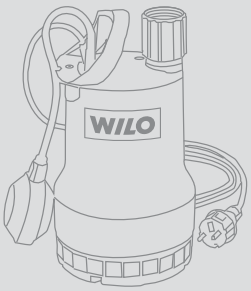
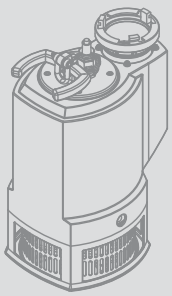
WILO
Pumpen Intelligenz.

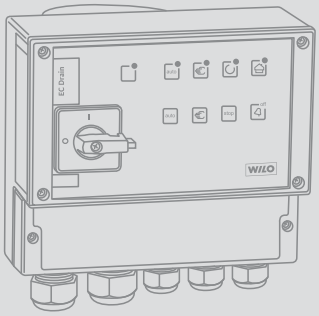
Catalogue Drainage and Sewage

Drainage Pumps

Submersible,
Self-priming Pumps
and Accessories







WILO EMU Technologie

Catalogue C1 – 50 Hz – 2008

C1

1	2	3	4	5	6	7	8	9	10	11	12	13
Wilo-Jet WJ	Wilo-Sub TWS-SE PnP	Wilo-SilentMaster	Wilo-Sub TWU 3	Wilo-RainSystem AF Comfort	Wilo-Comfort-Vario COR	Wilo-Stratos ECO	Wilo-Safe	Wilo-Star-Z 15 TT	Wilo-DrainLift Con	Wilo-Stratos	Wilo-Drain TM / TMW 32 Twister	Wilo-DrainLift S
B1	B1	B1	B1	B1	B4	A1	A1	A1	C3	A1	C1	C3

1	2	3	4	5	6	7	8	9	10
Wilo-EMU KS	Wilo-RainSystem AF 150	Wilo-Comfort-Vario COR 4	Wilo-Stratos-D	Wilo-CronoLine-IL-E	Wilo-TOP-Z	Wilo-Stratos	Wilo-CronoBloc-BL	Wilo-DrainLift M	Wilo-DrainLift WS
C1	B1	B4	A1	A2	A1	A1	A3	C3	C3

Program Overview and Fields of Application

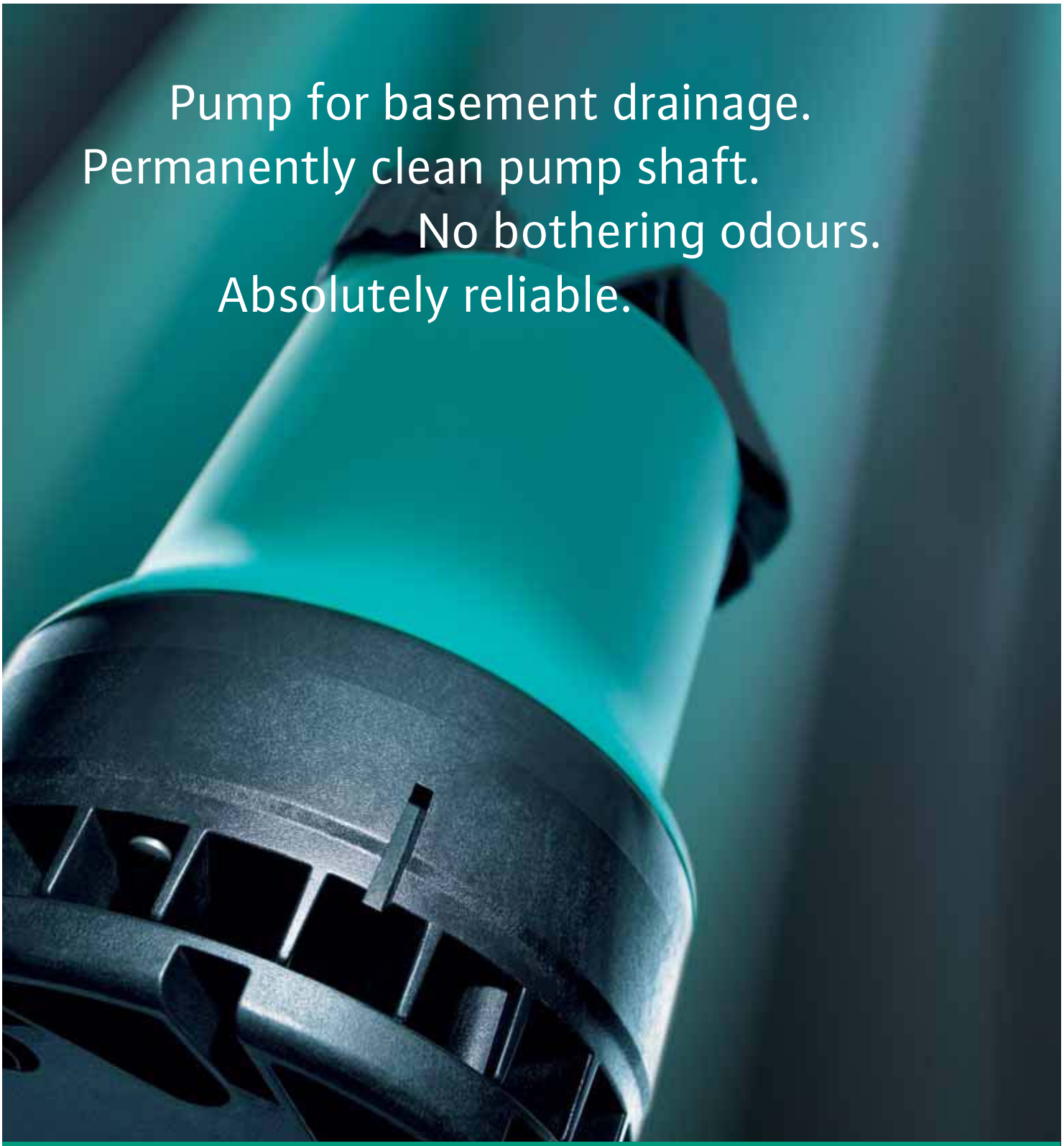
Drainage pumps

Pump type	Ball passage [mm]	Macerator	Dry sump installation	Main field of application					Page
Submersible motor pumps									**11**
Wilo-Drain TM/TMW	3 to 10	–	–	S	–	–	C	S	12
Wilo-Drain TS 40	10	–	–	S/M/C	–	–	C	M	12
Wilo-Drain TS 50	10	–	–	M/C	–	–	C	M	12
Wilo-Drain TS 65	10	–	–	M/C	–	–	C	C	12
Wilo-EMU KS	5 up to 45	–	–	S/M	–	–	–	–	12
Self-priming pumps									**39**
Wilo-Drain LP 40	10	–	•	S/M/C	–	–	C	–	40
Wilo-Drain LPC	6 to 12	–	•	S/M/C	S/M/C	–	C	–	40
Submersible motor/pedestal pumps (hot water)									**53**
Wilo-Drain TMT/TMC	10	–	–	C	–	–	C	C	54
Wilo-Drain VC	5 to 7	–	–	S/M/C	–	–	C	M/C	54

Legend:
- • Can be used /applicable
- – Cannot be used / not applicable
- **S** Single- and two-family house
- **M** Multi-family house
- **C** Commercial

Fields of application:

- Wastewater/drainage
- Wastewater/ coarse contaminants
- Sewage/faeces
- Production sewage
- Condensate Calorific value/air-conditioning device



Wilo-Drain TMW 32 Twister.

Settling sediments in wastewater mostly deposit in the pump shaft and cause odours. This is different in the case of Wilo Drain TMW 32 Twister. Thanks to its patented technology it provides continuous swirlings in the suction area. The settling sediments are automatically and completely pulled into the pump and that is why it remains permanently clean. Enormous? That is what we call Pumpen Intelligenz.

twister

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WILO

Pumpen Intelligenz.

Contents

General Notes and Abbreviations

Abbreviations and what they mean

Abbreviation	Meaning
1~	1-phase alternating current
3~	3-phase alternating current
-A	Float switch attached
Autopilot	Automatic adjustment of pump performance during setback phases, e.g. boiler setback operation overnight
BA	Building automation
Cap	Capacitors
Control input 0 - 10 V	Analogue input for external control of functions
°d	Degree of German water hardness, unit for assessing water hardness
DM	3-phase AC motor
Δp-c	Control mode for constant differential pressure
Δp-T	Control mode for differential-pressure control as a function of fluid temperature
Δp-v	Control mode for variable differential pressure
ΔT	Control mode for differential temperature
ECM technology	Electronically commutated motor with new wet rotor encapsulation, newly developed glandless drive concept for high-efficiency pumps
EM	1-phase AC motor
EnEV	German energy saving act (Energie-Einsparverordnung)
Ext. Min	Control input "Overriding Min", e.g. for setback operation without autopilot
Ext. off	Control input "Overriding Off"
GRD	Mechanical seal
GTW	Special cast iron: white malleable cast iron
H	Delivery head
Hz	Approval range for sprinkler pumps
IF	Interface
Installation	H = horizontal, V = vertical
Int. MS	Internal motor protection: Pumps with internal protection against unacceptably high winding temperatures
IR	Infrared interface
KTL coating	Cataphoretic painting: Paintwork with high adhesive strength for long-lasting corrosion protection
KTW	Authorisation for products with plastics, for utilisation in secondary hot water applications
LON	Local operating network (open, non- manufacturer-dependent, standardised databus system in LONWORKS networks)

Abbreviation	Meaning
MOT	Motor module (drive motor + impeller + terminal box/electronics module) for replacement in the TOP ... Series
P_I	Current consumption for shaft power requirement P_W
PLR	Pump central control, Wilo-specific data interface
PT 100	Platinum temperature sensor with a resistance of 100 Ω at 0 °C
P_W	Shaft power requirement
Q (= $\dot{V}$)	Volume flow
Qz	Approval range for sprinkler pumps
rbc	Blocking-current proof, no motor protection
RCD	Residual-current device
RMOT	Spare motor (drive motor + impeller + terminal box/ electronic module) for replacement
RV	Non-return valve
RVF	Non-return valve, spring-mounted
-S	Float switch attached
SBM	Run signal or collective run signal
SSM	Fault signal or collective fault signal
TrinkwV 2001	German Drinking Water Ordinance of 2001 (valid from 01.01.2003)
TRS	PTC thermistor sensor
TWC	Thermal winding contacts (in motor for monitoring winding temperature, full motor protection through additional tripping unit)
VDI 2035	VDI guideline for the prevention of damage in hot-water heating installations
Wilo-Control	Building automation management with pumps and accessories
WRAS	Water Regulations Advisory Scheme (secondary hot water approval for Great Britain and Northern Ireland)
▲	Operating mode of twin-head pumps: Individual operation of the respective operating pump
▲ + ▲	Operating mode of twin-head pumps: Parallel operation of both pumps
Ⓜ	Number of poles of electric motors: 2-poled motor = approx. 2900 1/min at 50 Hz
Ⓜ	Number of poles of electric motors: 4-poled motor = approx. 1450 1/min at 50 Hz
Ⓜ	Number of poles of electric motors: 6-poled motor = approx. 950 1/min at 50 Hz

Material designations and their meaning

Material	Meaning
1.4021	Chrome steel X20Cr13
1.4057	Chrome steel X17CrNi16-2
1.4122	Chrome steel X39CrMo17-1
1.4301	Chrome nickel steel X5CrNi18-10
1.4305	Chrome nickel steel X8CrNiS18-9
1.4306	Chrome nickel steel X2CrNi19-11
1.4401	Chrome nickel molybdenum steel X5CrNiMo17-12-2
1.4408	Chrome nickel molybdenum steel GX5CrNiMo19-11-2
1.4462	Chrome nickel molybdenum steel X2CrNiMoN22-5-3
1.4541	Chrome nickel steel with titanium added X6CrNiTi18-10
1.4542	Chrome nickel steel with copper and niobium added X5CrNiCuNb16-4
1.4571	Chrome nickel molybdenum steel with titanium added X6CrNiMoTi17-12-2
Abrasite	Chilled cast iron material for use in strongly abrasive fluids
Al	Light metal material (aluminium)
Ceram	Liquid ceramic coating; Coating with very high adhesive strength for long-lasting corrosion protection
Composite	High-strength plastic material
EN-GJL	Cast iron (cast iron with lamellar graphite)
EN-GJS	Cast iron (cast iron with spheroidal graphite, also called spheroidal cast iron)
G-CuSn 10	Zinc-free bronze
GfK	Fibreglass plastic
GG	See EN-GJL
GGG	See EN-GJS
Inox	Stainless steel
NiAl-Bz	Nickel aluminium bronze
Noryl	Fibreglass-reinforced plastic
PP-GF30	Polypropylene, reinforced with 30% fibreglass
PUR	Polyurethane
SiC	Silicone carbide
ST	Steel
V2A	Material group, e.g. 1.4301, 1.4306
V4A	Material group, e.g. 1.4404, 1.4571

Wear and tear

Pumps or pump components are subject to wear and tear and abrasion in accordance with state-of-the-art technology (DIN 31051/ DIN-EN 13306). This wear may vary depending on operating parameters (temperature, pressure, speed, water conditions) and the installation/usage situation and may result in the malfunction or failure at different times of the aforementioned products/components, including their electrical/electronic circuitry.

Wearing parts are all components subject to rotary or dynamic strain, including electronic components under tension, in particular:
- seals/gaskets (including rotating mechanical seals), seal ring
- bearings and shafts
- stuffing boxes
- capacitors
- relays/contactors/switches
- electronic circuits, semiconductor components, etc.
- impellers
- wearing rings/wearing plates

We do not accept liability for faults or defects arising from natural wear and tear.

WILO – General terms of delivery and service

The latest version of our general terms of delivery and service can be found on the Internet at

www.wilo.com

Planning Guide

Drainage pumps

Both the sewage generated in a building or on a piece of property and the rainwater which collects on courtyard and roof surfaces should be conveyed to the sewer system with the aid of pump stations and lifting units, insofar as they do not flow naturally downhill into the local sewage network. There are different ways of disposing of sewage waters, depending on the respective media to be conveyed.
Wilo submersible motor-driven pumps and sewage lifting units are designed especially to meet these different requirements and are in compliance with currently valid EN Standards.
Planning must be carried out in accordance with DIN EN 12050/12056 – Drainage systems for buildings and sites. A distinction is made here between sewage emerging from discharge points above the local backflow level, which must be guided to the public sewer system by taking advantage of natural declines in elevation, and sewage from discharge points whose water levels in the anti-syphon trap lie below the local backflow level. The backflow level is at a minimum the same as the street level (kerb) at the connection point, although local ordinances issued by the responsible government agency can also require that it be at a higher elevation.
Sewage (rainwater and wastewater) which arise at levels below the backflow level must be conveyed to the public sewer system by means of automatically operating lifting units – Wilo sewage lifting units or Wilo submersible motor-driven pump.

Pursuant to DIN 1986-100, EN 12050 and EN 12056 the following details are to be observed for installation planning and construction, among others:

- Lifting units are to be designed in terms of performance in such a way that a minimum flow velocity of 0.7 m/s is guaranteed for the prescribed nominal widths of the pressure pipe.
  Prescribed minimum nominal diameters:
  Wastewater lifting unit – DN 32
  Sewage lifting unit – DN 80 (without separation/macerator)
- The pressure pipe of a lifting unit must be equipped with a non-return valve and laid with its invert above the backflow level. The pressure pipe is not permitted to be connected to wastewater downpipes.
- Wastewater gate valves (supply and pressure sides) are to be installed in accordance with DIN 1986-100, EN 12050/EN 12056.
- Ventilation pipes from lifting units are to be guided to heights above the roof level; the minimum nominal pipe width is DN 70 for sewage lifting units.
- Feed lines are to be laid with sufficient drop-off gradients (a minimum of 1:50).
- It is expedient to avoid rigidity when laying pipelines through masonry.
- An automatic standby pump is to be provided for if the sewage drain pipe does not allow for interruptions.
- Switchboxes and signalling systems are to be installed at a dry, readily accessible position. The signalling system is to be mounted at a readily noticeable position.
- Lifting units must be serviced regularly.
- The installation area is to be provided with sufficient ventilation and lighting. A working space of at least 600 mm is to be provided for above and next to all operating elements and all parts requiring servicing.
  The lifting unit must be provided with anti-buoyant mounting.
- Sewage containing mineral oils or explosive admixtures must be guided through oil precipitators and/or petrol precipitators; those containing fatty substances must go through grease traps and those with sand through sand catchers. Acidic sewage must be neutralised.

Determining the required pump and/or system output
Flow Qp [l/s]:
Corresponds to the total of the incoming wastewater QS added to the incoming rainwater Qr, which must be determined in accordance with EN 12050/EN 12056
QS = amount of wastewater [l/s] made up of the total of all sewage sources, taking into account simultaneity,
Qr = amount of rainwater [l/s] totalling the product of precipitation volume, discharge coefficient and precipitation surface.
Delivery head H_{Ges} [m]:
Refers to the total derived from the height differential between the lowest collecting tank level and the invert of the backflow loop + the entire friction losses Hf [m] in the pressure pipe.
Note: When selecting a lifting unit, it is necessary to take into account the fact that the pressure difference between the delivery head at duty point with nominal flow rate (taking into account minimum flow volume) and delivery head with zero flow volume must still amount to approximately 2–3 m in order to open the non-return valve.

Operating modes (according to DIN EN 60034-1)
S1 = Continuous operation
The motor temperature increases during operation until it reaches the operating temperature (thermal persistent state). The temperature is dissipated during operation by means of coolant and/or the surrounding fluid. The machine can be operated without interruption while in this status. Specification of the installation type (surfaced/submerged) and/or of the installation is also to be taken into account. Continuous operation has no effect on this. S1 does not explicitly mean 24 h/day, 7 days/week!
Please observe the service life specifications and/or running times per years in the respective documentation.
S2 = Short-term operation
The motor cannot be operated continuously, because the power dissipation that is transformed into heat in the motor exceeds the heat dissipation capacity of the cooling apparatus. The max. operating period is specified in minutes, e.g. S2-15. There must be a pause until the machine temperature does not deviate by more than 2 K from the ambient temperature.
S3 = Intermittent duty
This operating mode represents a conventional load for sewage pumps. It describes a ratio of operating time to downtime. Both values must be indicated on the name plate and/or in the installation and operating instructions. For S3 operation, calculations are always in reference to a time period of 10 min.
Examples:

S3 - 20% means:	Operating time 20% of 10 min = 2 min
	Standstill time 80% of 10 min = 8 min
S3 - 3 min means:	Operating time 3 min
	Standstill time 7 min

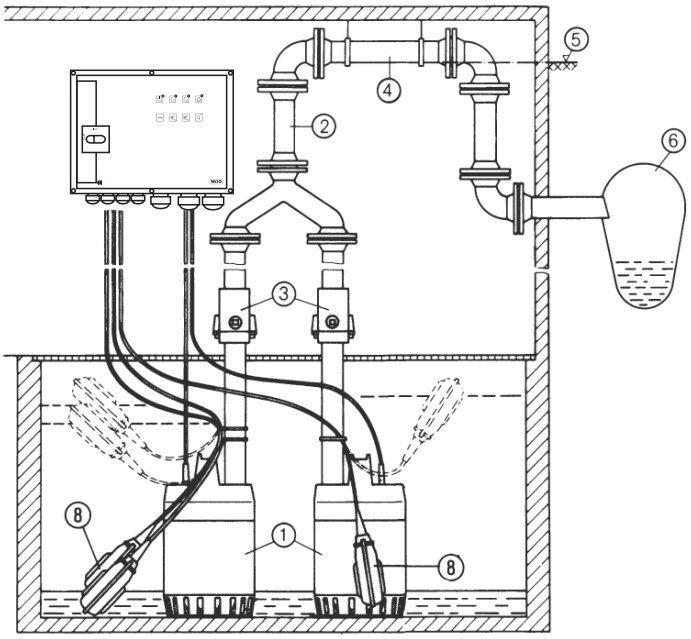
If 2 values are specified, then this means, for example with:

S3 - 5 min/20 min:	Operating time 5 min
	Standstill time 15 min
S3 - 25%/20 min:	Operating time 5 min
	Standstill time 15 min

Additional planning instructions:
See Wilo planning guide "Sewage" (must be ordered).

