9011ZH
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Sanicubic SC

ZH 安装和使用说明

EN Operating/installation manual

CE

(ZH) 警告

警告至少八岁以上儿童,身体、精神或感官有缺失者,及不具备操作该设备经验者必需在专人指导下， 且了解该设备的使用方式前提下方可操作该设备. 儿童不得随意玩耍. 用户设备清洁和维护保养不得由未监管儿童完成。

电路连接

电气安装必须由具有合格资质的电气工程师执行完成。
电源须为I级标准。设备电源必须接地。电源电路必须配有30毫安高灵敏漏电断路器的保护。无插座设备应连接在电源主开关上，该电源能确保断开所有电极(触点之间距离至少3毫米)。
该连接必须专门用于提供产品的电源。
请遵守使用国的有关现行规定。
如设备电源线损坏， 须由产品制造商或其售后服务部门更换以避免伤及用户。

操作本机前，请断开电源！

(EN) WARNING

This device may be used by children who are at least 8 years old, by people with reduced physical, sensory or mental capacities or those without knowledge or experience, if they are properly supervised and if the instructions relating to using the device completely safely have been given to them and the associated risks have been understood. Children must not play with the device. Cleaning and maintenance undertaken by the user must not be carried out by unsupervised children.

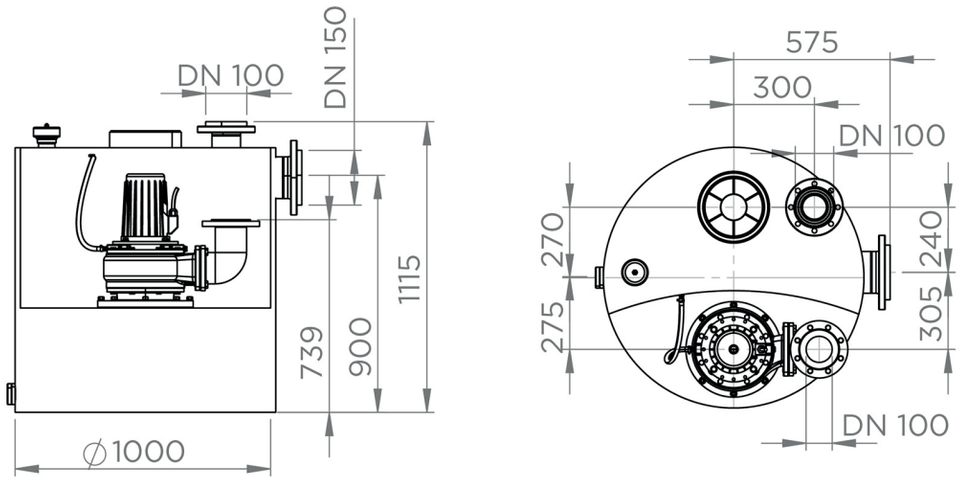
ELECTRICAL CONNECTIONS

The electrical installation must be done by a qualified electrical engineer.
The device's power supply must be connected to ground (class I) and protected by a high sensitivity differential breaker (30 mA). Devices without plug must be connected to a main switch on the power supply which disconnects all poles (contact separation distance of at least 3 mm). The connection must be used exclusively to provide the power of the product.
Connect the device to the mains according to the country's standards.
If the power cord is damaged, to prevent possible danger, it must be replaced by the manufacturer, customer service team or a similarly qualified individual.

