /h | l/min. | 15 1/2" | 20 3/4" | 25 1" | 32 1 1/4" | 40 1 1/2" | 50 2" | 65 2 1/2" | 80 3" | 100 4" | 125 5" | 150 6" | 175 7" | 200 8" | 250 10" | 300 12" | 350 14" | 400 16" | |
| 0,6 | 10 | V hr 0,94 11,8 | 0,53 2,82 | 0,34 1 | 0,21 0,25 | | | | | | | | | | | | | | |
| 0,9 | 15 | V hr 1,42 25,1 | 0,8 6,04 | 0,51 2,16 | 0,31 0,55 | | | | | | | | | | | | | | |
| 1,2 | 20 | V hr 1,89 43,1 | 1,06 10,4 | 0,68 3,72 | 0,41 0,95 | 0,27 0,31 | | | | | | | | | | | | | |
| 1,5 | 25 | V hr 2,36 64,5 | 1,33 15,8 | 0,85 5,68 | 0,52 1,47 | 0,33 0,47 | | | | | | | | | | | | | |
| 1,8 | 30 | V hr 2,83 92 | 1,59 22,3 | 1,02 8 | 0,62 2,09 | 0,4 0,66 | | | | | | | | | | | | | |
| 2,1 | 35 | V hr 3,3 123 | 1,86 29,8 | 1,19 10,8 | 0,73 2,81 | 0,46 0,89 | 0,3 | | | | | | | | | | | | |
| 2,4 | 40 | V hr 3,77 164 | 2,12 38,2 | 1,36 13,8 | 0,83 2,65 | 0,53 1,15 | 0,34 0,4 | | | | | | | | | | | | |
| 3 | 50 | V hr 4,72 246 | 2,65 58,2 | 1,7 21,5 | 1,04 5,6 | 0,66 1,75 | 0,42 0,61 | | | | | | | | | | | | |
| 3,6 | 60 | V hr 3,18 82 | 2,04 30 | 1,24 8 | 0,8 2,48 | 0,51 0,86 | | | | | | | | | | | | | |
| 4,2 | 70 | V hr 3,72 110 | 2,38 40 | 1,45 10,8 | 0,93 3,33 | 0,59 1,14 | | | | | | | | | | | | | |
| 4,8 | 80 | V hr 4,25 141 | 2,72 141 | 1,66 51,5 | 1,06 13,9 | 0,68 4,3 | 1,46 | | | | | | | | | | | | |
| 5,4 | 90 | V hr 3,3 64 | 1,86 17,5 | 1,19 5,4 | 0,73 1,82 | 0,46 0,46 | 0,3 | 0,45 0,46 | | | | | | | | | | | |
| 6 | 100 | V hr 3,77 79 | 2,12 21,4 | 1,36 6,6 | 0,83 2,22 | 0,53 0,56 | 0,34 | 0,5 0,56 | | | | | | | | | | | |
| 7,5 | 125 | V hr 4,25 120 | 2,72 120 | 1,66 33 | 1,06 10 | 0,63 0,86 | 0,34 | 0,63 0,86 | | | | | | | | | | | |
| 9 | 150 | V hr 4,72 47 | 3,06 47 | 1,87 14,2 | 1,19 4,74 | 0,76 1,21 | 0,45 0,43 | 0,46 | 0,5 0,43 | | | | | | | | | | |
| 10,5 | 175 | V hr 3,18 63 | 2,04 19 | 1,24 6,3 | 0,8 1,63 | 0,51 0,57 | | | | | | | | | | | | | |
| 12 | 200 | V hr 4,15 82 | 2,65 24,5 | 1,7 8,1 | 1,01 2,1 | 0,66 0,74 | | | | | | | | | | | | | |
| 15 | 250 | V hr 5,18 126 | 3,32 37,5 | 2,12 12,3 | 1,26 3,2 | 1,12 1,12 | | | | | | | | | | | | | |
| 18 | 300 | V hr 3,98 53 | 2,55 17,3 | 1,51 4,5 | 1 1,58 | 0,64 0,51 | | | | | | | | | | | | | |