Wastewater lifting unit (sewage without faeces) according to EN 12050-2

Double pumps – Wilo-Drain Twister



Double pumps-drainage station Wilo-Drain Twister

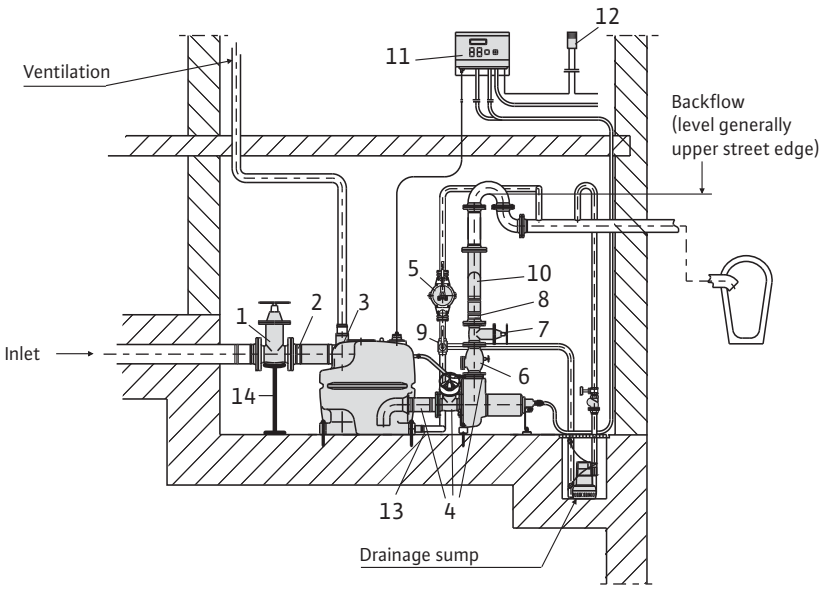
1 Submersible motor pump (2x)
2 Pressure pipe DN 32 with Y-piece
3 Non-return valve
4 Backflow loop
5 Backflow level
6 Channel
7 Switchgear
8 Float switch for monitoring levels and alarms

Configuration of the backflow loop

The backflow loop should not be set up in direct perpendicular configuration over the site of the lifting unit if at all possible. The rest of the sewage pipe is to be laid at an incline downward to the connection to the sewer system.

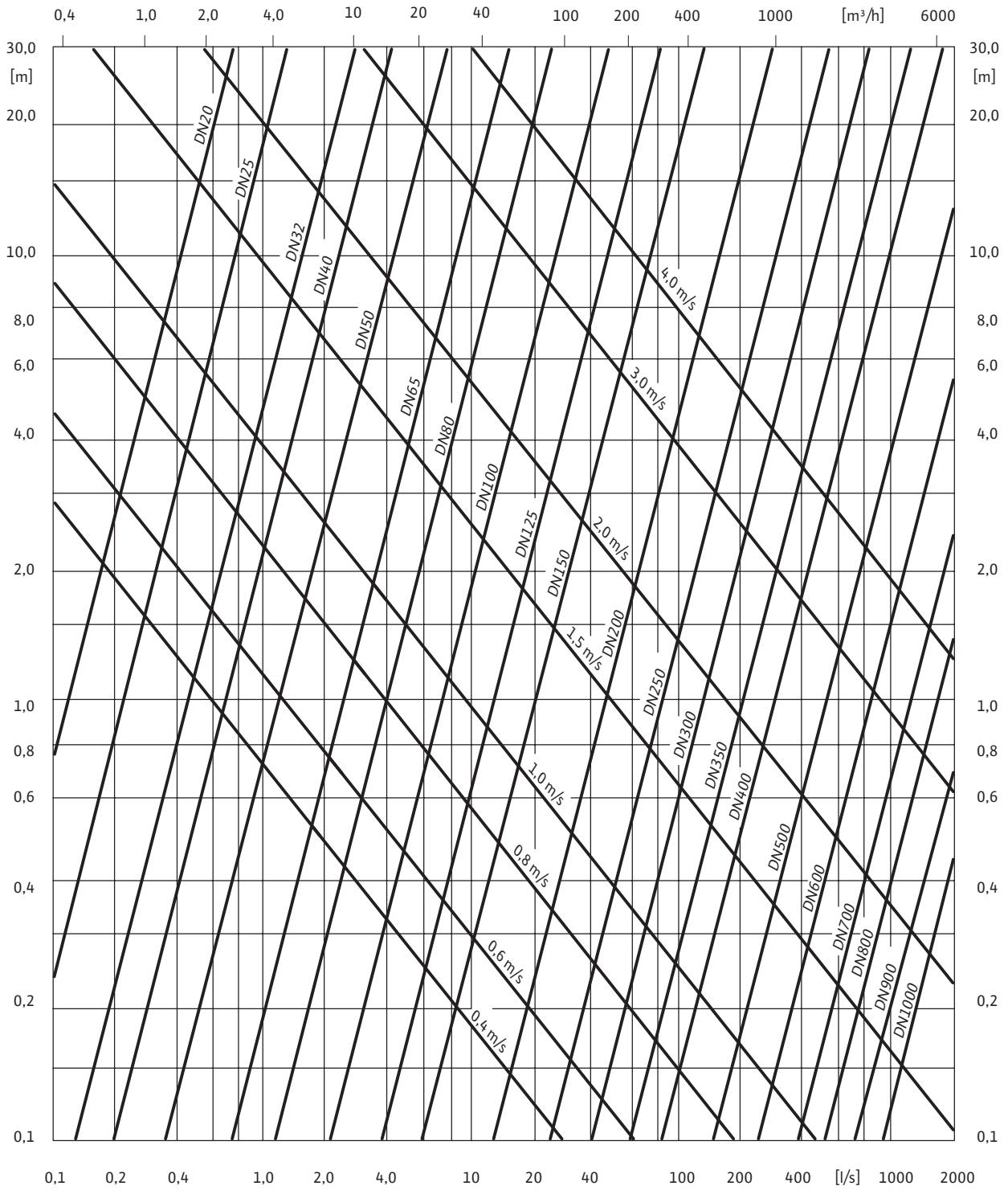
Wastewater and sewage lifting unit (sewage with faecal content) in accordance with EN 12050-1

Double system – Wilo-DrainLift XXL

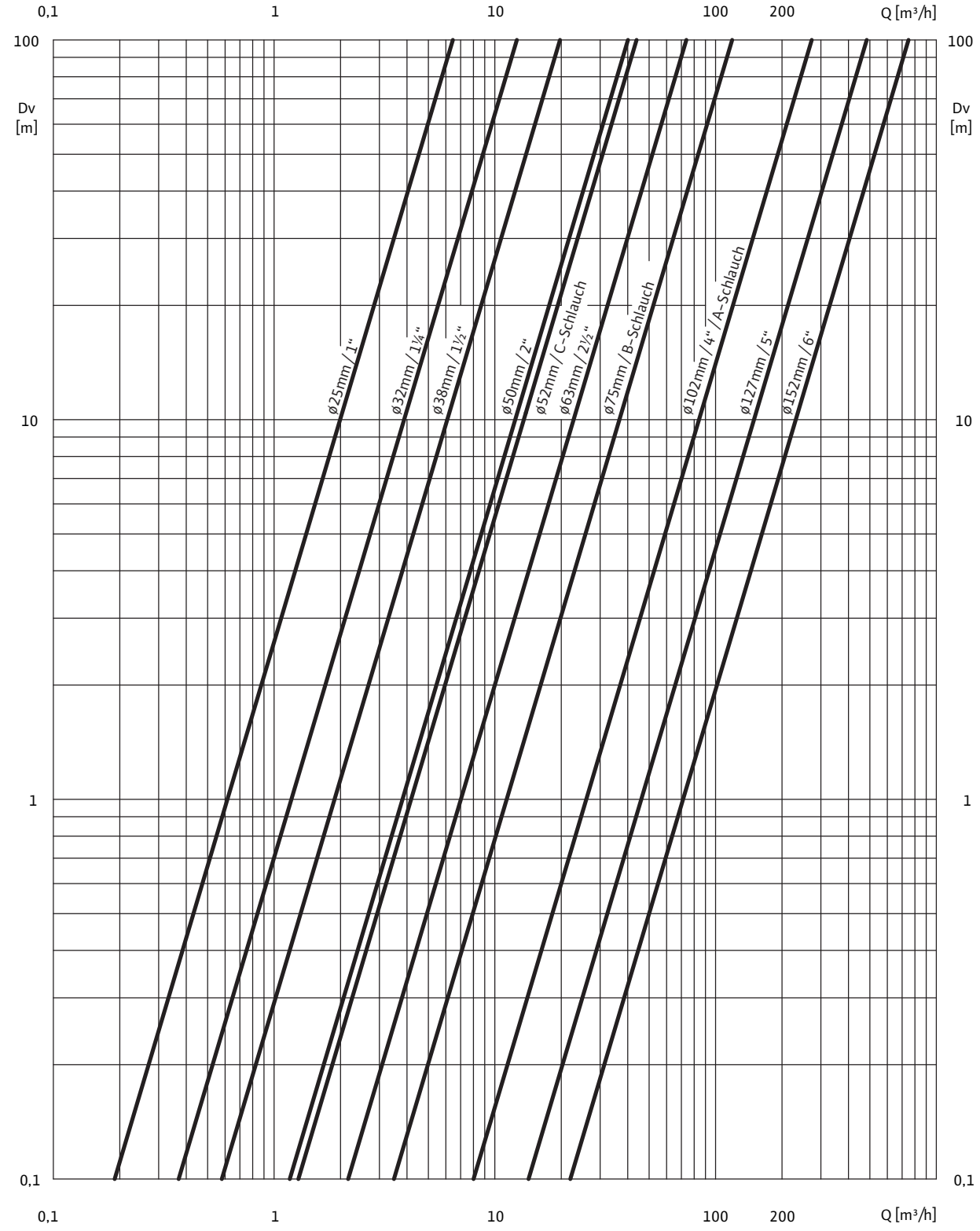


1 Gate valve DN 100 or DN 150
2 Single-ended flanged nipple with hose and hose clips DN 100 or DN 150
3 Elastic hose connection for ventilation
4 Kit containing connection between reservoir and pump, 2 gate valves and ventilation flange with hose
5 Diaphragm hand pump 1 ½"
6 Non-return valve DN 80 or DN 100
7 Gate valve DN 80 or DN 100
8 Single-ended flanged nipple with hose and hose clips DN 80 or DN 100
9 3-way tap
10 Y-pipe DN 80 or DN 100
11 Microprocessor-controlled switchgear
12 KAS, small alarm switchgear with signalling tone
13 Elastic hose connection for diaphragm hand pump
14 Fitting support for weight relief

Pressure losses in solid pipelines



Pressure losses in hoses



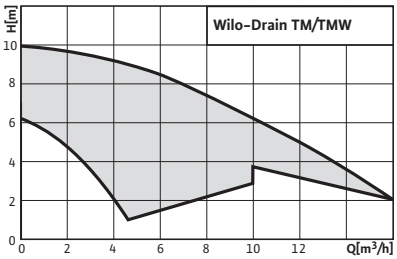
Q = flow; Dv = Pressure losses per 100 m hose (k_b = 0.25)

Contents

Submersible motor pumps

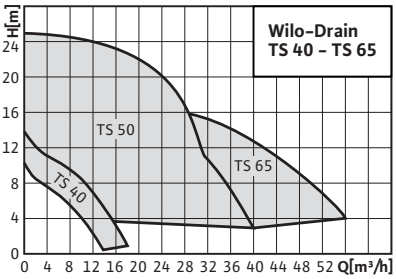
Series overview Wilo-Drain TM/TMW, TS, Wilo-EMU KS

Series: Wilo-Drain TM/TMW



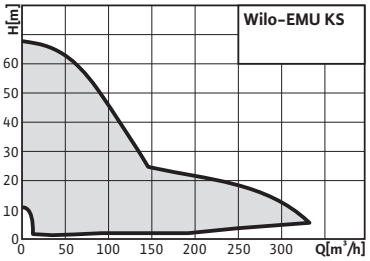
> Basement drainage pump
> Application:
- Pumping of clear or slightly soiled water from tanks, sumps or pits

Series: Wilo-Drain TS 40, TS 50, TS 65



> Submersible drainage pump
> Application:
- Pumping of wastewater with foreign matter with max. Ø 10 mm, with
  - House/site drainage
  - Environmental and wastewater treatment technology
  - Industrial and processing technology

Series: Wilo-EMU KS



> Submersible drainage pump
> Application:
- Pumping of wastewater with foreign matter with max. Ø 45 mm, with
  - Excavation pits, basins and sumps
  - Flooded cellar areas
  - Utilisation in fountains

Series overview Wilo-Drain TM/TMW, TS, Wilo-EMU KS

Series: Wilo-Drain TM/TMW

> Product advantages:
- Permanently clean pump sump (with TMW)
- Flat suction up to 5 mm (with TM 25/6)
- No media-related odour formation
- Easy installation
- High operational safety
- Easy operation.

> Additional information: **Page**

Series: Wilo-Drain TS 40, TS 50, TS 65

> Product advantages:
- Inox & composite
- Detachable connection cable
- Detachable float switch
- Wide performance range
- Thermal motor monitoring for 3~, even without switchgear (with TS 40)

> Additional information: **Page**

Series: Wilo-EMU KS

> Product advantages:
- Long service life
- High operational safety
- Slurping operation possible
- Suitable for continuous operation
- Easy handling

> Additional information: **Page**

Equipment/function Wilo-Drain TM/TMW, TS

	Wilo-Drain ...				
	TM 25/6	**TM/TMW 32**	**TS 40**	**TS 50**	**TS 65**
Operating mode S1 (continuous operation)					
Motor submersed	• (200 h/year)	• (200 h/year)	• (200 h/year)	• (200 h/year)	• (200 h/year)
Motor surfaced	• (200 h/year)	• (200 h/year)	–	–	–
Operating mode S3 (intermittent duty)					
Operating time [%]	25	25	25	25	25
Switching frequency/h maximum	50	50	50	50	40
Switching frequency/h recommended	20	20	20	20	20
Sealing Pumps-/motor					
On the pump side: Mechanical seal	•	•	•	•	•
On the motor end: Rotary shaft seal	•	•	•	•	•
Oil barrier chamber	•	•	•	•	•
Construction					
Wet sump installation stationary	•	•	•	•	•
portable	•	•	•	•	•
Submersible	•	•	•	•	•
Open multi-channel impeller	–	•	–	•	•
Vortex impeller	•	–	•	–	–
Turbulence apparatus	–	only TMW	–	–	–
Materials					
Motor Aluminium casting	–	–	–	–	–
Stainless steel	•	•	•	•	•
Pump Plastic	•	•	•	•	•
Equipment					
Motor operation monitoring (temperature)	•	•	only 3~	only 3~	•
Explosion protection	–	–	–	only 3~	only 3~
Sheath current cooling	•	•	–	–	–
Ready-to-plug	•	•	only 1~	Model A	Model A
Connection cable [m]	5/10	3 (10 with TM32/8 and TMW 32/11 HD)	10	10	10
Connection cable detachable	–	–	•	•	•
Attached float switch	Model A	Model TMW	Model A	Model A	–
Integrated non-return device	•	Model TMW	•	–	–
Capacitor box with 1~230 V	–	–	–	•	•
Hose connection	•	–	•	–	–

• = available or authorised, – = not available or not authorised

Equipment/function Wilo-EMU KS

		Wilo-EMU KS
Operating mode S1 (continuous operation)		
Motor submersed		•
Motor surfaced		•
Operating mode S3 (intermittent duty)		
Operating time [%]		–
Switching frequency/h maximum		15
Switching frequency/h recommended		–
Sealing Pumps-/motor		
On the pump side:	Mechanical seal	•
On the motor end:	Mechanical seal	•
	Rotary shaft seal	–
Oil barrier chamber		•
Construction		
Wet sump installation stationary		•
	portable	•
Submersible		•
Closed multi-channel impeller		–
Open multi-channel impeller		KS 5, 6, 8, 14, 15, 16, 220
Open single-channel impeller		KS 20
Vortex impeller		KS 9, 12, 24, 37, 70
Materials		
Motor	Aluminium casting	•
	Grey cast iron	KS 12, 20 and model Ex / GG
	Stainless steel	–
Pump	Plastic	–
	Grey cast iron	•
	PP-GF30	–
	Bronze	–
Equipment		
Motor operation monitoring (temperature)		•
Explosion protection		KS 5, 6, 16
Sheath current cooling		KS 24
Ready-to-plug		•
Connection cable [m]		10/20
Connection cable detachable		•

• = available or authorised, – = not available or not authorised

Equipment/function Wilo-EMU KS

	Wilo-EMU KS
Equipment (continued)	
Attached float switch	Model S
Shockproof capacitor plug for 1~230 V	KS 8, 9, 12, 14, 15
Capacitor box with 1~230 V	–

• = available or authorised, – = not available or not authorised

Series description Wilo-Drain TM/TMW

TM 25/6

TMW 32

Wilo-Drain TM/TMW
Basement drainage pump

Type key
Example: **Wilo-Drain TM 25/6 A**

TM	Submersible motor pump
25	Nominal diameter of the pressure port
/6	Max. delivery head [m]
A	With float switch

Example: **Wilo-Drain TMW 32/11 HD**

TMW	Submersible motor pump with turbulence apparatus
32	Nominal diameter of the pressure port (DN 32)
/11	Max. delivery head (m)
HD	For aggressive fluid

Application

TM
Pumping of clear or slightly soiled water from tanks, sumps or pits, vertical installation. Utilisation with overflows, flooding and inundation. For drainage of cellar stairways and cellar areas (flat suction up to 5 mm with TM 25/6).

TMW 32
The service life of submersible motor pumps, which are utilised in pump sumps and to which washing machine water, soapy water from basins and showers (among other mixtures), is considerably reduced by the settling sediments that are to be found in large quantities in these waters and which then ultimately form deposits in the pump sump. This leads to a muddying of the pump sump and of the pump itself.
Regular cleaning of the pump sump is necessary in order to prevent this from happening. Considerable investment is required, however, in terms of time and money to accomplish this, whereby the problem of mud disposal and the issue of hygienic protection during the cleaning of the pump sump cannot be evaluated with any greater precision at present. The **Wilo-Drain TMW 32 Twister** can help here.

Construction
Submersion pump suitable for stationary, fully automatic operation. A hose of appropriate length is connected during mobile utilisation, while a pipe is connected to the pressure port for stationary applications. A residual-current circuit-breaker for a trigger current of 30 mA that is to be provided onsite (regulation concerning installation outdoors) must be utilised in accordance with EN 60335-2,41.

In addition TMW
Thanks to its design, the Wilo-Drain Twister guarantees constant turbulence in the suction area of the pump. This results in a clean pump sump.
No fluid-related odours are generated, thanks to the turbulence and the elimination of the settling sediments connected with it.
Maintenance intervals are made less frequent.
When you deactivate the Twister (see installation and operating instructions) the pump curve is increased by 1 m.

Motor
Jacket-cooled, stainless steel-encapsulated, dry electro motor with installed thermal overload protection and automatic reactivation.