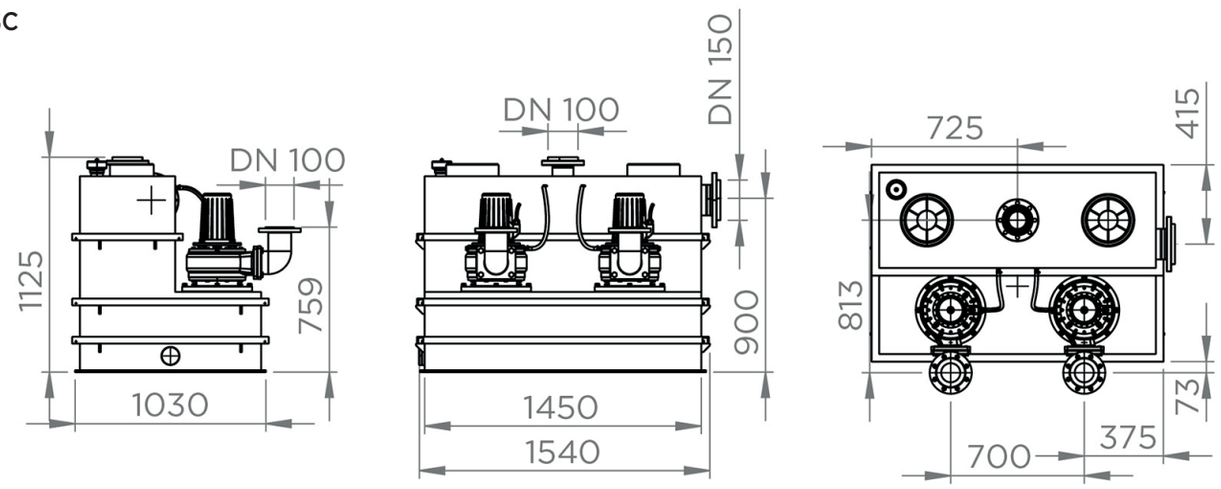
Disconnect electrical power before working on the unit!

尺寸 / DIMENSIONS

Sanicubic 1 SC



Sanicubic 2 SC



1. 安全指南

1.1 警告标识

	含义
危险	该术语定义了如不能避免则可能导致死亡或严重伤害的高风险危险。
警告	该术语定义了一种中度风险的危险，如果不能避免，可能会导致轻度到重度伤害。
财产损害	该术语定义了如不予以考虑则可能导致机器及其操作风险的危害。
	一般危险的警告。 危险性由表中所列的指示说明进行定义。
	该符号描述的是与电压有关的危险并提供关于电压保护的信息。

1.2 综述

本操作安装手册包含了Sanicubic SC污水提升站的调试、操作与维护的重要说明。
严格按照操作说明可确保安全运行、防止伤害和财产损失。请遵循每一章节内的安全说明。
安装和调试污水提升站之前，合格的工作人员/操作人员需认真阅读并理解全部指令内容。

1.3 使用场合

污水提升站仅适用于本手册所描述的应用领域。
- 污水提升站仅在技术完善的条件下运行。
- 在组装完成之前，请勿操作提升泵站。
- 污水提升站仅可提升输送本手册所述流体介质。
- 污水提升站不可无流体空载。
- 请勿超过本手册规定的适用范围。

1.4 员工资格和培训

本设备的调试和维护必须由合格的专业人员操作。

1.5 维护、检验及安装安全指南

- 任何修改或变更污水提升站可致保修失效。
- 仅可使用原厂配件或制造商认可配件。制造商不承担使用其他配件所造成的任何损害的责任。
- 运营方必须确保所有维护、检查和组装工作均由事先阅读过本操作和组装手册的合格、授权人员进行。
- 操作提升站前，请关闭电源并拔下电源插头。
- 请严格按照本手册所述步骤关闭提升站。
- 输送危险介质的泵站必须进行净化。在初次（或重新）启动之前，应注意5调试章节列出的注意事项。
- 未经授权人员（例如儿童）必须远离提升泵站。
- 请遵守操作和安装手册中的所有安全说明。

本操作手册必须始终存放在安装地点，以便操作人员查阅。

1.6 未遵守操作手册产生的风险及后果

如果因未能遵守本操作安装手册导致丧失保修权力或相应的权力受到损失，制造商将不承担任何责任。

2. 运输/存放/废弃处理

2.1 验收

- 收到产品时请检查提升站包装是否完好无损。
- 如发生损坏，请记录确切的损坏情况并立方即书面通知经销商。

2.2 运输

危险	
	**提升站坠落** 提升站坠落有受伤风险! ⇨ 注意观察指示的重量。 ⇨ 采用适当的运输工具。

- 提升泵站必须水平运输。
- 根据重量表选择适当的运输工具。

	毛重		毛重
Sanicubic 1 SC3.0 T	210 公斤	Sanicubic 2 SC3.0 T	370 公斤
Sanicubic 1 SC4.0 T	220 公斤	Sanicubic 2 SC4.0 T	385 公斤
Sanicubic 1 SC5.5 T	225 公斤	Sanicubic 2 SC5.5 T	400 公斤
Sanicubic 1 SC7.5 T	240 公斤	Sanicubic 2 SC7.5 T	425 公斤