| 24 | 400 | V hr 5,31 92 | 3,4 29,5 | 2,01 7,8 | 1,33 2,7 | 0,85 0,89 | | | | | | | | | | | | | |
| 30 | 500 | V hr 6,63 140 | 4,25 44,8 | 2,51 12 | 1,66 4,13 | 1,06 1,36 | 0,68 0,48 | | | | | | | | | | | | |
| 36 | 600 | V hr 5,1 63 | 3,02 16,9 | 1,99 5,8 | 1,27 1,93 | 0,82 0,68 | | | | | | | | | | | | | |
| 42 | 700 | V hr 5,94 84 | 3,52 22,6 | 2,32 7,8 | 1,49 2,6 | 0,95 0,9 | | | | | | | | | | | | | |
| 48 | 800 | V hr 6,79 108 | 4,02 29 | 1,70 10 | 1,09 3,35 | 0,75 0,43 | | | | | | | | | | | | | |
| 54 | 900 | V hr 7,64 134 | 4,52 36 | 1,91 12,5 | 1,22 4,2 | 0,85 0,54 | | | | | | | | | | | | | |
| 60 | 1000 | V hr 5,03 44,5 | 3,32 15,2 | 2,12 5,14 | 1,36 1,76 | 0,94 0,66 | | | | | | | | | | | | | |
| 75 | 1250 | V hr 6,28 68 | 4,15 23 | 2,65 7,9 | 1,70 2,68 | 1,18 0,48 | 0,87 0,48 | | | | | | | | | | | | |
| 90 | 1500 | V hr 7,54 96 | 4,98 32,6 | 3,18 11,2 | 2,04 3,77 | 1,42 1,42 | 1,04 0,68 | | | | | | | | | | | | |
| 105 | 1750 | V hr 8,79 129 | 5,81 43,5 | 3,72 15 | 2,38 5,04 | 1,65 1,91 | 1,21 0,91 | 0,93 0,45 | | | | | | | | | | | |
| 120 | 2000 | V hr 6,63 56 | 4,25 19,4 | 2,72 6,5 | 1,89 2,43 | 1,39 1,18 | 1,06 0,58 | 0,68 0,16 | | | | | | | | | | | |
| 150 | 2500 | V hr 8,29 85 | 5,31 30 | 3,40 9,8 | 2,36 3,75 | 1,73 1,79 | 1,33 0,89 | 0,85 0,25 | | | | | | | | | | | |
| 180 | 3000 | V hr 9,95 120 | 6,37 42 | 4,08 13,8 | 2,83 5,3 | 2,08 2,53 | 1,59 1,25 | 1,02 0,35 | 0,71 0,15 | | | | | | | | | | |
| 300 | 5000 | V hr 10,62 124,9 | 6,79 41,3 | 4,72 16,74 | 3,47 7,81 | 2,65 4,03 | 1,70 1,34 | 1,18 0,54 | 0,87 0,25 | 0,87 0,13 | | | | | | | | | |
| 600 | 10000 | V hr 13,59 161 | 9,44 65 | 6,93 30,2 | 5,31 15,6 | 3,4 2,09 | 2,36 1,56 | 1,73 1,09 | 1,33 0,89 | 0,97 0,5 | | | | | | | | | |
| 1200 | 20000 | V hr 6,79 20,1 | 4,72 8,13 | 3,47 3,8 | 2,65 1,95 | 1,70 1,18 | 1,18 0,77 | 0,87 0,52 | 0,48 0,4 | | | | | | | | | | |
| 1800 | 30000 | V hr 18,07 18,07 | 11,8 11,8 | 8,39 8,67 | 5,2 6,63 | 4,0 4,32 | | | | | | | | | | | | | |
| 3000 | 50000 | V hr 11,8 49,5 | 8,67 23 | 6,63 11,8 | 4,32 11,8 | | | | | | | | | | | | | | |
| 4500 | 75000 | V hr 17,7 110,5 | 13 51,3 | 9,9 26,4 | | | | | | | | | | | | | | | |
| 6000 | 100000 | V hr 17,33 90,6 | 13,27 46,6 | | | | | | | | | | | | | | | | |