Cable
VDE regulations require 10 m of fixed connection line for outdoor operation (a variety of different regulations apply abroad).

Sealing of Pumps/Motor space
Impeller-side: mechanical seal; motor-side: one rotary shaft seal; an oil chamber is located between the seals.

Scope of delivery
Pump ready for connection with cable, plug and attached float switch (depending on type), Installation and operating instructions and non-return valve.
TM 25/6: Additionally with hose connection (Ø 20, Ø 25).

Technical data Wilo-Drain TM/TMW

	Wilo-Drain ...				
	TM 25/6 TM 25/6 A	**TM 32/8**	**TMW 32/8**	**TMW 32/11**	**TMW 32/11 HD**
Approved fluids					
Washing machine soap and water mixture (without long-fibre constituents)	•	•	•	•	•
Water from automobile washing plants	•	•	•	•	•
Bath water, unchlorinated	•	•	•	•	•
Fire-fighting water	•	•	•	•	•
Heating water (T_{max} = 35 °C)	•	•	•	•	•
Boiler water	•	•	•	•	•
Condensate	–	–	–	–	•
Cooling water	•	•	•	•	•
Clean water	•	•	•	•	•
Untreated (waste)water	–	–	–	–	–
Drainage water	•	•	•	•	•
Semi-desalinated water	–	–	–	–	•
Rainwater	•	•	•	•	•
Swimming-pool water	–	–	–	–	•
Sea water	–	–	–	–	•
Wastewater	–	•	•	•	•
Aggressive fluids	–	–	–	–	•
Power					
Power consumption P_1 1~230 V [kW]	0.18	0.5	0.45	0.75	0.75
Power consumption P_1 3~400 V [kW]	–	–	–	–	–
Nominal motor power P_2 [kW]	0.1	0.37	0.37	0.55	0.55
Nominal current with 1~230 V [A]	0.8	2.2	2.1	3.6	3.6
Nominal current with 3~400 V [A]	–	–	–	–	–
Speed [1/min]	2900	2900	2900	2900	2900
Motor					
Protection class with maximum submersion depth	IP 68	IP 68	IP 68	IP 68	IP 68
Insulation class	B	F	F	F	F
Switching frequency/h maximum	50	60	60	60	60
Pump					
Max. noise level at min. level [dBA]	60	52	55	54	54
Submersion depth, maximum [m]	5	3	3	3	3
Fluid temperature [°C]	3 – 35	3 – 35	3 – 35	3 – 35	3 – 35
Fluid temperature, for short periods up to 3 min [°C]	–	90	90	90	90
Cable type	H07 RN-F	H07 RN-F	H05 RN-F	H05 RN-F	H07 RN-F

• = available or authorised, – = not available or not authorised

Technical data Wilo-Drain TM/TMW

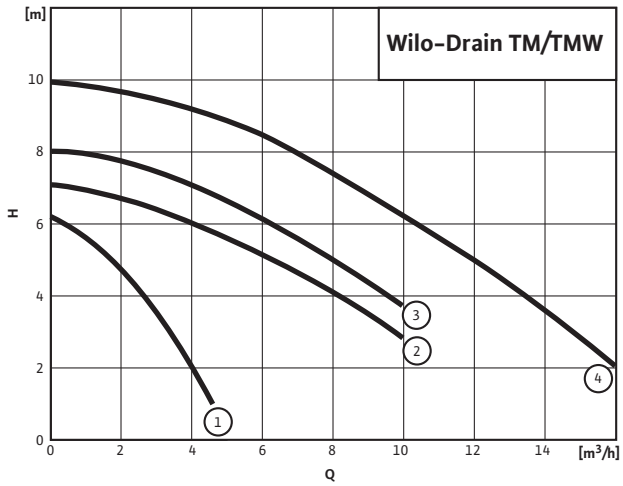
	Wilo-Drain ...				
	TM 25/6 TM 25/6 A	**TM 32/8**	**TMW 32/8**	**TMW 32/11**	**TMW 32/11 HD**
Pump (continued)					
Cable length [m]	5 (10)	10	3	3	10
Cable cross-section 1~230 V [mm²]	3G1	3G1	3G1	3G1	3G1
Cable cross-section 3~400 V [mm²]	–	–	–	–	–
Plug	shockproof	shockproof	shockproof	shockproof	shockproof
Type of connection cable	non-detachable	non-detachable	non-detachable	non-detachable	non-detachable
Activation type	direct	direct	direct	direct	direct
Ex protection (EEx d II B T4)	–	–	–	–	–
Free ball passage [mm]	3	10	10	10	10
Dimensions					
Pressure port [R/Rp]	1	1 ¼	1 ¼	1 ¼	1 ¼
Hose connection [mm]	20/25	–	–	–	–
Weight [kg]	5.8 (6.1)	5.2	4.7	6.2	6.2
Materials					
Pump housing	PP-GF30	PP-GF30	PP-GF30	PP-GF30	PP-GF30
Impeller	PBT	PP-GF30	PP-GF30	PP-GF30	PP-GF30
Shaft	1.4401 (AISI 316)	1.4021 (AISI 420)			
Rotary shaft seal on motor side	NBR	NBR	NBR	NBR	NBR
Mechanical seal on pump side	SIC/ceramic	Carbon/ceramic	Carbon/ceramic	Carbon/ceramic	Carbon/ceramic
Motor housing	PP	1.4301 (AISI 304)			1.4404 (AISI 316L)

• = available or authorised, – = not available or not authorised

Pump curves, dimensions, weights Wilo-Drain TM/TMW

Wilo-Drain TM/TMW

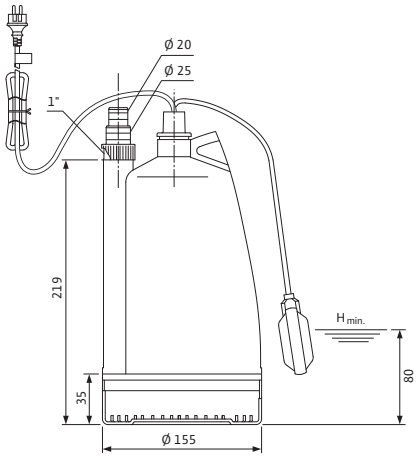
2-pole, 50 Hz



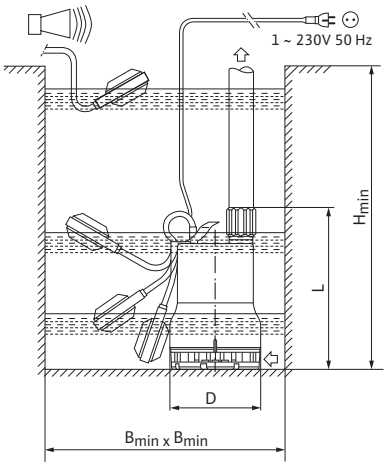
1 = TM 25/6
2 = TMW 32/8
3 = TM 32/8
4 = TMW 32/11

Dimension drawings

Wilo-Drain TM 25



Wilo-Drain TM/TMW 32...



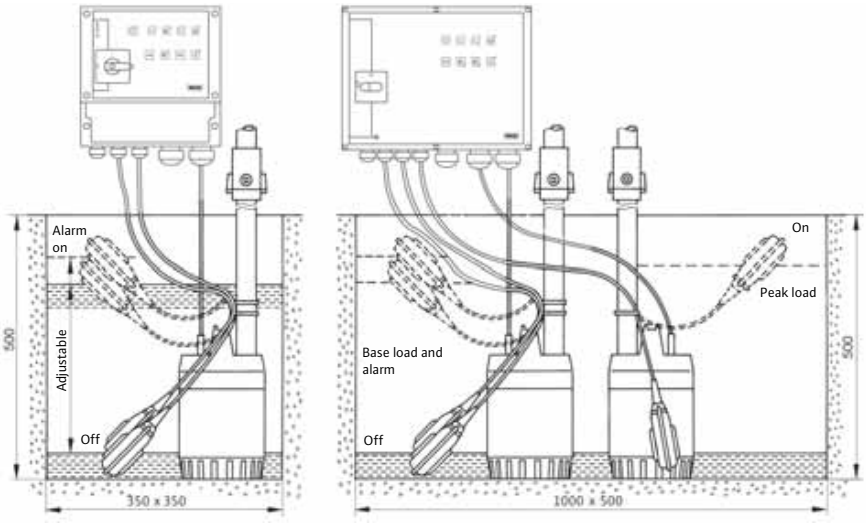
Dimensions, weights

Wilo-Drain ...	Pressure port	Hose connection	Over-all height up to connection	Pump diameter	Sump dimensions min.	Drainage level, min.	Weight
			L	D	H x B		
	G/Rp	[mm]					[kg]
TM 25/6	1	20/25	219	155	–	5	5.8
TM 25/6 A	1	20/25	219	155	–	5	6.1
TM 32/8	1 ¼	–	294	165	–	14	5.2
TMW 32/8	1 ¼	–	293	165	280 x 350	30	4.7
TMW 32/11	1 ¼	–	323	165	330 x 350	30	6.2
TMW 32/11 HD	1 ¼	–	323	165	330 x 350	30	6.2

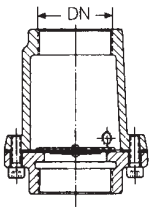
Installation example, mechanical accessories Wilo-Drain TM/TMW

Installation example

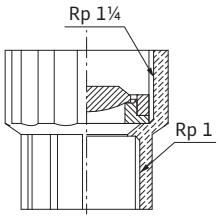
Schematic diagrams in conjunction with switchgears

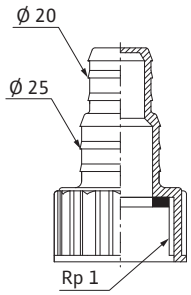


Mechanical accessories

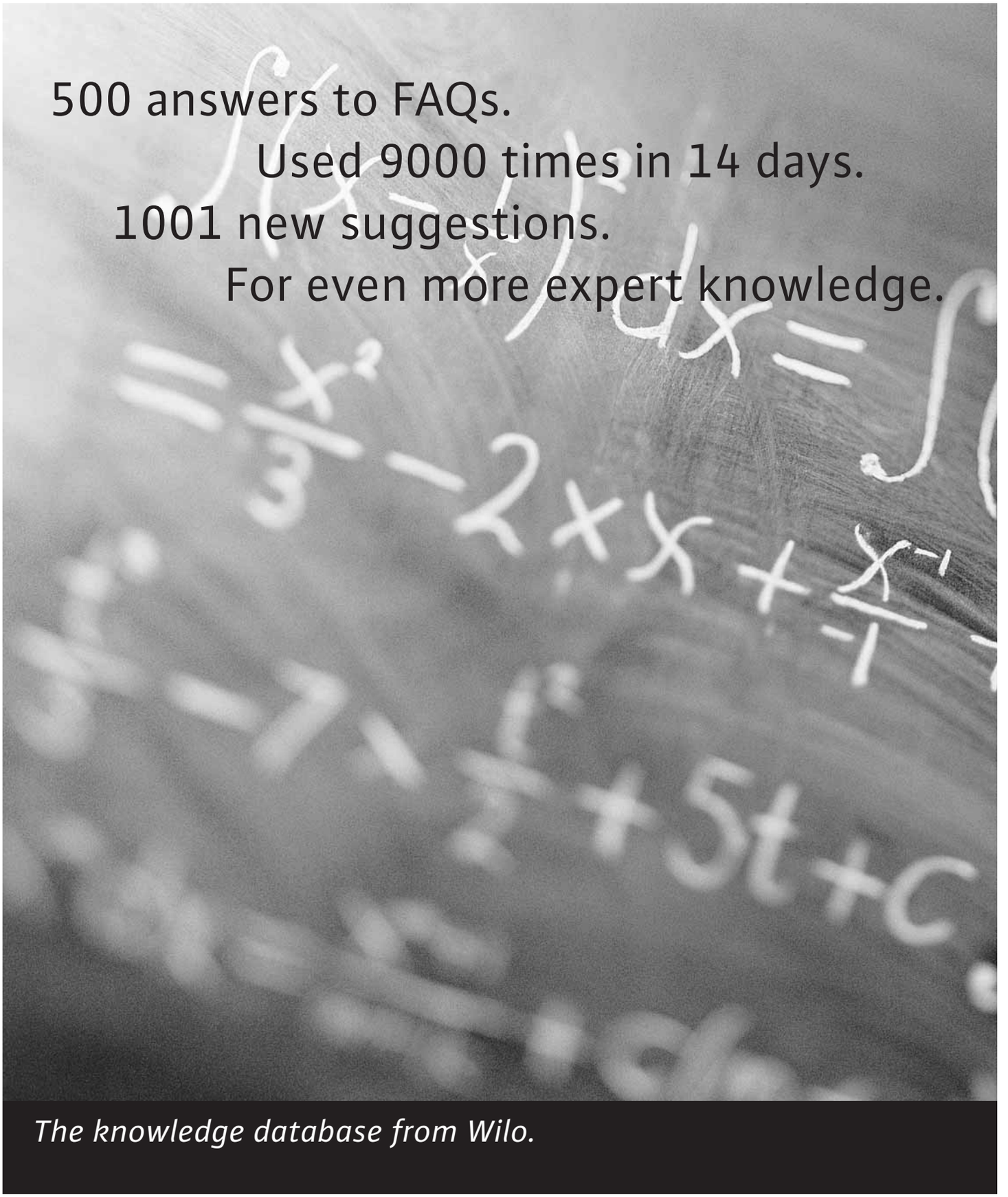


TM/TMW 32...: Non-return valve Rp 1 ¼
with drainage screw, plastic, nominal pressure PN 4 bar





T 25: Non-return valve, hose connection (Ø 20, Ø 25)
in the scope of delivery



Did you know? The knowledge database from Wilo will give you good and quick advice: with approx. 500 responses to the most frequently asked questions (FAQs) all about pumps, installations and systems. It is already being visited extensively by many skilled craftsmen.This is proven by 9000 utilisations in only 14 days, which we recently registered. The best thing: With every new question which you ask us with the contact form, we all become wiser together. Because the corresponding answer is naturally incorporated as soon as possible.
Know-how? We call this Pumpen Intelligenz.

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Pumpen Intelligenz.

Series description Wilo-Drain TS 40, TS 50, TS 65

TS 40/...

TS ... H

Wilo-Drain TS
Submersible drainage pump, 2-pole

Type key
Example: **Wilo-Drain TS 50 H 111/11-1 A**

TS	Submersible motor pump (wastewater)
50	Connection 50 (= Rp 2) 65 (= Rp 2½)
H	Impeller shape: H = half-open impeller
111	Nominal diameter of the impeller [mm]
/11	Power P_2 [kW] = value/10 = 1.1 kW
-1	1 = Alternating current (1~) No specification = three-phase alternating current (3~)
A	With float switch, connection cable and plug If not otherwise indicated: Connection cable with bare cable end

additional type keys:
Example: **Wilo-Drain TS 40/10 A**

TS	Submersible motor pump (wastewater)
40	Connection 40 (Rp 1½)
/10	Max. delivery head [m]
A	With float switch, connection cable and plug If not otherwise indicated: without float switch, with bare cable end (only with 3~)

Application
Wilo-Drain TS submersible motor pumps are well suited for pumping wastewater with foreign substances of max. Ø 10 mm, with
- House and site drainage
- Environmental and wastewater treatment technology
- Industrial and processing technology

Can be utilised in the following installation types
- Stationary wet
- Portable wet

Construction
Submersible drainage pump as submersible monobloc unit for vertical wet sump installation
- Inox & composite
- Low weight
- Detachable connection cable
- Detachable float switch
- Corrosion-resistant

Motor:
Three-phase current asynchronous motor 3~400 V, 50 Hz or alternating current motor 1~230 V, 50 Hz

Motor protection:
Single-phase: Thermal winding contact (TWC)
Three-phase current: TS 50, TS 65: Motor protection is to be provided on-site starting with 1.1 kW = thermal winding contacts (TWC)
TS 40: thermal motor operation monitoring self-switching

Bearing configuration:
Bearing configuration of the motor shaft in permanently lubricated, low-maintenance roller bearings.

Hydraulics:
Half-open impeller with a ball passage of 10 mm.
Installation possible without pedestal. With practical vertical pressure port.

Scope of delivery

TS 40, TS 50, TS 65
Pump ready for connection with connection cable (option of 5 or 10 m) equipped if necessary with float switch and plug (model A), installation and operating instructions and hose connection (only TS 40).

Technical data Wilo-Drain TS ...

	Wilo-Drain ...					
	TS 40/10 TS 40/10 A	**TS 40/14 TS 40/14 A**	**TS 50... H 111/11**	**TS 50... H 122/15**	**TS 50... H 133/22**	**TS 65... H 117/22**
Approved fluids						
Washing machine soap and water mixture (without long-fibre constituents)	•	•	•	•	•	•
Water from automobile washing plants	•	•	•	•	•	•
Bath water, unchlorinated	•	•	•	•	•	•
Fire-fighting water	–	–	•	•	•	•
Heating water (T_{max} = 35 °C)	•	•	•	•	•	•
Boiler water	–	–	•	•	•	•
Cooling water	with restric-tions	with restric-tions	•	•	•	•
Clean water	•	•	•	•	•	•
Untreated (waste)water	–	–	–	–	–	–
Drainage water	•	•	•	•	•	•
Semi-desalinated water	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions
Rainwater	•	•	•	•	•	•
Swimming-pool water	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions
Wastewater	•	•	•	•	•	•
Very diluted alkalis	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions
Mildly aggressive media	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions
Aggressive fluids	–	–	–	–	–	–
Power						
Power consumption P_1 1~230 V [kW]	0.48	1.0	1.5	–	–	–
Power consumption P_1 3~400 V [kW]	0.55	0.92	1.5	2.0	2.9	2.9
Nominal motor power P_2 [kW]	0.4	0.75	1.1	1.5	2.2	2.2
Nominal current with 1~230 V [A]	2.2	4.4	7.7	–	–	–
Nominal current with 3~400 V [A]	1.1	2.0	3.2	3.6	5.1	5.1
Speed [1/min]	2900	2900	2900	2900	2900	2900
Motor						
Protection class with maximum submersion depth	IP 68	IP 68	IP 68	IP 68	IP 68	IP 68
Insulation class	B	B	F	F	F	F
Switching frequency [1/h]	50	50	50	50	50	40
Pump						
Max. noise level at min. level [dBA]	70	70	–	–	–	–
Submersion depth, maximum [m]	5	5	10	10	10	10

• = available or authorised, – = not available or not authorised

Technical data Wilo-Drain TS ...