- 检查提升泵站是否在运输中发生损坏。

2.3 临时存放

- 必须存放于阴凉干燥、避光防霜通风地方。
- 提升泵站必须保持水平。
- 延长储存期后进行调试时，请采取以下预防措施确保提升站的安装:

财产损害	
	**潮湿、肮脏或损坏的开口和连接点。** 渗漏或损坏提升站! ⇨ 安装时清洁提升站封闭开口。

2.4 废弃处理

本设备不得作为生活垃圾处理，应放至电子设备专用回收点处理。设备材料和组件可重复使用。电子电气产品废弃处理，任何形式的旧家电循环再利用和回收，有利于保护环境。

3. 说明

3.1 一般描述

Sanicubic SC 系列污水提升泵站为即接即用型单泵或双泵提升泵站，可短时浸没，配有防气体和异味的塑料集水箱。这些提升泵站与具有气压式自动液位控制功能的立式切割泵配套使用。并配备液位传感器及配套的控制箱。

3.2 应用

Sanicubic SC 系列污水提升泵站用于排放（收集和泵送）下水道回流水位以下的生活污水。

应用限制

严禁泵送以下液体和物质:

– 固体物质、纤维物质、焦油、沙子、水泥、灰烬、砂纸、一次性湿巾、纸板、碎屑、废物、内脏、油脂、油;

– 含有会腐蚀或损坏泵材料的废水:

– 含有有害物质的废水，例如来自餐馆的未经处理的油腻污水（此类废水必须安装符合标准 EN 1825 的油脂分离器）。

3.3 运作模式

污水靠重力流入 Sanicubic SC 提升泵站。
水箱设计为无压运行：箱内必须保持常压状态。
箱内水位上升时，会压缩吸水管（拧在水箱顶部）内的空气。当水位达到预设启动液位时，水泵启动并通过排水管将污水排

出水箱。止回阀（未提供）可防止排放管中的污水回流到水箱中。

对于双泵型号，两台水泵交替运行。当水箱内水位过高时，第二台泵将自动启动。

控制箱配有蜂鸣器，水泵发生故障或水箱中的水位过高时会触发蜂鸣器报警。可通过专用接线端子连接外部报警装置（请参阅报警器说明书）。接线位置详见控制箱电路图。

3.4 所含附件列表

Sanicubic SC 系列污水提升泵站配有气动控制装置和控制箱。

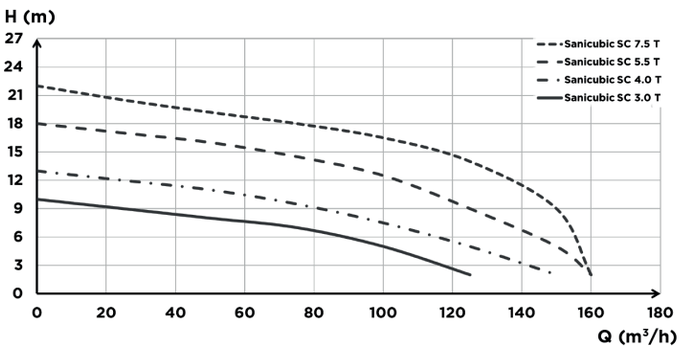
3.5 技术参数

Sanicubic 1 SC Sanicubic 2 SC	3.0 T	4.0 T	4.0 T (60 Hz)	5.5 T	7.5 T
额定功率 P1 (瓦)	4,0	5,5		6,3	8,7
输出功率 P2 (瓦)	3,0	4,0		5,5	7,5
电压 U (伏)	400				
最大吸收电流 (A)	6,9	11,2	9,3	12,1	16,9
转速 (50 赫兹) (n^{-1})	1400		1700	1400	
防水等级	IP56				
最大流量 Q (立方/小时)	120	140		160	165
最大垂直排污高度 H (米)	10	13		18	22
最高允许温度	55 °C				
运行模式	S3 25%				
排放管路口径	DN 100				
输入口径	DN 150				
通风口径	DN 100				
自由通道 (mm)	80			100	
Sanicubic 1 SC					
总容积 (升)	480				
有效容积 (升)	270				
Sanicubic 2 SC					
总容积 (升)	1 000				
有效容积 (升)	500				