THE FLOW RESISTANCE MUST BE MULTIPLIED BY:

- 0.8 for stainless steel pipes
- 1.25 for slightly rusted steel pipes
- 1.7 for pipes with deposits that reduce the flow section
- 0.7 for aluminium pipes
- 1.3 for fibre-cement pipes

Hr = FLOW RESISTANCE (m/100 m OF PIPELINE)
V = WATER SPEED (m/sec)

FLOW RESISTANCE
TABLE OF FLOW RESISTANCE IN BENDS, VALVES AND GATES IN cm OF COLUMN OF WATER

| WATER SPEED m/sec | SHARP BENDS | | | | | SMOOTH BENDS | | | | | STANDARD GATE VALVES | FOOT VALVES | CHECK VALVES |
|----------------------|----------------|----------------|----------------|----------------|----------------|---------------------|---------------------|---------------------|-------------------|---------------------|----------------------|-------------|--------------|
| | $a = 30^\circ$ | $a = 40^\circ$ | $a = 60^\circ$ | $a = 80^\circ$ | $a = 90^\circ$ | $\frac{d}{R} = 0,4$ | $\frac{d}{R} = 0,6$ | $\frac{d}{R} = 0,8$ | $\frac{d}{R} = 1$ | $\frac{d}{R} = 1,5$ | | | |
| 0,10 | 0,03 | 0,04 | 0,05 | 0,07 | 0,08 | 0,007 | 0,008 | 0,01 | 0,0155 | 0,027 | 0,030 | 30 | 30 |
| 0,15 | 0,06 | 0,07 | 0,10 | 0,14 | 0,17 | 0,016 | 0,019 | 0,024 | 0,033 | 0,06 | 0,033 | 31 | 31 |
| 0,2 | 0,11 | 0,13 | 0,18 | 0,26 | 0,31 | 0,028 | 0,033 | 0,04 | 0,058 | 0,11 | 0,058 | 31 | 31 |
| 0,25 | 0,17 | 0,21 | 0,28 | 0,4 | 0,48 | 0,044 | 0,052 | 0,063 | 0,091 | 0,17 | 0,090 | 31 | 31 |
| 0,3 | 0,25 | 0,30 | 0,41 | 0,6 | 0,7 | 0,063 | 0,074 | 0,09 | 0,13 | 0,25 | 0,13 | 31 | 31 |
| 0,35 | 0,33 | 0,40 | 0,54 | 0,8 | 0,93 | 0,085 | 0,10 | 0,12 | 0,18 | 0,33 | 0,18 | 31 | 31 |
| 0,4 | 0,43 | 0,52 | 0,71 | 1,0 | 1,2 | 0,11 | 0,13 | 0,16 | 0,23 | 0,43 | 0,23 | 32 | 31 |
| 0,5 | 0,67 | 0,81 | 1,1 | 1,6 | 1,9 | 0,18 | 0,21 | 0,26 | 0,37 | 0,67 | 0,37 | 33 | 32 |
| 0,6 | 0,97 | 1,2 | 1,6 | 2,3 | 2,8 | 0,25 | 0,29 | 0,36 | 0,52 | 0,97 | 0,52 | 34 | 32 |
| 0,7 | 1,35 | 1,65 | 2,2 | 3,2 | 3,9 | 0,34 | 0,40 | 0,48 | 0,70 | 1,35 | 0,70 | 35 | 32 |
| 0,8 | 1,7 | 2,1 | 2,8 | 4,0 | 4,8 | 0,45 | 0,53 | 0,64 | 0,93 | 1,7 | 0,95 | 36 | 33 |
| 0,9 | 2,2 | 2,7 | 3,6 | 5,2 | 6,2 | 0,57 | 0,67 | 0,82 | 1,18 | 2,2 | 1,20 | 37 | 34 |
| 1,0 | 2,7 | 3,3 | 4,5 | 6,4 | 7,6 | 0,7 | 0,82 | 1,0 | 1,45 | 2,7 | 1,45 | 38 | 35 |
| 1,5 | 6,0 | 7,3 | 10 | 14 | 17 | 1,6 | 1,9 | 2,3 | 3,3 | 6 | 3,3 | 47 | 40 |
| 2,0 | 11 | 14 | 18 | 26 | 31 | 2,8 | 3,3 | 4,0 | 5,8 | 11 | 5,8 | 61 | 48 |
| 2,5 | 17 | 21 | 28 | 40 | 48 | 4,4 | 5,2 | 6,3 | 9,1 | 17 | 9,1 | 78 | 58 |
| 3,0 | 25 | 30 | 41 | 60 | 70 | 6,3 | 7,4 | 9 | 13 | 25 | 13 | 100 | 71 |
| 3,5 | 33 | 40 | 55 | 78 | 93 | 8,5 | 10 | 12 | 18 | 33 | 18 | 123 | 85 |
| 4,0 | 43 | 52 | 70 | 100 | 120 | 11 | 13 | 16 | 23 | 42 | 23 | 150 | 100 |
| 4,5 | 55 | 67 | 90 | 130 | 160 | 14 | 21 | 26 | 37 | 55 | 37 | 190 | 120 |
| 5,0 | 67 | 82 | 110 | 160 | 190 | 18 | 29 | 36 | 52 | 67 | 52 | 220 | 140 |

- 1) Flow resistance in bends is due to the contraction of the liquid threads resulting from the change of direction: the development of the bends must therefore be included in the length of the pipeline.
- 2) Flow resistance in valves and gates was determined on the basis of practical tests.