	Wilo-Drain ...					
	TS 40/10 TS 40/10 A	**TS 40/14 TS 40/14 A**	**TS 50... H 111/11**	**TS 50... H 122/15**	**TS 50... H 133/22**	**TS 65... H 117/22**
Pump (continued)						
Fluid temperature [°C]	3 – 35	3 – 35	3 – 35	3 – 35	3 – 35	3 – 35
Cable type	H07 RN-F	H07 RN-F	OZOFLEX (PLUS) H07 RN-F – oil-resistant			
Cable length [m]	5/10	5/10	10	10	10	10
Cable cross-section 1~230 V [mm²]	3G1	3G1	3G1	–	–	–
Cable cross-section 3~400 V [mm²]	4G1	4G1	4G1	4G1,5	4G1,5	4G1,5
Plug	Shockproof (only 1~)		Shockproof / CE	–	–	–
Type of connection cable	Plug (detachable)					
Activation type	direct	direct	direct	direct	direct	direct
Ex protection (EEx d II B T4)	–	–	only 3~	•	•	•
Free ball passage [mm]	10	10	10	10	10	10
Dimensions						
Pressure port [R/Rp]	1 ½	1 ½	2	2	2	2 ½
Hose connection [mm]	40	40	–	–	–	–
Weight [kg]	13.0	16.0	21	22	23	24
Materials						
Pump housing	PP-GF30	PP-GF30	PUR	PUR	PUR	PUR
Impeller	PP-GF30	PP-GF30	PUR	PUR	PUR	PUR
Shaft	1.4404 (AISI 316L)/1.0402		1.4404 (AISI 316L)/1.0301			
Rotary shaft seal on motor side	–	–	NBR	NBR	NBR	NBR
Mechanical seal on motor side	SiC/SiC	SiC/SiC	–	–	–	–
Mechanical seal on pump side	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC
Static seal	NBR	NBR	NBR	NBR	NBR	NBR
Motor housing	1.4301 (AISI 304)		1.4301 (AISI 304)			

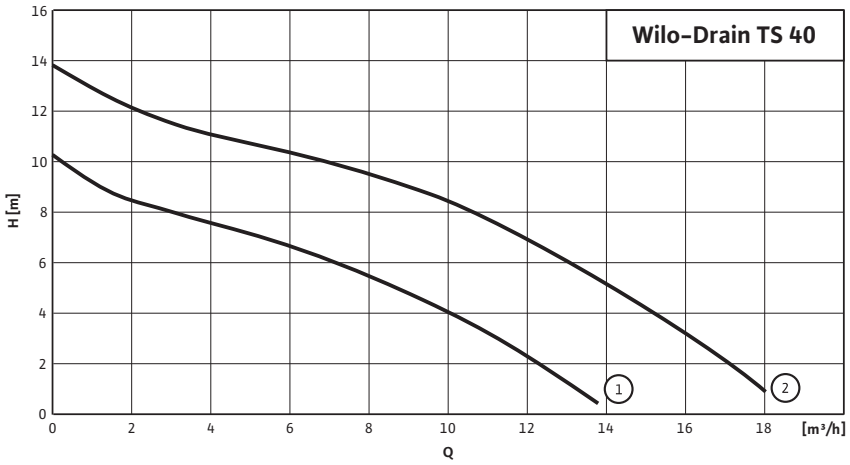
• = available or authorised, – = not available or not authorised

Note about Wilo-Drain TS:
Versions
TS 50... H 111/11
also available in model A (without explosion protection, incl. float switch and plug 1~230 V).

Pump curves, dimensions, weights Wilo-Drain TS 40

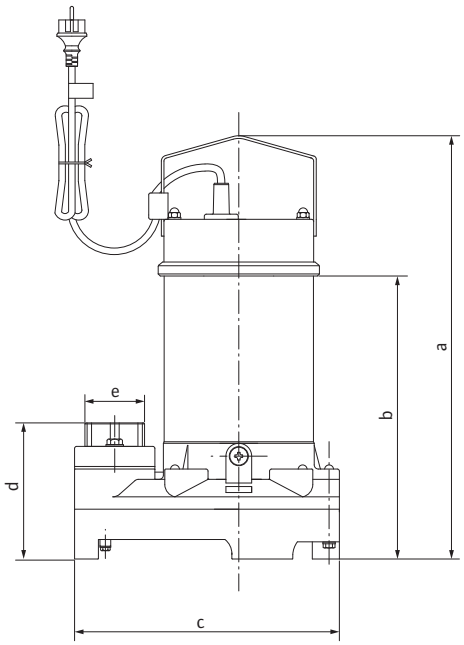
Wilo-Drain TS 40/10, TS 40/14

2-pole, 50 Hz



1 = TS 40/10
2 = TS 40/14

Dimension drawing



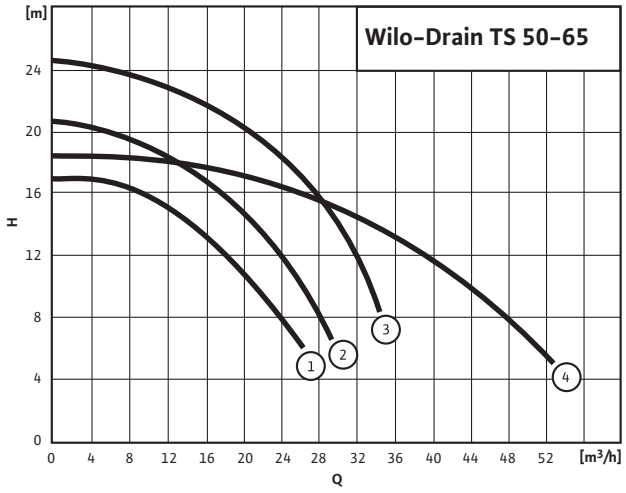
Dimensions

Wilo-Drain …	Dimensions				
	a	b	c	d	e
	[mm]				
TS 40/10 **TS 40/10 A**	407	273	245	145	DN 40 / R 1 ½
TS 40/14 **TS 40/14 A**	424	290	245	145	DN 40 / R 1 ½

Pump curves, terminal diagram Wilo-Drain TS 50, TS 65

Wilo-Drain TS 50, TS 65

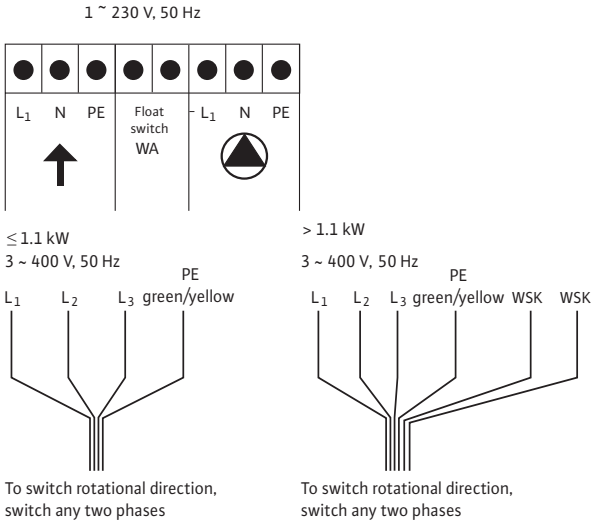
2-pole, 50 Hz



1= TS 50 H 111/11
2= TS 50 H 122/15
3= TS 50 H 133/22
4= TS 65 H 117/22

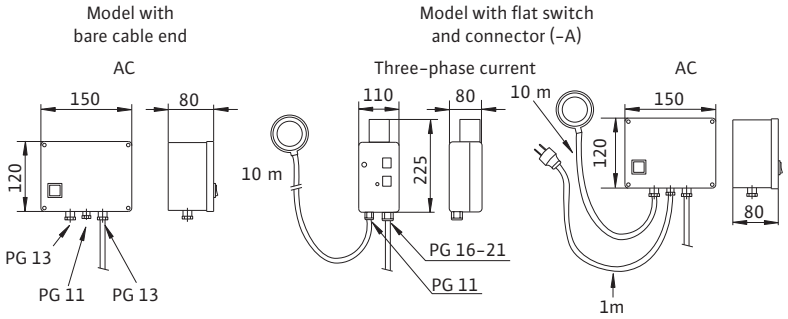
All shown pump curves are valid for a density of $\rho = 1$ kg/dm³

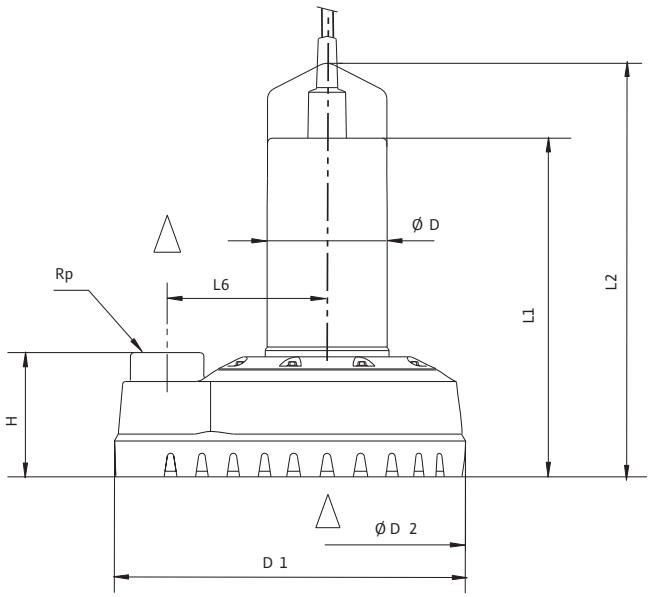
Terminal diagram



Dimensions, weights Wilo-Drain TS 50, TS 65

Dimension drawing



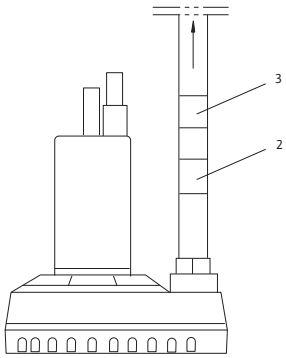


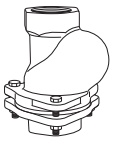
Dimensions, weights

Wilo Drain …	Pressure port	Dimensions							Weight
	–	L1	L2	L6	D	H	D1	D2	–
	Rp	[mm]							[kg]
TS 50 H 111/11 3~ A	2	360	440	170	128	132	375	294	21
TS 50 H 111/11 1~ A	2	360	440	170	128	132	375	294	21
TS 50 H 122/15 3~	2	360	440	170	128	132	375	294	22
TS 50 H 133/22 3~	2	387	472	170	138	132	375	294	23
TS 65 H 117/22 3~	2 ½	398	483	170	138	149	375	294	24

Mechanical accessories Wilo-Drain TS ...

Stationary wet sump installation





Non-return valve (Item 2)
TS 40 standard-equipped with integrated flap trap.

TS 40	TS 50	TS 65
Rp 1 ½	Rp 2	Rp 2 ½

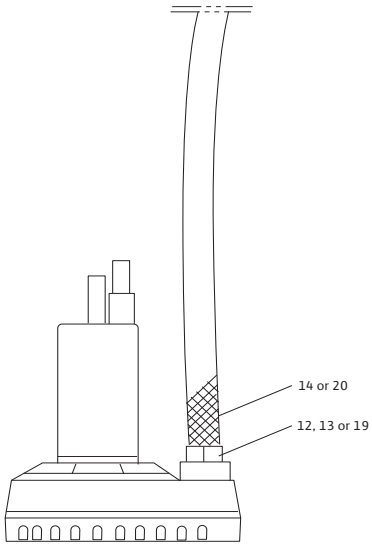
all female threads GG (EN-GJL)

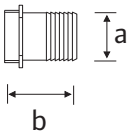
Gate valve (ball valve; Item 3)

TS 40	TS 50	TS 65
Rp 1 ½	Rp 2	Rp 2 ½

Female thread brass, nickel-plated

Portable wet sump installation



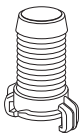


Hose connection, incl. hose clip (item 12)
With TS 40 included in the scope of delivery

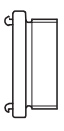
TS 40	TS 50	TS 65
R 1 ½	R 2	Rp 2 ½
Plastic	Plastic	Stainless steel
a 40 mm	60 mm	70 mm
b 80 mm	90 mm	100 mm

All male thread

Geka rigid coupling (Item 19)
Made of brass
TS 40: R 1 ½ male thread



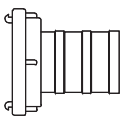
Geka hose coupling (Item 20)
Made of brass, fits Geka rigid coupling, incl. hose clip
TS 40: for internal hose diameter 40 mm



Storz-pipe coupling (Item 13)
Made of aluminium, 52-C

TS 50	TS 65
G 2	G 2 ½$_2$

Male thread, tappet clearance 66 mm



Storz-hose coupling (Item 14)
Made of aluminium, 52-C, incl. hose clip
TS 50 = Tappet clearance 66 mm, for internal hose diameter 52 mm

Series description Wilo-EMU KS

Wilo-EMU KS
Single-stage pump for excavation pits

Type key
Example: **Wilo-EMU KS 15 E**

KS Drainage pump

15 Code number for distinguishing between pumps

E
- **E** = Single-phase connection
- **ES** = Single-phase connection + float switch
- **D** = Three-phase current
- **DS** = Three-phase current connection + float switch
- **DM** = Three-phase current connection + motor protection
- **DMS** = Three-phase current connection + motor protection + float switch
- **E0** = Single-phase connection without plug (bare cable end)
- **D0** = Three-phase current connection without plug (bare cable end)
- **Z** = Centre pressure port
- **H** = High-pressure impeller
- **M** = Medium-pressure impeller
- **N** = Low-pressure impeller

Application
Drainage of excavation pits, cellar areas, sumps and basins. Predestined for utilisation in fountains.

Construction
Submersible motor pump with double mechanical seal. The design is outstanding for its high wear-resistance and general sturdiness. The electrical drive is sealed off from the pumped liquid with two mechanical seals and one internal oil barrier chamber. The motor space is oil-filled.

Scope of delivery
Pump ready for connection with 10 m connection cable (starting from KS 24, 20 m) and AC or three-phase current plug, Storz or GEKA-rigid coupling, installation and operating instructions, 90° bend where necessary for implementation of vertical pressure drop.

Accessories
Flange, pressure hose set C, pressure hose set B, level switching ZSE or ZSD.

Technical data Wilo-EMU KS

	Wilo-EMU ...						
	KS 5 (Ex)	**KS 6 (Ex)**	**KS 8 KS 8 (GG)**	**KS 9 KS 9 (GG)**	**KS 12**	**KS 14 KS 14 (GG)**	**KS 15 KS 15 (GG)**
Approved fluids							
Washing machine soap and water mixture (without long-fibre constituents)	•	•	•	•	•	•	•
Water from automobile washing plants	with restrictions	with restrictions	with restrictions	with restrictions	with restrictions	with restrictions	with restrictions
Bath water, unchlorinated	•	•	•	•	•	•	•
Heating water	•	•	•	•	–	•	•
Condensate	–	–	–	–	–	–	–
Cooling water	with restrictions	with restrictions	with restrictions	with restrictions	–	with restrictions	with restrictions
Clean water	•	•	•	•	•	•	•
Drainage water	•	•	•	•	•	•	•
Semi-desalinated water	with restrictions	with restrictions	–	–	–	–	–
Rainwater	•	•	•	•	•	•	•
Swimming-pool water	–	–	–	–	–	–	–
Sea water	–	–	–	–	–	–	–
Waste water, floodwater and river water	•	•	•	•	•	•	•
Very diluted alkalis	with restrictions	with restrictions	with restrictions	with restrictions	–	with restrictions	with restrictions
Mildly aggressive media	with restrictions	with restrictions	with restrictions	with restrictions	–	with restrictions	with restrictions
Power							
Power consumption P_1 1~230 V [kW]	–	–	1.1	1.1	1.9	1.1	1.9
Power consumption P_1 3~400 V [kW]	1.1	1.1	1.1	1.1	1.9	1.1	1.9
Nominal motor power P_2 [kW]	0.75	0.75	0.75	0.75	1.3	0.75	1.3
Nominal current with 1~230 V [A]	–	–	5.7	5.7	9.4	5.7	9.4
Nominal current with 3~400 V [A]	1.76	1.76	1.9	1.9	3.15	1.9	3.2
Speed [1/min]	2900	2900	2900	2900	2900	2900	2900
Motor							
Protection class with maximum submersion depth	IP 68	IP 68	IP 68	IP 68	IP 68	IP 68	IP 68
Insulation class	F	F	F	F	F	F	F
Switching frequency [1/h]	15	15	15	15	15	15	15
Pump							
Submersion depth, maximum [m]	10	10	10	10	10	10	10
Fluid temperature, maximum [°C]	40	40	40	40	35	40	40

• = available or authorised, – = not available or not authorised

Technical data Wilo-EMU KS

	Wilo-EMU …						
	KS 5 (Ex)	**KS 6 (Ex)**	**KS 8 KS 8 (GG)**	**KS 9 KS 9 (GG)**	**KS 12**	**KS 14 KS 14 (GG)**	**KS 15 KS 15 (GG)**
Pump (continued)							
Cable type	H07 RN-F	H07 RN-F	H07 RN-F	H07 RN-F	H07 RN-F	H07 RN-F	H07 RN-F
Cable length [m]	10	10	10	10	10	10	10
Cable cross-section 1~230 V [mm²]	–	–	4G1,5	4G1,5	4G1,5	4G1,5	4G1,5
Cable cross-section 3~400 V [mm²]	7G1,5	7G1,5	4G1,5	4G1,5	4G1,5	4G1,5	4G1,5
Type of connection cable	–	–	detachable / plug	detachable / plug	detachable / plug	detachable / plug	detachable / plug
Activation type	direct	direct	direct	direct	direct	direct	direct
Ex protection	•	•	–	–	–	–	–
Free ball passage [mm]	10	10	9	5	40	10	10
Dimensions							
Pressure port [G/Storz]	1¼ / C	1¼ / C	1¼ / C	1¼ / C	2 / C	2 / C	2 / C
Weight [kg]	24	24	21 (25)	21 (25)	28	21 (25)	26 (30)
Materials							
Pump housing	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250
Impeller	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250
Shaft	1.4021 (AISI 420)						
Mechanical seal on motor side	SiC/SiC	SiC/SiC	Steatit/ carbon	Steatit/ carbon	Steatit/ carbon	Steatit/ carbon	Steatit/ carbon
Mechanical seal on pump side	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC
Static seals	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton	NBR	NBR/Viton	NBR/Viton
Motor housing – standard	EN-GJL-250	EN-GJL-250	Aluminium	Aluminium	EN-GJL-250	Aluminium	Aluminium
Motor housing – version (GG)	–	–	EN-GJL-250	EN-GJL-250	–	EN-GJL-250	EN-GJL-250

• = available or authorised, – = not available or not authorised

Technical data Wilo-EMU KS

	Wilo-EMU ...					
	KS 16 (Ex)	**KS 20**	**KS 24**	**KS 37ZN KS 37ZM KS 37ZH**	**KS 70ZN KS 70ZM KS 70ZH ***	**KS 220**
Approved fluids						
Washing machine soap and water mixture (without long-fibre constituents)	•	•	•	•	•	•
Water from automobile washing plants	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions	with restric-tions
Bath water, unchlorinated	•	•	•	•	•	•
Heating water	•	–	•	•	•	•
Condensate	–	–	–	–	–	–
Cooling water	with restric-tions	–	with restric-tions	with restric-tions	with restric-tions	with restric-tions
Clean water	•	•	•	•	•	•
Drainage water	•	•	•	•	•	•
Semi-desalinated water	with restric-tions	–	–	–	–	–
Rainwater	•	•	•	•	•	•
Swimming-pool water	–	–	–	–	–	–
Sea water	–	–	–	–	–	–
Waste water, floodwater and river water	•	•	•	•	•	•
Very diluted alkalis	with restric-tions	–	with restric-tions	with restric-tions	with restric-tions	with restric-tions
Mildly aggressive media	with restric-tions	–	with restric-tions	with restric-tions	with restric-tions	with restric-tions
Power						
Power consumption P_1 1~230 V [kW]	–	–	–	–	–	–
Power consumption P_1 3~400 V [kW]	2.6	2.2	2.8	4.9	8.9/9.5*	24.4
Nominal motor power P_2 [kW]	2.0	2.8	2.4	3.7	7.0/7.5*	22
Nominal current with 1~230 V [A]	–	–	–	–	–	–
Nominal current with 3~400 V [A]	4.5	4.65	4.7	8.0	14.7/15.6*	40.5
Speed [1/min]	2900	2900	2900	2900	2900	2900
Motor						
Protection class with maximum submersion depth	IP 68	IP 68	IP 68	IP 68	IP 68	IP 68
Insulation class	F	F	F	F	F	F
Switching frequency [1/h]	15	15	15	15	15	15
Pump						
Submersion depth, maximum [m]	10	10	12	12	12	12
Fluid temperature, maximum [°C]	40	35	40	40	40	40