材料

水箱	PE HD	**电机端轴密封件**	唇形密封圈
泵体	EN-GJL-200	**泵端轴密封件**	4千瓦 以下电机采用机械密封件，5.5千瓦 以上电机采用硬铸铁密封件
机体	EN-GJL-200		
叶轮	EN-GJL-200	**轴**	不锈钢 1.4101

3.6 性能曲线



3.7 概述

参见第8页

3.8 尺寸

参见第2页

4. 安装

4.1 安装前的准备工作

• 检查铭牌上的参数与控制装置和泵站的参数（电源电压、频率）是否相符。

• 设备的安装和操作必须遵守当地规定和EN12056-4标准。必须由合格的专业人员进行调试。

• Sanicubic SC 安装空间必须最够大，设备四周及上方至少应有600毫米的空间，易于维修。安装间的高度约为 2 至 2.5米。

• 该空间必须光线充足且通风，无浸水并且能够防冻。

• 报警信号必须始终对用户可见。

• 如果排放的污水含有油脂，应加装油水分离器。

• 除上述污水外，其他污水（如手工业或工业废水）未经事先处理不得排入管道。

• 安装间的地面必须能够承受整个泵站的负载。

• 在地下室或存在渗水风险的场所，建议在检查井中安装排水泵。

4.2 调试

• 设备上方天花板上设有吊钩，可用于水泵吊装以及可能的维护和维修工作。

• 安装前应检查所有管道和建筑结构的尺寸，并与泵站尺寸进行比对。需特别注意进水管不得低于泵站的进水口位置。

• 将提升站在空地上安装好并使用水平仪找平。

• 为避免出现浮动风险，请使用随产品提供的安装工具将其固定在于地面。

4.3 管道安装

财产损害

⇨ 提升站不得作为管线的检测点使用。
⇨ 将管前端在提升站上支撑好。 实现无限制连接。
⇨ 采用合适方法消除管线热膨胀。

4.3.1 入口管

很重要

建议入口管安装止回阀和截止阀。 必须安装止回阀和截止阀，从而不影响提升泵的拆卸。

注意

所有管件必须能够防止噪音传播并具备柔性。

管线已架好。

进水管需保持至少 3% 的坡度，以确保污水能够顺畅流入泵站。

将进水管插入孔中。

4.3.2 排水连接

财产损害

不当安装排水管。
安装空间渗漏和淹水！
⇨ 提升站不得作为管线的检测点使用。
⇨ 排水管不得接入其它排放管线。

为防止污水管回流，将排水阀安装成“回路”，因此其最高点的基础位于回流水位之上。

水泵水平排放口处的 90° 弯头垂直末端为 DN100 法兰。

必须在提升泵站的排水管上安装止回阀（未提供）。

在止回阀下游安装一个截止阀，以便于清洗或更换止回阀。

必须在提升泵站的排放管上安装止回阀（包含在供货中）。

必要时，管道和配件必须用管箍或悬臂梁进行加固。

4.3.3 排气管

很重要

根据EN 12050-1标准规定，顶部必须设有通风口。提升站必须保持通风，水箱即可一直保持大气压力。 空气必须双向自由流通，无安装隔膜阀。

• 将泵站的通风管（DN 100）直接连接到建筑物的通风管，或单独安装并引至屋顶。

• 通风管必须通过柔性接头垂直连接至通风口。