VOLUMETRIC CAPACITY

| litres per minute l/min | cubic metres per hour m ³ /h | cubic feet per hour ft ³ /h | cubic feet per minute ft ³ /min | imp. gal. per minute imp. gal./min | US gal. per minute US gal./min |
|-------------------------------|---|--|--|--|--------------------------------------|
| 1,000 | 0,0600 | 2,1189 | 0,0353 | 0,2200 | 0,2640 |
| 16,6670 | 1,0000 | 35,3147 | 0,5886 | 3,6660 | 4,4030 |
| 0,4720 | 0,0283 | 1,0000 | 0,0167 | 0,1040 | 0,1250 |
| 28,3170 | 1,6990 | 60,0000 | 1,0000 | 6,2290 | 7,4800 |
| 4,5460 | 0,2728 | 9,6326 | 0,1605 | 1,0000 | 1,2010 |
| 3,7850 | 0,2271 | 8,0209 | 0,1337 | 0,8330 | 1,0000 |
| 0,1100 | 0,0066 | 0,2339 | 0,0039 | 0,0240 | 0,0290 |

PRESSURE AND HEAD

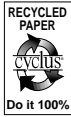
| Newton per square metre N/m ² | kiloPascal kPa | bar bar | pound force per square inch psi | metre of water m H ₂ O | millimetre of mercury mm Hg |
|--|-------------------|---------------------|---------------------------------------|--------------------------------------|-----------------------------------|
| 1,000 | 0,0010 | 1 x 10 ⁵ | 1,45 x 10 ⁻⁴ | 1,02 x 10 ⁻⁴ | 0,0075 |
| 1.000,0000 | 1,0000 | 0,0100 | 0,1450 | 0,1020 | 7,5000 |
| 100.000,0000 | 100,0000 | 1,0000 | 14,5000 | 10,2000 | 750,1000 |
| 98.067,0000 | 98,0700 | 0,9810 | 14,2200 | 10,0000 | 735,6000 |
| 6.895,0000 | 6,8950 | 0,0690 | 1,0000 | 0,7030 | 51,7200 |
| 2.984,0000 | 2,9840 | 0,0300 | 0,4330 | 0,3050 | 22,4200 |
| 9.789,0000 | 9,7890 | 0,0980 | 1,4200 | 1,0000 | 73,4200 |
| 133,3000 | 0,1330 | 0,0013 | 0,0190 | 0,0140 | 1,0000 |
| 3.386,0000 | 3,3860 | 0,0338 | 0,4910 | 0,3450 | 25,4000 |

LENGTH

| millimetre mm | centimetre cm | metre m | inch in | foot ft | yard yd |
|------------------|------------------|---------------|---------------|---------------|---------------|
| 1,000 | 0,1000 | 0,0010 | 0,0394 | 0,0033 | 0,0011 |
| 10,0000 | 1,0000 | 0,0100 | 0,3937 | 0,0328 | 0,0109 |
| 1000,0000 | 100,0000 | 1,0000 | 39,3701 | 3,2808 | 1,0936 |
| 25,4000 | 2,5400 | 0,0254 | 1,0000 | 0,0833 | 0,0278 |
| 304,8000 | 30,4800 | 3,0480 | 12,0000 | 1,0000 | 0,3333 |
| 914,4000 | 91,4400 | 0,9144 | 36,0000 | 3,0000 | 1,0000 |

VOLUME

| cubic metre m ³ | litre l | millilitre ml | imp. gallon imp. gal. | US gallon US gal | cubic foot ft ³ |
|-------------------------------|---------------|---------------------|--------------------------|--------------------------|-------------------------------|
| 1,000 | 1.000,0000 | 1 x 10 ⁶ | 220,0000 | 264,2000 | 35,3147 |
| 0,0010 | 1,0000 | 1.000,0000 | 0,2200 | 0,2642 | 0,0353 |
| 1 x 10 ⁻⁶ | 0,0010 | 1,0000 | 2,2 x 10 ⁻⁴ | 2,642 x 10 ⁻⁴ | 3,53 x 10 ⁻⁵ |
| 0,0045 | 4,5460 | 4.546,0000 | 1,0000 | 1,2010 | 0,1605 |
| 0,0038 | 3,7850 | 3.785,0000 | 0,8327 | 1,0000 | 0,1337 |
| 0,0283 | 28,3170 | 28.317,0000 | 6,2288 | 7,4805 | 1,0000 |



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