• = available or authorised, – = not available or not authorised

Technical data Wilo-EMU KS

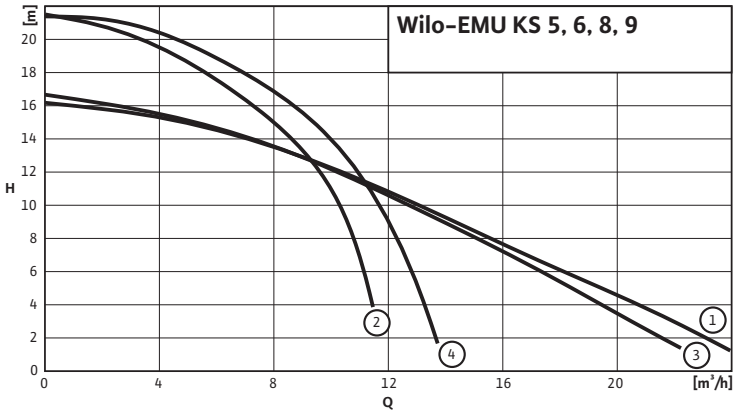
	Wilo-EMU ...					
	KS 16 (Ex)	**KS 20**	**KS 24**	**KS 37ZN KS 37ZM KS 37ZH**	**KS 70ZN KS 70ZM KS 70ZH ***	**KS 220**
Pump (continued)						
Cable type	H07 RN-F	H07 RN-F	H07 RN-F	NISSHöu	NISSHöu	H07 RN-F
Cable length [m]	10	10	20	20	20	20
Cable cross-section 1~230 V [mm²]	–	–	–	–	–	–
Cable cross-section 3~400 V [mm²]	7G1,5	4G1,5	4G1,5	4G1,5	4G2,5	4G6 + 2x 1.0
Type of connection cable	–	detachable / plug	detachable / plug	detachable	detachable	detachable
Activation type	direct	direct	direct	direct	direct	Smooth start-up
Ex protection	•	–	–	–	–	–
Free ball passage [mm]	12	45	5	6	6	10
Dimensions						
Pressure port [G/Storz]	2 / C	2 ½ / B	3 / B	4 / A	4 / A	6 / F
Weight [kg]	30	45	34	66	83	254
Materials						
Pump housing	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJL-250	Aluminium
Impeller	EN-GJL-250	EN-GJL-250	EN-GJL-250	EN-GJS-500-7	EN-GJS-500-7	Abrasive
Shaft	1.4021 (AISI 420)					
Mechanical seal on motor side	SiC/SiC	Carbon/ Cr steel	Carbon / aluminium oxide	Carbon /SiC	Carbon/SiC	SiC/SiC
Mechanical seal on pump side	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC	SiC/SiC
Static seals	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton	NBR
Motor housing – standard	EN-GJL-250	EN-GJL-250	Aluminium	Aluminium	Aluminium	Aluminium
Motor housing – version (GG)	–	–	–	–	–	–

• = available or authorised, – = not available or not authorised

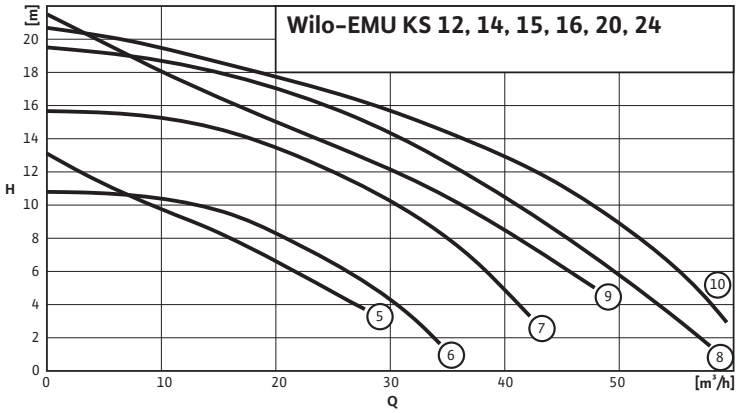
Pump curves Wilo-EMU KS

Wilo-EMU KS

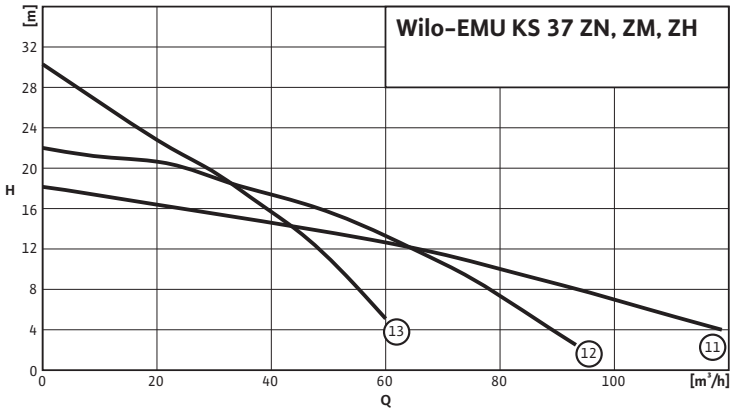
2-pole, 50 Hz



1 = KS 5
2 = KS 6
3 = KS 8
4 = KS 9



5 = KS 12
6 = KS 14
7 = KS 15
8 = KS 16
9 = KS 20
10 = KS 24

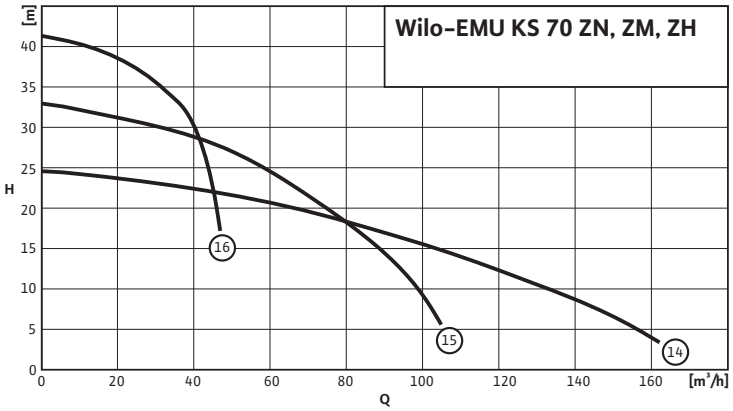


11 = KS 37 ZN
12 = KS 37 ZM
13 = KS 37 ZH

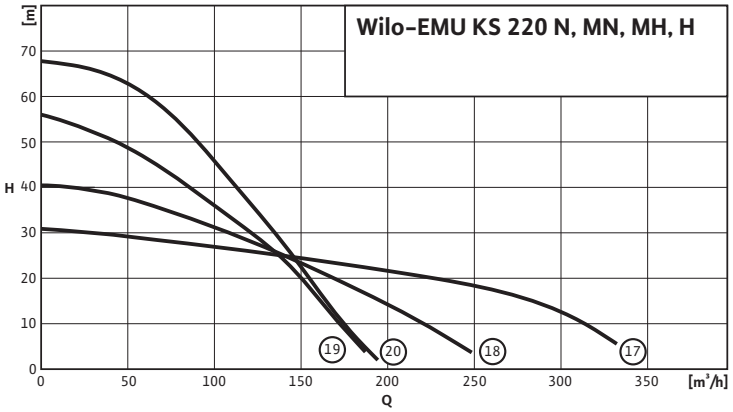
Pump curves, dimensions Wilo-EMU KS

Wilo-EMU KS

2-pole, 50 Hz



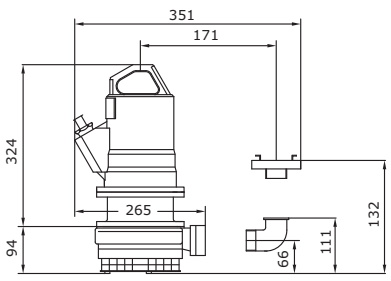
14 = KS 70 ZN
15 = KS 70 ZM
16 = KS 70 ZH



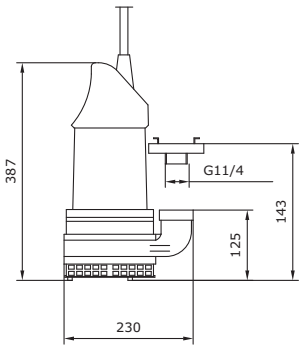
17 = KS 220 N
18 = KS 220 MN
19 = KS 220 MH
20 = KS 220 H

Dimension drawings

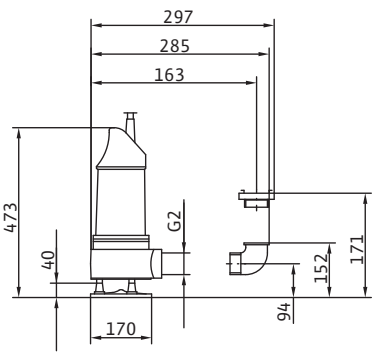
Wilo-EMU KS 5, 6



Wilo-EMU KS 8, 9

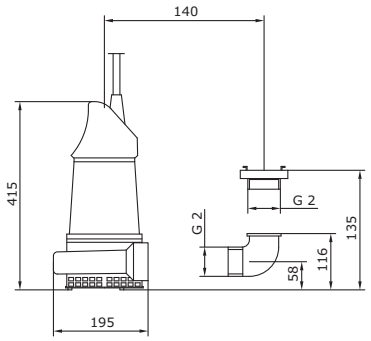


Wilo-EMU KS 12

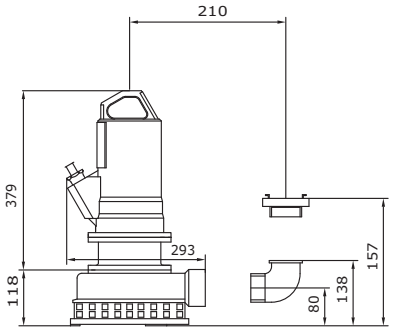


Dimensions Wilo-EMU KS

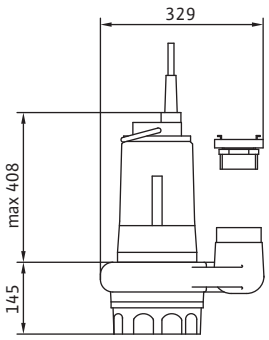
Wilo-EMU KS 14, 15



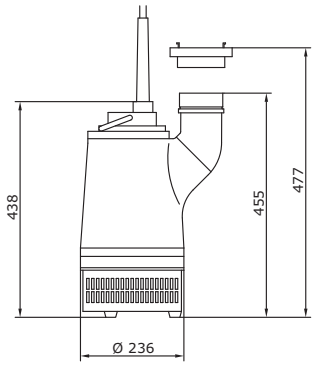
Wilo-EMU KS 16



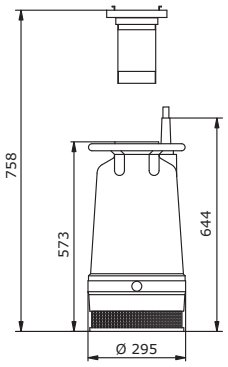
Wilo-EMU KS 20



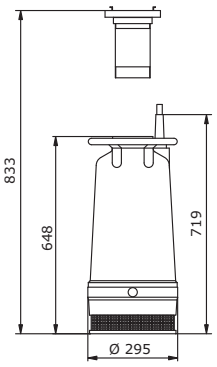
Wilo-EMU KS 24



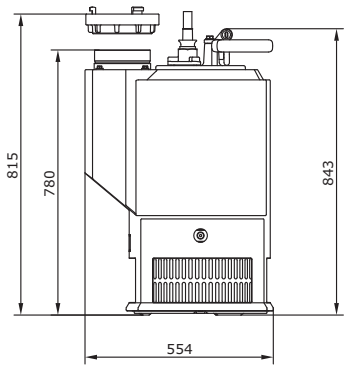
Wilo-EMU KS 37



Wilo-EMU KS 70



Wilo-EMU KS 220

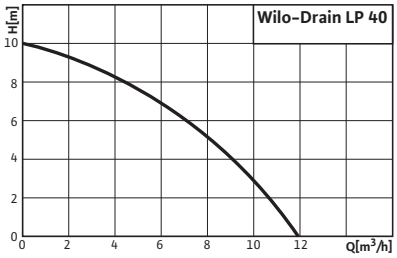


Contents

Self-priming pumps

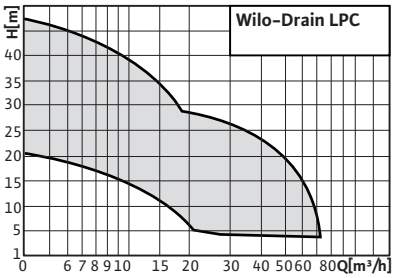
Series overview Wilo-Drain LP, LPC

Series: Wilo-Drain LP 40



> Self-priming drainage pump
> Application:
- Pumping of wastewater from
  - Excavation pits and ponds
  - Sprinkling/spraying of gardens and greenery
  - Mobile drainage

Series: Wilo-Drain LPC



> Self-priming drainage pump
> Application:
- Pumping of wastewater with small amounts of solid substances for
  - Excavation pits and ponds
  - Sprinkling/spraying of gardens and greenery
  - Drainage of seepage water
  - Mobile drainage

Series overview Wilo-Drain LP, LPC

Series: Wilo-Drain LP 40

> Product advantages:
- High operating safety
- Easy handling
- Easy operation

> Additional information: **Page**

Series: Wilo-Drain LPC

> Product advantages:
- Long service life
- Sturdy construction
- Easy handling
- Easy operation
- Easy-maintenance (inspection opening for cleaning the pump)
- Mobile and flexible application (version with combustion motor/handcart)

> Additional information: **Page**

Equipment/function Wilo-Drain LP, LPC

		Wilo-Drain ...	
		LP 40	**LPC**
Operating mode S1 (continuous operation)			
Motor immersed		–	–
Motor surfaced		–	–
Motor air-cooled		•	•
Operating mode S3 (intermittent duty)			
Operating time [%]		–	–
Switching frequency/h maximum		–	–
Switching frequency/h recommended		–	–
Sealing pumps/motor			
On the pump side:	Mechanical seal	•	•
On the motor end:	Mechanical seal	–	–
	Rotary shaft seal	–	–
Oil barrier chamber		–	–
Construction			
Wet sump installation	stationary	–	–
	portable	–	–
Dry sump installation	stationary	•	•
	portable	•	Model M only
Submersible		–	–
Closed multi-channel impeller		–	–
Open multi-channel impeller		–	•
Open single-channel impeller		–	–
Vortex impeller		•	–
Materials			
Motor	Aluminium casting	•	•
	Grey cast iron	–	–
	Stainless steel	–	–
Pump	Plastic	–	–
	Cast aluminium	–	only LPC 40
	Grey cast iron	–	•
	PP-GF30	•	–
	Brass	•	–

• = available or authorised, – = not available or not authorised

Equipment/function Wilo-Drain LP, LPC

	Wilo-Drain ...	
	LP 40	**LPC**
Equipment		
Motor operation monitoring (temperature)	•	–
Explosion protection	–	–
Sheath current cooling	–	–
Ready-to-plug	–	–
Connection cable [m]	–	–
Connection cable detachable	•	•
Oval counter flange	•	–

• = available or authorised, – = not available or not authorised

Series description Wilo-Drain LP

Wilo-Drain LP
Self-priming drainage pump

Type key
Example: **Wilo-Drain LP 40/10**

LP	Self-priming pump (lifting pump)
40	Nominal diameter (DN 40)
/10	Maximum delivery head [m]

Application
The self-priming drainage pump Wilo-Drain LP 40 is suitable for pumping large quantities of clean or slightly soiled water. Its utilisation is to be found in gardening operations, in agriculture and farming, as well as in industry.

Construction
Portable self-priming centrifugal pump, secure mounting on low-vibration baseplate made of polypropylene.
Maximum suction height 6 m.

Scope of delivery
Pump includes oval counter flange with inside thread Rp 1 ½, carrying handle and installation and operating instructions.

Accessories
Connection cable 5 m incl. plug and switch, hose connection set R 1 ½, level switching ZSE.

Technical data Wilo-Drain LP

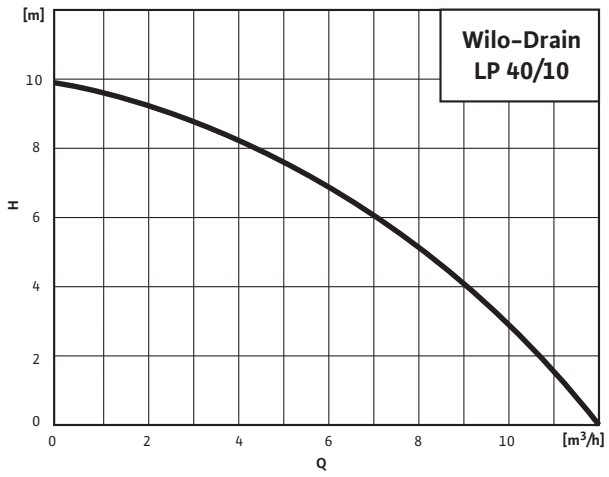
	Wilo Drain LP 40/10
Approved fluids	
Washing machine soap and water mixture (without long-fibre constituents)	•
Water from automobile washing plants	•
Bath water, unchlorinated	•
Saline water	–
Heating water	•
Cooling water	•
Clean water	•
Drainage water	•
Rainwater	•
Waste water, floodwater and river water	•
Very diluted alkalis	•
Power	
Power consumption P_1 1~230 V [kW]	0.55
Nominal motor power P_2 [kW]	0.4
Nominal current with 1~230 V [A]	2.3
Speed [1/min]	2900
Motor	
Protection class	IP 44
Insulation class	B
Pump	
Fluid temperature [°C]	3 – 35
Plug (shockproof)	•
Free ball passage [mm]	5
Dimensions	
Pressure port [DN/G]	40/1 ½
Hose connection Ø [mm]	40
Weight [kg]	12
Materials	
Pump housing	Polypropylene
Impeller	Brass
Shaft	1.4006 (AISI 410)/1.0402
Mechanical seal	Carbon/ceramic
Static seals	NBR
Motor housing	Aluminium

• = available or authorised, – = not available or not authorised

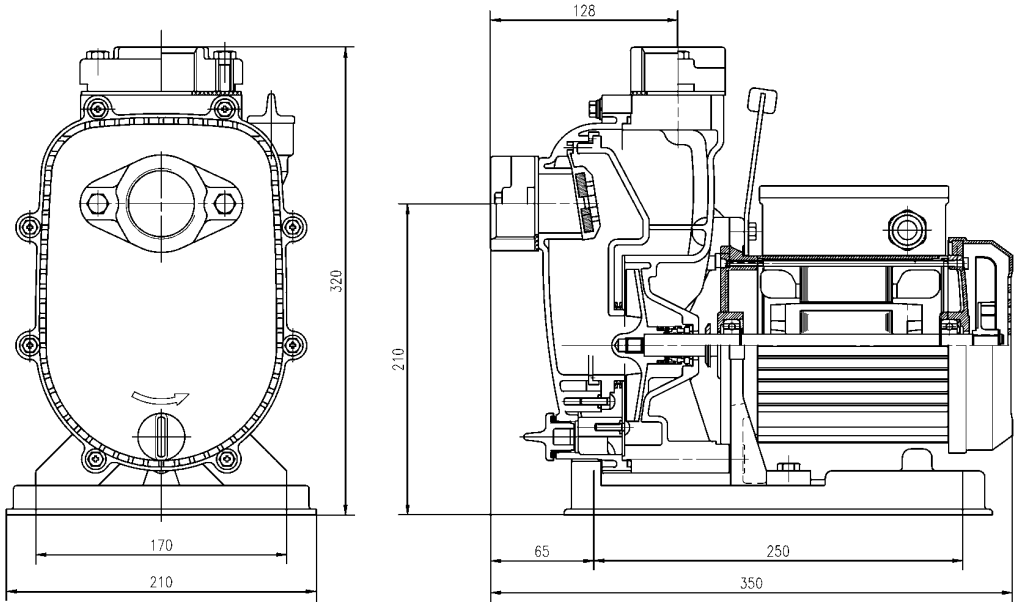
Pump curve, dimensions, terminal diagram Wilo-Drain LP

Wilo Drain LP 40/10

2-pole, 50 Hz

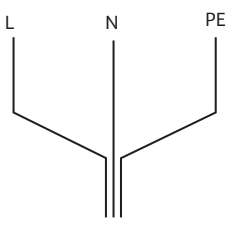


Dimension drawing



Terminal diagram

1~230 V, 50 Hz



Series description Wilo-Drain LPC

Wilo- Drain LPC
Self-priming drainage pump

Type key
Example: LPC 40/19 3-400-50-2 M

LP	Self-priming pump (lifting pump)
C	Grey cast iron
40	Nominal diameter (DN 40)
/19	Maximum delivery head [m]
3-400	Electro motor: 3~400 V
-50	Frequency 50 Hz
-2	2-pole
M	Mobile: Model with handcart

Example: **LPC 40/27 PM**

LP	Self-priming pump (lifting pump)
C	Grey cast iron
40	Nominal diameter (DN 40)
/27	Maximum delivery head [m]
P	Petrol: 4-tact petrol-burning motor
M	Mobile: Model with handcart

Application
The self-priming drainage pump Wilo-Drain LPC, with a maximum suction height of 7.5 m, is particularly suitable for pumping soiled water, with applications in gardening operations, agriculture and farming, as well as in industry.