• 通风管必须通过柔性接头垂直连接至通风口。

• 连接处应防臭。

排气管不得接入隔油池入口一侧排气管。

财产损害

通风不足。
提升泵不工作的风险！
⇨ 必须保持空气自由流通。
⇨ 请勿堵塞出风口。
⇨ 请勿安装空气进气阀（隔膜阀）。
⇨ 不得接入机械排气扇。

4.4 电路连接

危险

⇨ **每次安装或拆卸水泵或对其进行任何其他作业之前，必须切断系统电源。**

危险

电路安装由非专业人员完成。
电击死亡危险。
⇨ 电路安装须由专业电工完成。
⇨ 电路安装须符合所在国现行标准。

• 所有使用的电气装置必须符合 IEC 60364/NF C 15-100 标准，这意味着电源插座必须配备接地端子。
• 在系统接入的电网中，必须在控制装置上游单独安装一个高灵敏度漏电保护器 (I <30 毫安)；或者，为防止漏电保护器跳闸导致控制装置发生故障，必须在控制装置与每台水泵之间单独加装漏电保护器。
• 该电源接口必须专用于 **Sanicubic SC** 设备。
• 请严格遵守 EN 12056-4 标准的要求。
• 三相连接时，外部熔断器保护必须采用三极自动断路器。以确保故障时电网完全隔离并防止两相运行。
• 所有电气设备，包括控制装置、报警装置及电源插座，都必须安装在干燥且防淹的房间内。
• 电机过载可能导致过热。电机过热时切勿触碰其高温表面。

警告

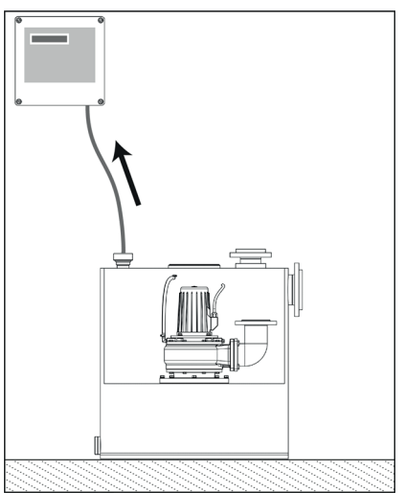
电机表面高温。
有烫伤风险！
⇨ 切勿在没有防护设备的情况下触摸电机外壳。

提升泵站的接线图见控制箱说明书。

5. 调试

5.1 启用的前提条件

• 在提升泵站投入使用之前，请确保提升泵站及所有保护装置的电气连接正确无误。
• 安装并连接控制箱：请参阅控制箱随附的安装说明书。
• 控制箱安装需确保气动软管和吸水管始终保持向上倾斜：



只有这样，才能保证自动控制装置正常运行。

财产损害

气动软管向下倾斜，位置较低。
软管受压、扭曲。
软管过长。
存在冷凝风险！
可能干扰检测信号。
⇨ 请遵守上述及控制箱安装说明书中的安装规则。

5.2 启用操作

控制装置预设参数如下：

停机液位 N1	启动液位 N2	启动液位 N3 （仅限双泵式提升泵站）	报警液位 HW	延迟时间
30 毫米	350 毫米	370 毫米	400 毫米	10 秒

财产损害

泵体未充分注水。
有停机风险！
⇨ 必须正确设置液位传感器，确保泵体完全注满水后立即启动泵送。

上电。
• 三相系统：
– 检查相位连接：
控制箱配有相位控制器，防止两相运行。强制启动水泵（在双泵系统中，两台泵依次启动）。如果出现“相位”[Phase error] 报警，请切断泵站电源，并在控制箱内正确连接三相电源。
– 检查泵的转向：
使用工具拧开水泵顶部的小盖子。此时可以看到电机轴上端，上面有油漆标记。强制启动水泵。观察标记旋转方向与（电机外壳上的）箭头是否一致。如果不一致，请切断电源并在控制箱内调换两相接线。将盖子拧回原位。双泵系统：对另一台水泵重复上述操作。