Construction
This self-priming centrifugal pump is equipped with an open multi-channel impeller and integrated non-return valve (LPC 40 only). Sturdy construction resulting from the high-quality cast iron of the impeller and of the pump housing (LPC 40 made of aluminium casting). Mounting security is ensured by a fixed, low-vibration base-plate. The impeller and the pump housing can be cleaned through a small inspection opening (not LPC 40). The long service life of this pump is made possible by easy replacement of the wearing plate (except for LPC 40).

Scope of delivery
Pump with installation and operating instructions.
For P-version (petrol combustion motor) with rope hand starter.

Accessories
Motor protection switches, stop valves, suction set consisting of: Hose nozzle, hose, hose clip, hose coupling and foot valve (strainer).

Technical data Wilo-Drain LPC

	Wilo Drain...				
	LPC 40/19 (LPC 40/19M)	**LPC 50/25 (LPC 50/25M)**	**LPC 80/29**	**LPC 40/27P (LPC 40/27PM)**	**LPC 50/47P (LPC 50/47PM)**
Approved fluids					
Washing machine soap and water mixture (without long-fibre constituents)	•	•	•	•	•
Water from automobile washing plants	•	•	•	•	•
Bath water, unchlorinated	•	•	•	•	•
Saline water	–	–	–	–	–
Heating water	•	•	•	•	•
Cooling water	•	•	•	•	•
Clean water	•	•	•	•	•
Drainage water	•	•	•	•	•
Rainwater	•	•	•	•	•
Waste water, floodwater and river water	•	•	•	•	•
Very diluted alkalis	•	•	•	•	•
Power					
Nominal motor power P_2 3~400 V [kW]	1.1	2.2	4.2	–	–
Nominal current with 3~400 V [A]	4.5	7.7	14.2	–	–
Motor power [kW/PS]	–	–	–	2.21/3	3.68/5
Piston capacity [cm^3]	–	–	–	127	205
Tank volume [l]	–	–	–	2.8	2.8
Speed [1/min]	2900	2900	2900	3600	3600
Motor					
Protection class	IP 55	IP 55	IP 55	–	–
Insulation class	F	F	F	–	–
Pump					
Fluid temperature [°C]	5 – 80	5 – 80	5 – 80	5 – 80	5 – 80
Plug	–	–	–	–	–
Free ball passage [mm]	6	6	12	6	6
Dimensions					
Pressure port [G]	1 ½ A	2	3	1 ½ A	2
Hose connection Ø [mm]	–	–	–	–	–
Weight [kg]	19 (26)	43 (52)	75	25 (32)	43 (52)
Materials					
Pump housing	Aluminium	EN-GJL 250	EN-GJL 250	Aluminium	EN-GJL 250
Impeller	EN-GJL 250	EN-GJL 250	EN-GJL 250	EN-GJL 250	EN-GJL 250
Shaft	1.4028 (AISI 420F)				

• = available or authorised, – = not available or not authorised

Technical data Wilo-Drain LPC

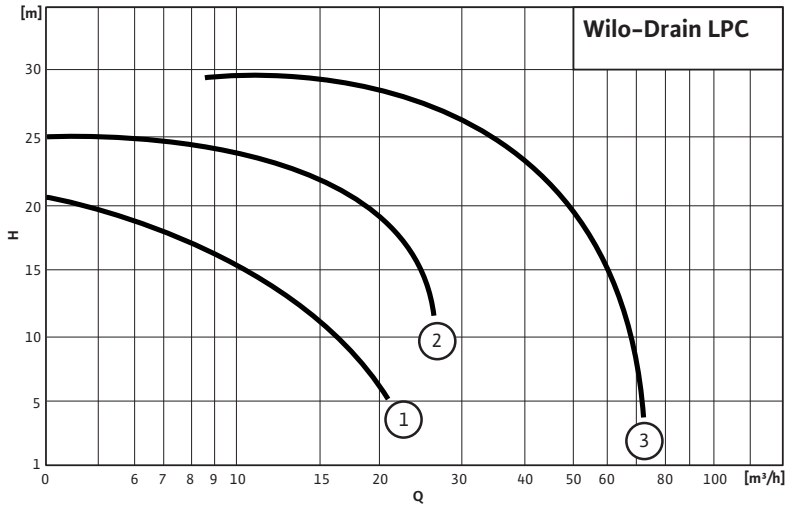
	Wilo Drain...				
	LPC 40/19 (LPC 40/19M)	**LPC 50/25 (LPC 50/25M)**	**LPC 80/29**	**LPC 40/27P (LPC 40/27PM)**	**LPC 50/47P (LPC 50/47PM)**
Materials (continued)					
Mechanical seal	Carbon / aluminium oxide	Carbon / aluminium oxide	SiC/SiC	Carbon / aluminium oxide	Carbon / aluminium oxide
Static seals	NBR	NBR	NBR	NBR	NBR
Motor housing	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium

• = available or authorised, – = not available or not authorised

Pump curves Wilo-Drain LPC

Wilo-Drain LPC...

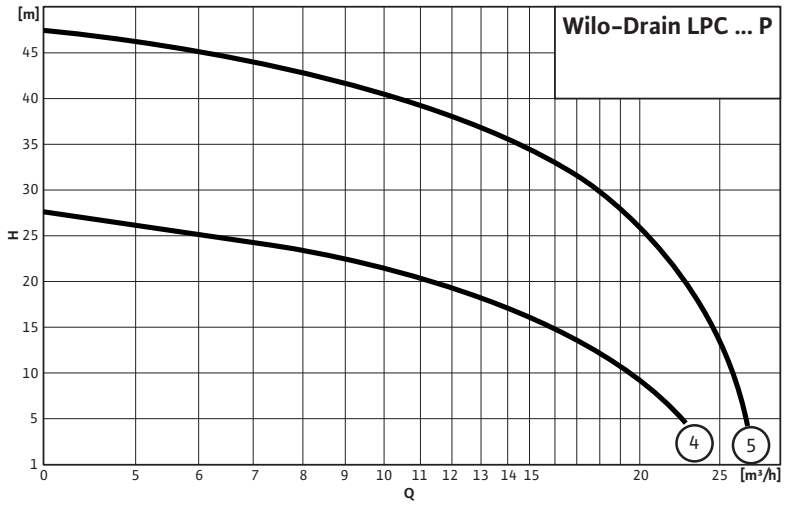
2-pole, 50 Hz



1 = LPC 40/19
2 = LPC 50/25
3 = LPC 80/29

Wilo-Drain LPC ... P

4-tact petrol-burning motor

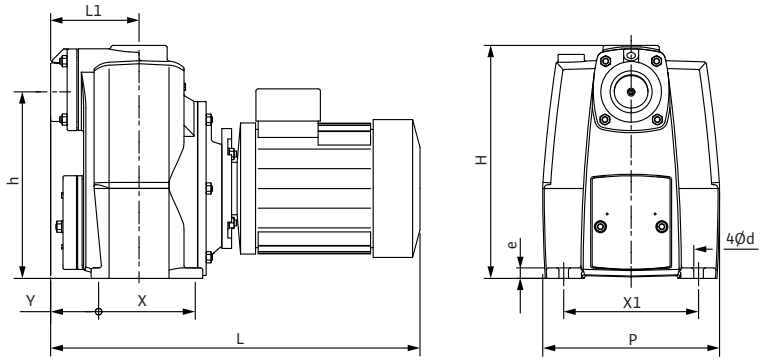


4 = LPC 40/27P
5 = LPC 50/47P

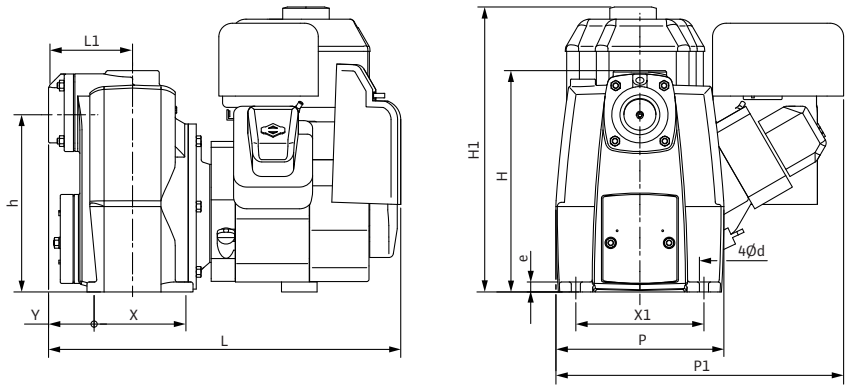
Dimension drawings, dimensions Wilo-Drain LPC...

Dimension drawing

Wilo-Drain LPC



Wilo-Drain LPC...P



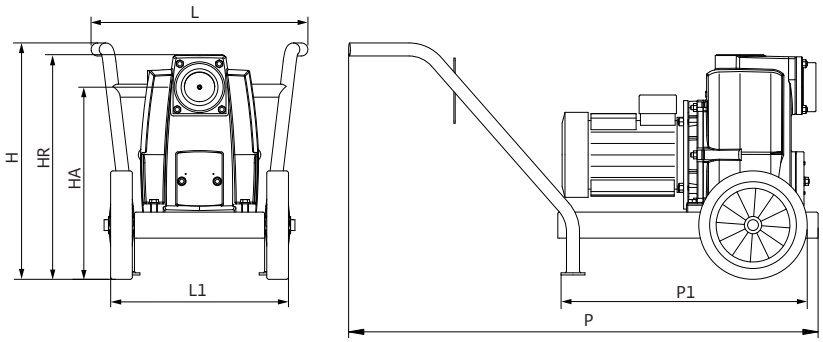
Dimensions LPC/LPC...P, individual pumps

Wilo-Drain ...	Connections	Dimensions [mm]											
	DN	H	H1	L	L1	P	P1	h	X	X1	Y	Ød	e
LPC 40/19	G 1 ½ A	274	–	397	73	195	–	238	122	140	14	10	10
LPC 50/25	G2	311	–	493	118	236	–	249	129	180	64	12	14
LPC 80/29	G3	363	–	583	175	283	–	288	190	210	95	14	19
LPC 40/27 P	G 1 ½ A	274	400	420	73	195	400	238	122	140	14	10	10
LPC 50/47 P	G2	311	400	495	118	236	400	249	129	180	64	12	14

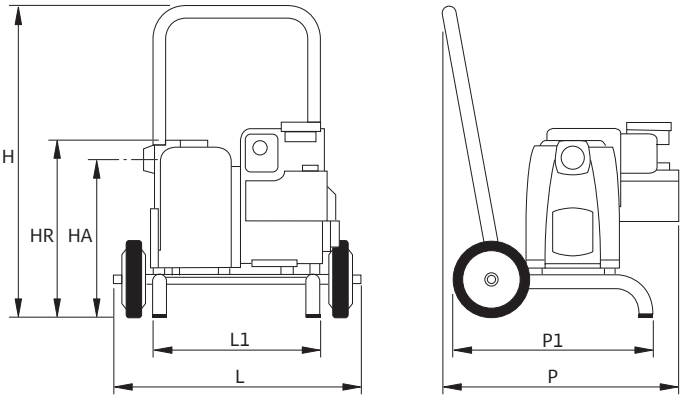
Dimension drawings, dimensions Wilo-Drain LPC...M

Dimension drawing

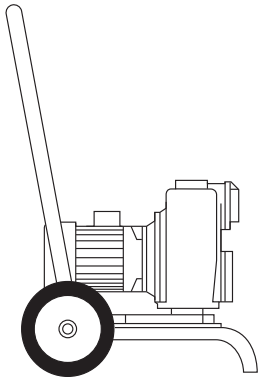
Wilo-Drain LPC 80/29 M



Wilo-Drain LPC 40/27 PM, LPC 50/47 PM



Wilo-Drain LPC 40/19 M, LPC 50/25 M



Dimensions LPC...M-versions with handcart

Wilo-Drain ...	Connections	Dimensions [mm]						
	DN	H	HA	HR	L	L1	P	P1
LPC 40/19 M	G 1 ½ A	980	349	383	620	410	665	500
LPC 50/25 M	G2	980	360	420	620	410	665	500
LPC 80/29 M	G3	545	443	518	620	385	1082	568
LPC 40/27 PM	G 1 ½ A	980	349	383	620	410	665	500
LPC 50/47 PM	G2	980	360	420	620	410	665	500

Contents

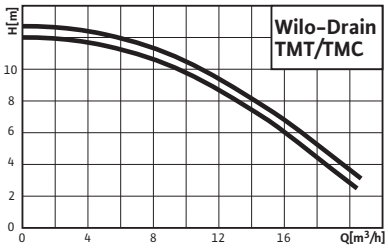
Submersible motor/pedestal pumps

Wastewater/Drainage (Hot Water)

Submersible motor/pedestal pumps

Series overview Wilo-Drain TMT/TMC, VC

Series: Wilo-Drain TMT/TMC

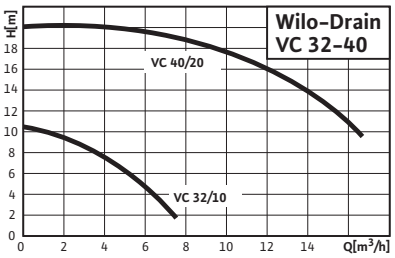


> Drainage pumps

> Application:

- In industrial and municipal use, e.g. for condensate, hot water and aggressive fluids.

Series: Wilo-Drain VC



> Vertical drainage pump

> Application:

- Pumping of wastewater:
  - With solid substances of max. Ø 5 mm or Ø 7 mm (VC 40)
  - Fluids up to 95 °C
  - From pump sumps
  - With condensate
  - From basements at risk of flooding

Series overview Wilo-Drain TMT/TMC, VC

Series: Wilo-Drain TMT/TMC

> Product advantages:
- High temperature resistance
- Also suitable for aggressive media

> Additional information: **Page**

Series: Wilo-Drain VC

> Product advantages:
- Integrated motor protection
- Long service life
- Easy commissioning
- Connection outside the fluid
- Long standstill times

> Additional information: **Page**

Equipment/function Wilo-Drain TMT/TMC, VC

		Wilo-Drain ...	
		TMT/TMC	**VC 32, 40**
Operating mode intermittent duty S3			
Operating time [%]		25	25
Switching frequency/h maximum		50	20
Switching frequency/h recommended		20	20
Operating mode continuous operation S1			
Motor submersed		•	–
Motor air-cooled		–	• (2h/day)
Sealing pumps/motor			
On the pump side:	Mechanical seal	•	–
On the motor end:	Rotary shaft seal	•	–
Oil barrier chamber		•	–
Construction			
Wet sump installation stationary		•	• (only pump housing)
	portable	•	–
Dry sump installation stationary		–	–
Submersible		•	• (only pump housing)
Open multi-channel impeller		•	•
Materials			
Motor	Aluminium casting	–	•
	Stainless steel	•	–
	Bronze	•	–
	Grey cast iron	•	–
Pump	Grey cast iron	•	•
	Bronze	•	–
Equipment			
Connection cable [m]		5	–
Attached float switch		–	•
Capacitor box		–	VC 32, 1~

• = available or authorised, – = not available or not authorised

Series description Wilo-Drain TMT/TMC

Wilo-Drain TMT/TMC
Drainage pumps

Type key
Example: **Wilo-Drain TMC 30-0,5**

TM	Submersible motor pump
T	For hot wastewater up to 95 °C
C	For industrial wastewater up to 95 °C
30	Nominal diameter of the pressure port (DN 32)
-0,5	Nominal motor power [kW]

Application
Submersible motor pump, constructed for manifold utilisation in industrial and municipal usage, e.g. for condensate, hot water and aggressive media.

Construction
Oil-immersed, leak-proof encapsulated, noiseless three-phase squirrel-cage motor, free of radio frequency interference. A residual-current circuit-breaker for a trigger current of 30 mA which is to be provided onsite (regulation concerning outdoor installation) must be utilised in accordance with EN 60335-2, 41

Scope of delivery
Pump with rigid connected feed line with bare cable end and installation and operating instructions. (Motor protection onsite by others)

Technical data Wilo-Drain TMT/TMC

	Wilo-Drain ...		
	TMT 30-0,5 GG	**TMC 30-0,5 Bronze**	**TMC 30-0,7 Niro**
Approved fluids			
Heating water	•	•	•
Hot water	•	•	•
Boiler water	•	•	•
Pump sumps from boiler systems	•	•	•
Condensate	•	•	•
Drainage water	•	•	•
Rainwater	•	•	•
Sea water/saline water	–	•	–
Wastewater, floodwater and river water	•	•	•
Very diluted alkalis	•	–	–
Stronger alkalis	–	•	–
Mildly aggressive media	•	–	–
Acidic water	–	–	•
Aggressive media	–	•	•
Power			
Nominal motor power P_2 [kW]	0.55	0.55	0.75
Nominal current with 1~230 V [A]	–	–	–
Nominal current with 3~400 V [A]	1.9	1.9	1.9
Nominal current with 3~230 V [A]	–	–	–
Speed [1/min]	2870	2870	2870
Motor			
Protection class	IP 68	IP 68	IP 68
Insulation class	H	H	H
Pump			
Submersion depth, maximum [m]	5	5	5
Fluid temperature, maximum [°C]	95/65 [1)]	95/65 [1)]	95/65 [1)]
Cable type	SiAF	SiAF	SiAF
Cable length [m]	5	5	5
Cable cross-section 3~400 V [mm^2]	4 x 1.5	4 x 1.5	4 x 1.5
Plug	–	–	–
Type of power cable	sealed	sealed	sealed
Activation type	direct	direct	direct
Ex protection	–	–	–
Free ball passage [mm]	10	10	10

• = available or authorised, – = not available or not authorised
[1)] surfaced

Technical data Wilo-Drain TMT/TMC

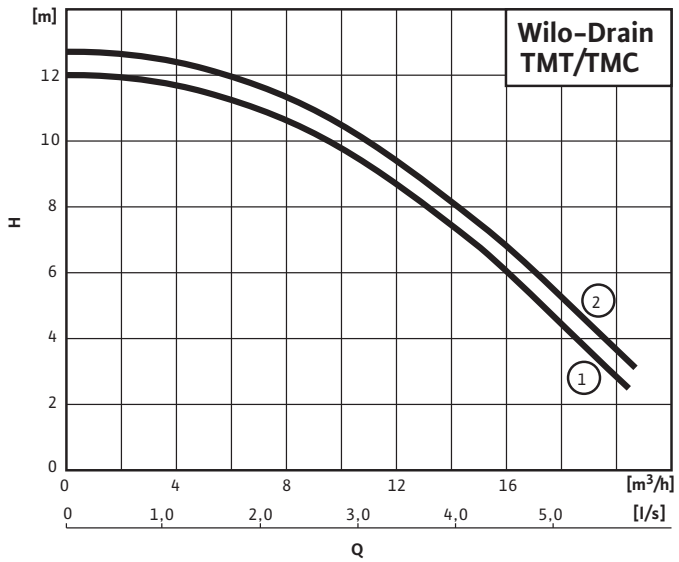
	Wilo-Drain ...		
	TMT 30-0,5 GG	**TMC 30-0,5 Bronze**	**TMC 30-0,7 Niro**
Dimensions			
Pressure port [DN/Rp]	1 ¼	1 ¼	1 ½
Weight [kg]	30	33	32
Materials			
Pump housing	EN-GJL-250	G-CuSn 10	1.4408
Impeller	EN-GJL-250	G-CuSn 10	1.4408
Shaft	1.4122	1.4122	1.4571 (AISI 316Ti)
Baseplate	–	–	–
Lower sleeve bearings	–	–	–
Suction strainer	–	–	–
Floater	–	–	–
Mechanical seal	2-way carbon/ceramic	2-way carbon/ceramic	1-way carbon/ceramic
Static seals	FPM	FPM	PTFE/Teflon
Motor housing	EN-GJL-250	G-Cu SN 10	1.4408

• = available or authorised, – = not available or not authorised
[1)] surfaced

Pump curves, dimensions, weights Wilo-Drain TMT/TMC

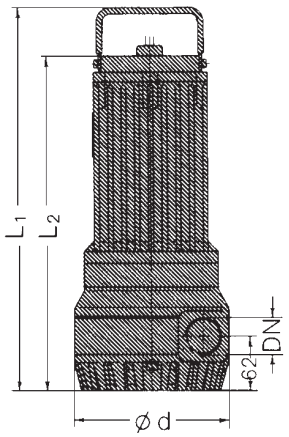
Wilo-Drain TMT/TMC

2-pole, 50 Hz



1 = TMT/TMC 30-0,5
2 = TMC 30-0,7

Dimension drawing



Dimensions, weights

Wilo-Drain …	Pressure port	Installation height		Pumps Ø	Weight
	–	L1	L2	D	–
	Rp	[mm]			[kg]
TMT 30-0,5 GG	1 ¼	455	388	183	30
TMC 30-0,5 bronze	1 ¼	455	388	183	33
TMC 30-0,7 Niro	1 ¼	466	392	200	32

Series description Wilo-Drain VC

Wilo-Drain VC
Vertical wastewater pump

Type key
Example: **Wilo-Drain VC 32/10**

VC	Vertical wastewater pump
32	Pressure port nominal diameter [mm]
/10	Max. delivery head [m]

Application
Wilo-Drain VC pumps are suitable for pumping wastewater with solid substances from max. 5 mm or 7 mm (VC 40) diameter. They have been specifically designed for conveying media up to 95 °C (e.g. condensate, pump sumps of boiler plants, basements at risk of flooding).
Can be utilised in the following installation types
- On completely flat floors
- Shaft always vertical
- VC 40 hanging from flange

Construction
Float switch
VC 32: Built into motor
VC 40: Disconnected from motor
Electrical data
VC 32: 1~230 V with capacitor 40 µF
VC 40: 3~230/400 V motor protection switch required onsite.

Scope of delivery
Pump with attached float switch and installation and operating manual.

Technical data Wilo-Drain VC

	Wilo Drain ...	
	VC 32/10	**VC 40/20**
Approved fluids		
Heating water	•	•
Hot water	•	•
Boiler water	•	•
Pump sumps from boiler systems	•	•
Condensate	•	•
Drainage water	•	•
Rainwater	•	•
Sea water/saline water	–	–
Wastewater, floodwater and river water	•	•
Very diluted alkalis	•	•
Washing machine soap and water mixture (without long-fibre constituents)	•	•
Stronger alkalis	–	–
Mildly aggressive media	–	–
Acidic water	–	–
Aggressive media	–	–
Power		
Nominal motor power P_2 [kW]	0.37	2.20
Nominal current with 1~230 V [A]	3.65	–
Nominal current with 3~400 V [A]	0.88	4.40
Nominal current with 3~230 V [A]	1.59	7.60
Speed [1/min]	2900	2900
Motor		
Protection class	IP 54	IP 54
Insulation class	F	F
Pump		
Submersion depth, maximum [m]	–	–
Fluid temperature, maximum [°C]	5 up to 95	5 up to 95
Cable type	–	–
Cable length [m]	–	–
Cable cross-section 3~400 V [mm²]	–	–
Plug	–	–
Type of power cable	–	–
Activation type	direct	direct
Ex protection	–	–
Free ball passage [mm]	5	7

• = available or authorised, – = not available or not authorised

Technical data Wilo-Drain VC

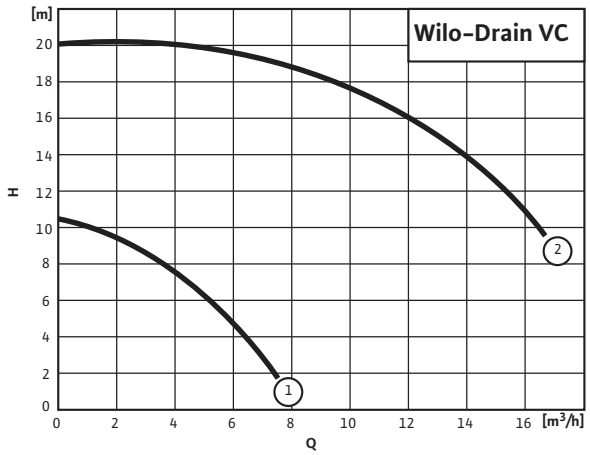
	Wilo Drain ...	
	VC 32/10	**VC 40/20**
Dimensions		
Pressure port [R]	1	1 ½
Weight [kg]	36	75
Materials		
Pump housing	Cast iron	Cast iron
Impeller	1.4028 (AISI 420F)	EN-GJL-250
Shaft	Stainless steel	Stainless steel
Baseplate	EN-GJL-250	EN-GJL-250
Lower sleeve bearings	G-CuSn 10	G-CuSn 10
Suction strainer	Noryl (GFN 3)	Noryl (GFN 3)
Floater	Polypropylene	Polypropylene
Mechanical seal	–	–
Static seals	–	–
Motor housing	Aluminium	Aluminium

• = available or authorised, – = not available or not authorised

Pump curves, dimensions Wilo-Drain VC

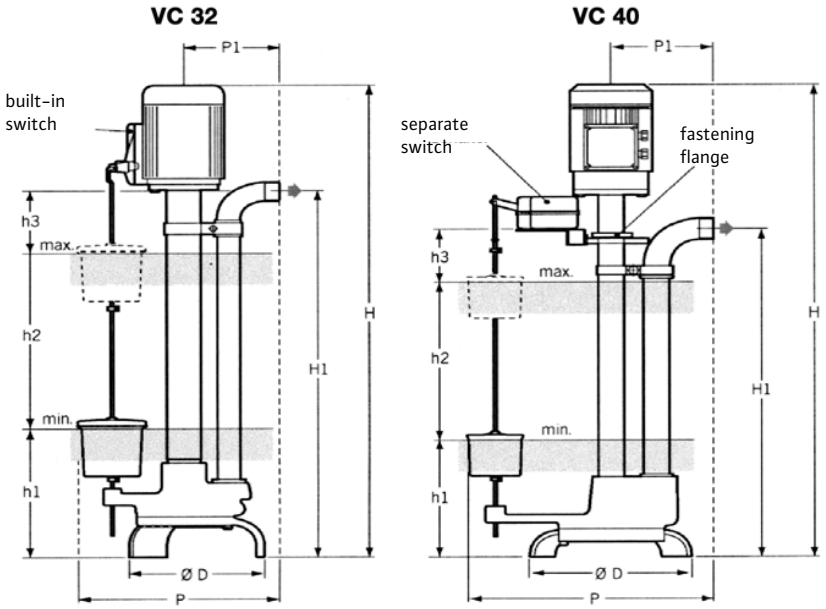
Wilo-Drain VC

2-pole, 50 Hz



1 = VC 32/10
2 = VC 40/20

Dimension drawing



Dimensions

Wilo-Drain ...	Pressure port	Dimensions							
	–	H	P	H1	Ø D	h1	h2	h3	P1
	R	[mm]							
VC 32/10	1	1240	300	1020	230	160	610	250	141
VC 40/20	1 ½	1400	458	1034	325	130	740	130	190

Contents

Electrical Accessories Wilo-Drain

Electrical Accessories Wilo-Drain

Drainage pumps

Recommended accessories

	Wilo-EC-Drain 1x4.0 [1]	Wilo-EC-Drain 2x4.0 [2]	Wilo-Drain-Control PL1 [1]	Wilo-Drain-Control PL1 WS [1]	Wilo-Drain-Control PL2 [2]	Wilo-Drain-Control PL2 WS [2]	Wilo-Drain-Control 1 [1]	Wilo-Drain-Control 2 [2]
Submersible motor pumps								
Wilo-Drain TM/TMW	•	•	o	o	o	o	o	o
Wilo-Drain TS 40	•	•	o	o	o	o	o	o
Wilo-Drain TS 50	•	•	o	o	o	o	o	o
Wilo-Drain TS 65	•	•	o	o	o	o	o	o
Wilo-EMU KS 5, 6, 16(Ex)	•	•	o	o	o	o	o	o
Wilo-EMU KS 8, 9, 12, 14, 15, 20, 24	•	•	o	o	o	o	o	o
Wilo-EMU KS 37, 70, 220	•	•	o	o	o	o	o	o
Wilo-Drain TMT/TMC	•	•	o	o	o	o	o	o

• = recommended, ◦ = optional, – = not required
[1] Switchgear for 1 pump, [2] switchgear for 2 pumps

Recommended accessories

	Wilo KAS	Wilo-Drain-Alarm 2	Wilo-Alarm-Control 1	Wilo-Alarm - Control 2	Motor protection plug CEE	Level sensor	Float switch MS1	Float switch WA
Submersible motor pumps								
Wilo-Drain TM/TMW	○	○	○	○	–	○	–	•
Wilo-Drain TS 40	○	○	○	○	○	○	○	•
Wilo-Drain TS 50	○	○	○	○	○	○	○	•
Wilo-Drain TS 65	○	○	○	○	○	○	○	•
Wilo-EMU KS 5, 6, 16(Ex)	○	○	○	○	○	○	○	•
Wilo-EMU KS 8, 9, 12, 14, 15, 20, 24	○	○	○	○	○	○	○	•
Wilo-EMU KS 37, 70, 220	○	○	○	○	○	○	○	•
Wilo-Drain TMT/TMC	○	○	○	○	○	○	○	•

• = recommended, ○ = optional, – = not required

Electrical Accessories Wilo-Drain

Drainage pumps

Recommended accessories

	Dynamic pressure system	Bubbling-through system	Ex cut-off relay	Breakdown barrier	Switch cabinet	Flash light	Signal horn
Submersible motor pumps							
Wilo-Drain TM/TMW	○	○	–	–	○	○	○
Wilo-Drain TS 40	○	○	–	–	○	○	○
Wilo-Drain TS 50	○	○	○	○	○	○	○
Wilo-Drain TS 65	○	○	○	○	○	○	○
Wilo-EMU KS 5, 6, 16(Ex)	○	○	•	○	○	○	○
Wilo-EMU KS 8, 9, 12, 14, 15, 20, 24	○	○	–	–	○	○	○
Wilo-EMU KS 37, 70, 220	○	○	–	–	○	○	○
Wilo-Drain TMT/TMC	○	○	–	–	○	○	○

• = recommended, ○ = optional, – = not required

The Wilo factory customer service technicians are partners who are there for you with their practical support in all of Germany 365 days a year. Your personal contact partner on site offers you all conceivable support. This local service works so well thanks to our unparalleled organisational structure. Everything comes together in our factory-owned Wilo Service Centre. Based on this, every service call is coordinated perfectly via your personal control centre, and the Wilo customer service technician will be on site to give optimum support with a lot of useful information.
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Pumpen Intelligenz.

Electrical Accessories Wilo-Drain

Drainage pumps

Equipment/Function

		Wilo-EC-Drain 1x4.0	Wilo-EC-Drain 2x4.0	Wilo-DrainControl PL 1/PL 1 WS	Wilo-DrainControl PL 2/PL 2 WS	Wilo-DrainControl 1	Wilo-DrainControl 2	Wilo KAS
Application								
Switchgear for pump control		•	•	•	•	•	•	–
Alarm switchgear		–	–	–	–	–	–	•
Number of pumps to be controlled		1	2	1	2	1	2	–
Electrical connection								
Direct activation [A]		max. 12	maximum 2 x 12x	max. 12	maximum 2 x 12x	maximum 10	maximum 2 x 10x	–
Star/delta switching		–	–	–	–	> 10 A	> 10 A	–
Construction								
Microprocessor-controlled		–	•	•	•	•	•	–
Electronic		•	–	–	–	–	–	•
Housing material								
Plastic		•	•	•	•	•	•	•
Metal		–	–	–	–	–	–	–
Equipment								
Test run		–	•	•	•	–	–	–
Pump starts counter/impulse counter		–	–	•	•	–	–	–
LCD display		–	–	•	•	•	•	–
LED control lamp		•	•	•	•	•	•	–
Main switch		•	•	• (only with PL 1 WS)	• (only with PL 2 WS)	•	•	–
Ampere display		–	–	•	•	• [2]	• [2]	–
Voltmeter		–	–	–	–	–	–	–
Adjustable follow-up time		–	–	•	•	•	•	–
Operating hours counter		–	–	•	•	•	•	–
Level-registering	Float switch	• [3]	• [3]	• [3]	• [3]	• [3]	• [3]	–
	Pneumatic pressure sensor	–	–	•	•	–	–	–
	Level sensor (4-20 mA)	–	–	• [4]	• [4]	• [4]	• [4]	–
	Electrodes	–	–	–	–	–	–	•
Alarm	Mains-dependent	•	•	•	•	•	•	–
	Built-in (buzzer)	•	•	•	•	–	–	•
Pump cycling		–	•	–	•	–	•	–

[1] For other motor power ratings upon request
[2] Only for direct-switch-on devices (up to 4 kW)
[3] In the explosive area only with Ex cut-off relay
[4] In the explosive area only with breakdown barrier

• = available, – = not available

Equipment/Function

	Wilo-EC-Drain 1x4.0	Wilo-EC-Drain 2x4.0	Wilo-DrainControl PL 1/PL 1 WS	Wilo-DrainControl PL 2/PL 2 WS	Wilo-DrainControl 1	Wilo-DrainControl 2	Wilo KAS
Message/display function							
Collective run signal (SBM)	•	•	–	–	–	–	–
Collective fault signal (SSM)	•	•	•	•	•	•	–
Individual run signal (EBM)	–	–	–	–	•	•	–
Individual fault signal (ESM)	–	–	–	•	–	–	–
Control functions (motor operation monitoring)							
TWC	•	•	•	•	•	•	–
PTC	–	–	–	–	•	•	–
Impermeability (DI)	–	–	–	–	•	•	–
Electronic	•	•	•	•	• (to 10 A)	• (to 10 A)	–
Motor protection switch	–	–	optional	optional	• (starting with 10 A)	• (starting with 10 A)	–
Scope of delivery							
Float switch	–	•/-	–	–	–	–	–
Horn	–	–	–	–	–	–	–

[1] For other motor power ratings upon request
[2] Only for direct-switch-on devices (up to 4 kW)
[3] In the explosive area only with Ex cut-off relay
[4] In the explosive area only with breakdown barrier

• = available, – = not available

Electrical Accessories Wilo-Drain

Drainage pumps

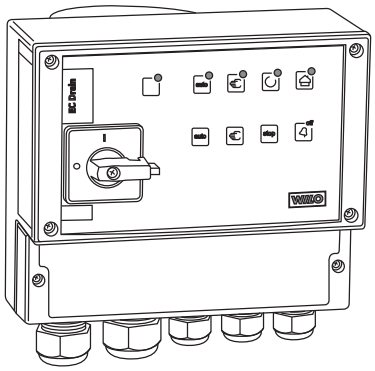
Equipment/function

		Wilo Drain-Alarm 2	Wilo-AlarmControl 1	Wilo-AlarmControl 2	Motor protection plug CEE	Ex cut-off relay	Breakdown barrier	Flash light	Signal horn	Wilo SK 545
Application										
Switchgear for pump control		–	–	–	•	–	–	–	–	–
Alarm switchgear		•	•	•	–	–	–	–	–	–
Number of pumps to be controlled		–	–	–	1	–	–	–	–	2
Electrical connection										
Direct activation [A]		–	–	–	•	–	–	–	–	– External power section
Star/delta switching		–	–	–	–	–	–	–	–	– External power section
Construction										
Electronic		•	•	•	–	•	•	•	–	•
Electromechanical		–	–	–	•	–	–	–	•	–
Housing material										
Plastic		•	•	•	•	•	•	•	•	•
Equipment										
LED control lamp		•	–	–	•	•	–	–	–	•
Level-registering	Float switch	•	•	•	•	•	–	–	–	–
	Pneumatic pressure sensor	–	–	–	–	–	–	–	–	–
	Level sensor (4–20 mA)	–	–	–	–	–	•	–	–	–
	Electrodes	–	–	–	–	–	–	–	–	–
Alarm	Mains-independent	•	•	•	–	–	–	–	–	–
	Mains-dependent	•	•	•	–	–	–	–	–	–
	Built-in (buzzer)	•	•	•	–	–	–	–	–	–
Outlet 1~230 V		–	–	•	–	–	–	–	–	–
Message/display function										
Individual fault signal (ESM)		•	•	–	–	–	–	–	–	–
Control functions (motor operation monitoring)										
TWC		–	–	–	•	–	–	–	–	•
Impermeability (DI)		–	–	–	–	–	–	–	–	•
Motor protection switch		–	–	–	•	–	–	–	–	–

• = available, – = not available

Product descriptions

Switchgear Wilo-EC-Drain 1x4.0



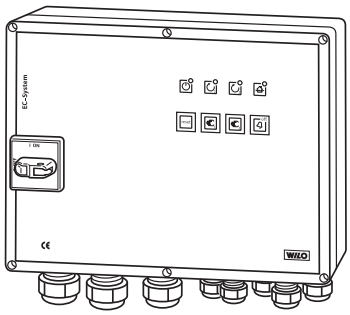
Electronically controlled switchgear for the automatic, transmitter-dependent control of 1 wastewater/sewage submersible motor pumps of the Wilo-Drain series.

- Full motor protection with integrated motor current monitoring and thermal winding contact assessment
- Lockable main switch
- Transmitter connection for float switch, type WA 65, WA 95
- Button for manual mode of the pump
- High water alarm
- Forced switch-on with high water
- Potential-free fault signal (changeover contact) and potential-free operating signal (changeover contact)
- Integrated mains-dependent alarm buzzer
- Operation, high water and malfunction display via LEDs in the front panel

Technical data:
Operating voltage: 1~230 V, 3~400 V, 3~230 V
Connected load P_2: 4.0 kW
Maximum current: 12 A
Frequency: 50/60 Hz
Protection class: IP 65 (within buildings/switch cabinets)
Dimensions (W x H x D): 215 x 220 x 125 mm

Note: Switchgears are not protected against explosions and may not be utilised except outside of potentially explosive areas. Ex cut-off relays are to be provided for pump control in potentially explosive areas.

Switchgear Wilo-EC-Drain 2x4.0



Microprocessor-controlled switchgear for the automatic, transmitter-dependent control of 2 wastewater/sewage submersible motor pumps of the series Wilo-Drain.

- Motor protection by means of built-in thermal winding contact assessment
- Lockable main switch
- Transmitter connection for float switch, types WA 65, WA 95 and MS1
- Two buttons for manual mode of the pumps
- Adjustable pump kick function for a pump start of 3 sec. after a standstill time of 7 days.
- High water alarm
- Forced switch-on with high water
- Potential-free fault signal (changeover contact) and potential-free operating signal (changeover contact)
- Integrated mains-dependent alarm buzzer
- Operation, high water and malfunction display via LEDs in the front panel
- Optional for control of explosion-protected pumps

Technical data:
Operating voltage: 1~230 V, 3~400 V, 3~230 V
Connected load P_2: 2 x 4.0 kW
Maximum current: 2 x 12 A
Frequency: 50/60 Hz
Protection class: 54
Dimensions (W x H x D): 300 x 230 x 113 mm

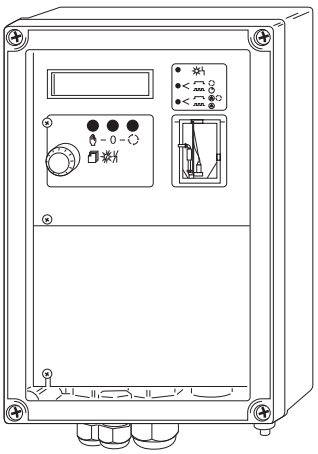
Note: Switchgears are not protected against explosions and may not be utilised except outside of potentially explosive areas. Ex cut-off relays are to be provided for pump control in potentially explosive areas.

Electrical Accessories Wilo-Drain

Drainage pumps

Product descriptions

Switchgear Wilo-DrainControl PL 1



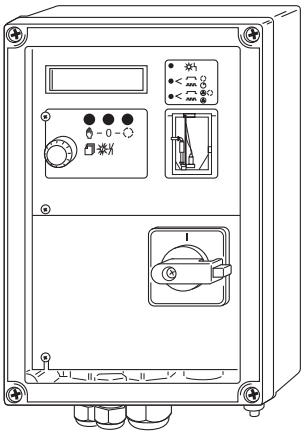
Switchgear for regulating the levels of 1 submersible motor pump. Level measurement can be carried out with either the bubbling-through or the dynamic pressure procedure, with float switches or electronic level sensors.

- LCD display
- LED for alarm, operation/follow-up time, manual/automatic operation
- Input terminals for connecting float switches (WA 65, WA 95 or MS1) or for connecting a level sensor **0-1 mWs** (4-20 mA)
- Potential-free contact for collective fault signal and high water alarm
- Forced switch-on of the pump
- Pump switch-off with follow-up time
- Integrated buzzer
- Operating hours counter, pump starts

Technical data:
Operating voltage: 1~230 V, 3~400 V
Frequency: 50/60 Hz
Protection class: IP 65 (within buildings/switch cabinets)
Dimensions (W x H x D): 180 x 255 x 180 mm

Note: Switchgears are not protected against explosions and may not be utilised except outside of potentially explosive areas. A level sensor in the Ex area (with breakdown barrier!) or a float switch (in the Ex area with Ex cut-off relay) is to be provided for pump control.

Switchgear Wilo-DrainControl PL 1 WS



Switchgear for regulating levels of 1 submersible motor pump in conjunction with the pumps stations Wilo-DrainLift WS... Level measurement can be carried out with either the bubbling-through or the dynamic pressure procedure, with float switches or electronic level sensors.

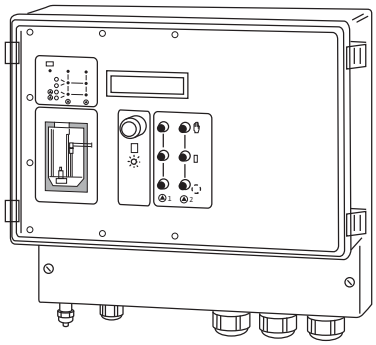
- LCD display
- LED for alarm, operation/follow-up time, manual/automatic operation
- Input terminals for connecting float switches (WA 65, WA 95 or MS1) or for connecting a level sensor **0-1 mWs** (4-20 mA)
- Potential-free contact for collective fault signal and high water alarm
- Forced switch-on of the pump
- Pump switch-off with follow-up time
- Integrated buzzer
- Operating hours counter, pump starts
- Lockable main switch
- 3~mains, no neutral conductor required

Technical data:
Operating voltage: 1~230 V, 3~400 V
Frequency: 50/60 Hz
Protection class: IP 65 (within buildings/switch cabinets)
Dimensions (W x H x D): 180 x 255 x 180 mm

Note: Switchgears are not protected against explosions and may not be utilised except outside of potentially explosive areas. A level sensor in the Ex area (with breakdown barrier!) or a float switch (in the Ex area with Ex cut-off relay) is to be provided for pump control.

Product descriptions

Switchgear Wilo-DrainControl PL 2



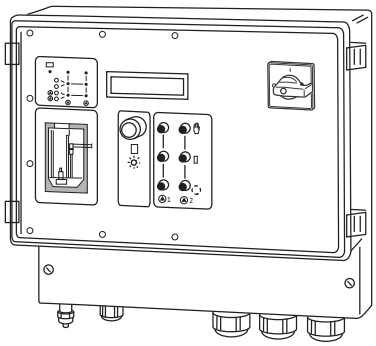
Switchgear for regulating the levels of 2 submersible motor pumps. Level measurement can be carried out with either the bubbling-through or the dynamic pressure procedure, via an electronic level sensor **0–2.5 mWs** (4–20 mA) or float switch (WA 65, WA 95 or MS1).

- LCD display, multi-language switching
- LED for alarm, operation/follow-up time, manual/automatic operation
- Potential-free contact for collective fault signal and high water alarm, pump malfunction 1, pump malfunction 2
- Forced switch-on of the pump
- Pump switch-off with follow-up time
- Automatic fault-actuated switchover
- Integrated buzzer
- Operating hours counter, pump starts

Technical data:
Operating voltage: 1~230 V, 3~400 V
Frequency: 50/60 Hz
Protection class: IP 65 (within buildings/switch cabinets)
Dimensions (W x H x D): 320 x 300 x 120 mm

Note: Switchgears are not protected against explosions and may not be utilised except outside of potentially explosive areas. A level sensor in the Ex area (with breakdown barrier!) or a float switch (in the Ex area with Ex cut-off relay) is to be provided for pump control.

Switchgear Wilo-DrainControl PL 2 WS



Switchgear for regulating the levels of 2 submersible motor pumps. Level measurement can be carried out with either the bubbling-through or the dynamic pressure procedure, via an electronic level sensor **0–1 mWs** (4–20 mA) or float switch (WA 65, WA 95 or MS1).

- LCD display, multi-language switching
- LED for alarm, operation/follow-up time, manual/automatic operation
- Potential-free contact for collective fault signal and high water alarm, pump malfunction 1, pump malfunction 2
- Forced switch-on of the pump
- Pump switch-off with follow-up time
- Automatic fault-actuated switchover
- Integrated buzzer
- Operating hours counter, pump starts
- Lockable main switch
- 3~mains, no neutral conductor required

Technical data:
Operating voltage: 1~230 V, 3~400 V
Frequency: 50/60 Hz
Protection class: IP 65 (within buildings/switch cabinets)
Dimensions (W x H x D): 320 x 300 x 120 mm

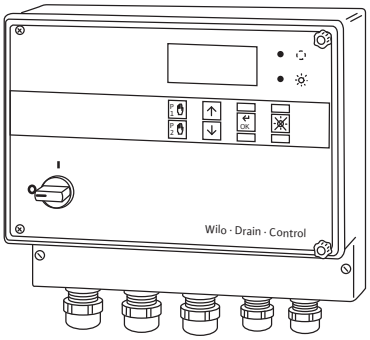
Note: Switchgears are not protected against explosions and may not be utilised except outside of potentially explosive areas. A level sensor in the Ex area (with breakdown barrier!) or a float switch (in the Ex area with Ex cut-off relay) is to be provided for pump control.

Electrical Accessories Wilo-Drain

Drainage pumps

Product descriptions

Switchgear Wilo-DrainControl 1/2



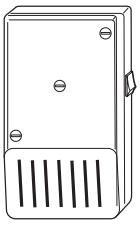
Microprocessor-controlled switchgear for fully automatic control of 1 or 2 wastewater/sewage submersible motor pumps of the Wilo-Drain series

- Manual-0-automatic switch using membrane keyboard
- Two-line LCD-display with 2 x 16 characters, multilingual, switchable, menu-driven operating feature via membrane keypad
- Input terminals for connecting a level sensor
  - Standard: 0 – 2.5 mWs (4-20 mA)
  - Optional: 0 – 1 mWs (4-20 mA) or 0 – 5 mWs (4-20 mA)
- Input terminals for connecting the float switches WA 65, WA 95 or MS1
- Automatic phase failure and rotating field control
- Operating hours counter
- Pump cycling (control 2) after each pumping procedure
- Potential-free contacts for:
  - Collective fault signal
  - Signal horn (NO contact)
  - Operation pump 1 (NO contact)
  - Operation pump 2 (NO contact) only control 2
- Main switch
- Integrated electronic motor current monitoring
- Maximum ambient temperature 40 °C
- Housing: Plastic for wall-mounted installation
- Starting mode: direct or star/delta

Technical data:
Operating voltage: 1~230 V, 3~400 V, 3~230 V
Frequency: 50 Hz
Protection class: 54
Dimensions (W x H x D): depends on model

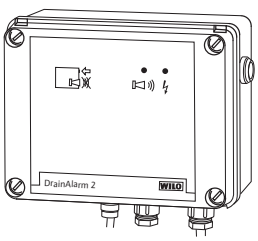
Note: Switchgears are not protected against explosions and may not be utilised except outside of potentially explosive areas. A level sensor in the Ex area (with breakdown barrier!) or a float switch (in the Ex area with Ex cut-off relay) is to be provided for pump control.

Small alarm switchgear Wilo KAS



Small alarm switchgear with signalling tone 70 dBA, signal transmitter (electrode) with 3 m cable, self-charging power supply (battery backup approx. 5 h) in ISO plug housing (shock-proof), protection class IP 30, 230 V~ /9 V=; 1.5 VA.

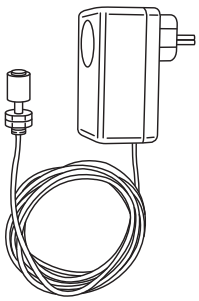
Wilo Drain-Alarm 2



Alarm switchgear for wall-mounted installation with optical and acoustical alarm signal (buzzer) 85 dBA self-charging power supply, potential-free contact, ISO housing, protection class IP 54, 1~230 V. A float switch of type WA is required as a transmitter.

Product descriptions

Alarm switchgears Wilo-AlarmControl 1/2



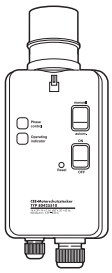
Wilo-AlarmControl 1:
Mains-independent alarm system with shockproof plug. Storage battery, acoustic alarm signal (buzzer), mini floater switch with 3 m cable mounted on the device. With potential-free contact and ISO housing IP 20.

Wilo-AlarmControl 2:
Mains-independent alarm system with shockproof plug and integrated outlet for connecting an appliance, e.g. a washing machine. Storage battery, acoustic alarm signal (buzzer), mini floater switch with 3 m cable mounted on the device. With insulated housing IP 20.

Technical data:
- Operating voltage: 1~230 V, 50 Hz
- Control voltage: 12 VDC (non-stabilised)
- Alarm contact with AlarmControl 1: potential-free normally open contact, contact load max. 1 A (230 VAC)
- Contact outlet: contact load max. 16 A (250 VAC)
- Protection class: IP 20
- Housing: ABS
- Cable length mini-float switch: 3 m (2 x 0.75 mm^2)
- Maximum ambient temperature: + 60 °C
- Dimensions (W x H x D): 68 x 112 x 53 mm

Note: Switchgears are not protected against explosions and may not be utilised except outside of potentially explosive areas.

Motor protection plug CEE



Motor protection switch (only up to a nominal motor power of P_2 < 4 kW) with phase inverter and rotation direction indicator, thermal motor protection of the motor. Performance ranges:
- 2.6 – 3.7 A
- 3.7 – 5.5 A
- 5.5 – 8 A
- 8 – 11.5 A

Optional with TP 80, TP 100 assessment of thermal motor protection and leakage detection possible.

Level sensor

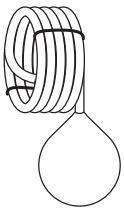
For level determination.
- Protection class: IP 68
- Measurement range 0 - 1 mWS; 0 - 2.5 mWS
- Cable lengths 10, 30 or 50 m
- Output signal 4 - 20 mA
- ATEX-certified

Electrical Accessories Wilo-Drain

Drainage pumps

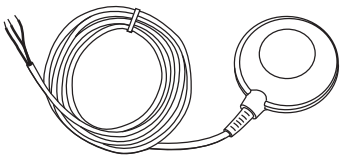
Product descriptions

Float switch MS1



Cable length 10 m, for sewage containing faeces, for connection to a Wilo-DrainControl 1 or 2.

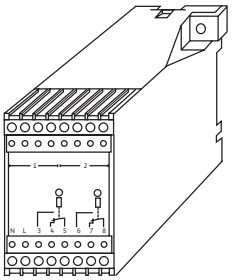
Float switch WA



Cable length 5 m, 10 m, 20 m, 30 m, switching: up ON/down OFF.

- WA 65 for fluids up to 60 °C
- WA 95 for fluids up to 90 °C

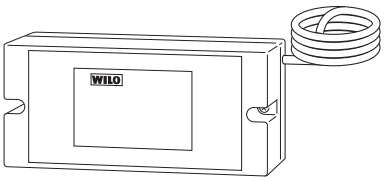
Ex cut-off relay



For the installation of float switches in potentially explosive areas.
Suitable for the connection of 2 to 5 float switches. Installed in an ISO housing, protection class IP 54, with transparent cover, for wall mounting.
Dimensions (W x H x D): 182 x 180 x 165 mm

- 2-circuit (connection of 2 float switches possible)
- 3-circuit (connection of 3 float switches possible)
- 4-circuit (connection of 4 float switches possible)
- 5-circuit (connection of 5 float switches possible)

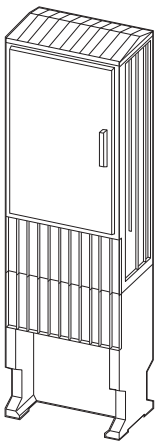
Breakdown barrier



For the installation of a level sensor in potentially explosive areas.
Suitable for the connection of a level sensor.
Protection class IP 40, housing for installation in non-explosive area.
Dimensions (W x H x D): 75 x 150 x 106 mm
1 m cable premounted.

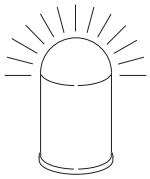
Product descriptions

Switch cabinet, outdoor installation for Wilo-DrainControl



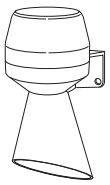
Empty housing for outdoor installation, made of fibreglass-reinforced polyester, with lock, provided with ventilation and exhaust. For pedestal mounting. Additional options such as ammeter, voltmeter, heating, etc. are available on request and can be immediately installed in the switch cabinet in conjunction with a Wilo-DrainControl if desired (additional charge).
Dimensions (W x H x D): 590 x 875 x 320 mm

Flash light



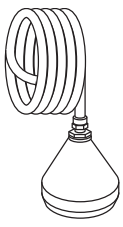
For installation on switch cabinets, outdoor installation, 230 VAC

Signal horn



For connection to Wilo-DrainControl, 230 VAC, 92 dBA

Dynamic pressure system



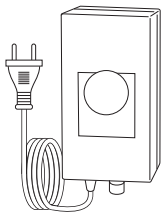
The pressure sensor (bell) detects changes in the fluid level in the sump. The modifications of the pressure value in the bell is transmitted via a leak-proof hose to the Wilo-DrainControl PL switchgear and evaluated using measuring elements in the switchbox.
Scope of delivery: submersion bell with 10 m hose

Electrical Accessories Wilo-Drain

Drainage pumps

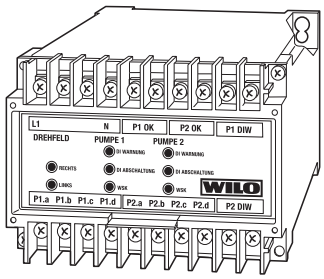
Product descriptions

Bubbling-through system



Dynamic pressure principle with compressed air permanently introduced by small compressor.
The submersion bell (dynamic pressure system) is to be ordered separately.
Scope of delivery: Small compressor 3 m hose with T-piece and non-return valve

Tripping unit Wilo-SK 545



Tripping unit for monitoring max. 2 Wilo submersible motor-driven pumps TP 80, 100 or 150

- Installation in existing switchgears or as a module for switchgears of conventional design construction, installation on a 35 mm top-hat rail
- Monitoring of the rotating field
- Leakage detection
- Thermal monitoring (TWC)
- Operational voltage 3~400 V max. 6 A fuse protection
- Potential-free output contacts max. load 250 V, 1 A
- Dimensions (W x H x D): 100 x 72 x 113 mm

Wilo Catalogue System 2008

Heating, air-conditioning, cooling
Circulating pumps
Glandless pumps and accessories, package heat exchanger assembly

Catalogue A1

Heating, air-conditioning, cooling
Glanded pumps
Pumps in in-line design and accessories

Catalogue A2

Heating, air-conditioning, cooling, water supply
Monobloc and norm pumps, axially split case pumps
Pumps and accessories

Catalogue A3

Water supply
Domestic water supply, rainwater utilisation
Pumps, systems and accessories

Catalogue B1

Water supply
Borehole pumps 3" to 24"
Pumps and systems for building engineering / building services, domestic, municipal and industrial water supply

EMU Technologie

Catalogue B2

Water supply
High-pressure multistage centrifugal pumps
Pumps and accessories

Catalogue B3

Water supply
Pressure boosting systems
Single and multiple-pump systems in dry sump installations and accessories

Catalogue B4

Water supply
Sprinkler pumps with VdS-approval
Borehole pumps and accessories

EMU Technologie

Catalogue B5

Drainage and sewage
Drainage pumps
Submersible pumps, self-priming pumps and accessories

EMU Technologie

Catalogue C1

Drainage and sewage
Sewage pumps DN 32 to DN 600
Submersible pumps and accessories for building engineering / services, municipal and industrial applications

EMU Technologie

Catalogue C2

Drainage and sewage
Wastewater and sewage lifting units, pumps stations
Pump systems and accessories

Catalogue C3

Drainage and sewage
Submersible mixers
Mixers, re-circulation pumps, jet cleaners, grit collector pumps and accessories for municipal applications in water treatment systems

EMU Technologie

Catalogue C4

Heating, air-conditioning, cooling

Water supply

Drainage and sewage

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