警告

设备配有切割刀片。
可能造成手指或身体其他部位被夹伤、割伤，甚至截肢。
⇨ 请远离运动部件。

• 按下“自动”按键进行运行测试：
– 打开检修盖板。
– 通过正常进水（清洗池、马桶等）向集水箱注水。系统应自动启动、排空箱体并停止。系统停止后，排放管中的水不得流回水箱。在双泵系统中，两台水泵应交替启动。
– 根据安装条件和扬程高度调整延迟时间，确保水泵尽可能排空集水箱，避免长时间“呼呼”运行（抽水时噪音较大）。泵送结束时（控制装置上显示 0厘米），吸水管应离开液体。延迟时间可通过控制箱进行调整。
– 试运行期间，应检查所有管道和连接处是否有泄漏，并在必要时重新密封。
– 关闭检修盖板。
如果系统正常运行，请保持自动模式。
• 控制箱设置：
开启“全天候自动启动”功能（在控制箱屏幕上选择[24 hours start]，然后设置为[is activated]）。即使没有达到启动液位，水泵也会短时运行。防止其因长期未使用而出现卡滞。

5.3 应用界限

财产损害	
⚠	**超压超温。** 高温或有毒液体泄漏! ⇨ 遵守文档中的操作规范。 ⇨ 避免关闭阀门运行提升泵。 ⇨ 必须避免设备无泵送液体空载。

使用中遵守以下参数和数值:

参数	数值
液体最高允许温度	35°C ≤55°C（最长泵送 5 分钟）
运行模式	间歇运行 S3 25%

- 提升泵站不适用于连续运行!
- 最大进水流量必须始终小于泵在计算扬程下的流量（参见 3.6）。
- 避免让提升泵站长期处于停机状态（参见 5.2）。

财产损害	
⚠	**提升泵站长期不运行。** 密封件有卡滞风险。 ⇨ 在控制箱开启“全天候自动启动”功能。 ⇨ 外出时请勿切断提升泵站的电源。

6. 停用

1. 关闭进水管阀门。
2. 排空水箱。关闭排放管阀门。
3. 切断电源并锁定系统。
4. 检查液压部件和叶轮。必要时进行清洁。

警告	
⚠	**设备配有切割刀片。** 可能造成手指或身体其他部位被夹伤、割伤，甚至截肢。 ⇨ 即使水泵已断电，操作时也必须小心谨慎。 ⇨ 请远离运动部件。 ⇨ 使用必要的防护设备。

5. 清理水箱。

7. 维护/保养

危险	
⚠	⇨ **操作本机前，请断开电源！**

警告	
⚠	**污水提升站由非专业人士操作。** 受伤风险! ⇨ 维修和维护应由受过培训的专业人士完成 ⇨ 遵守安全和基本指令。

警告	
⚠	**T在没有充分准备的情况下对提升泵站进行操作。** 有受伤风险! ⇨ 正确关停提升泵站，并采取措施防止其意外启动。 ⇨ 关闭进水阀门。 ⇨ 排空提升泵站。 ⇨ 关闭排水阀门。 ⇨ 待提升泵站冷却至环境温度。

7.1 检查和维护计划

根据 EN 12056-4 标准，必须对提升泵站进行定期维护检修，以确保污水正常排放并及时发现和排除故障。

用户每月应至少观察两个运行周期，检查提升泵站是否正常运行。

根据 EN 12056-4 标准，提升泵站的维护必须由具备相关资质的人员进行。最长间隔如下:

- 工业用提升泵站：3 个月;
- 小型公共设施用提升泵站：6个月;
- 家用提升泵站：1 年。

7.2 检查项目清单

检查电源。检查参数值是否与铭牌上的标称值一致。

检查电源是否接地。

检查电源是否接入 30 毫安 漏电保护器。

按下强制启动按钮，检查电机是否正常运行。如果异常，请检查水泵是否堵塞。

在三相系统中，检查泵的转向。

进行多周期运行测试。

检查柔性接头的安装及磨损情况。

检查报警装置的功能和有效性。

检查截止阀和止回阀的功能和密封性。

清洁并检查水位传感装置。

查阅报警日志（控制箱内）。

查阅水泵运行日志（控制箱内）

检查液压部件和切割刀片。必要时进行清洁。

警告	
⚠	**设备配有切割刀片。** 可能造成手指或身体其他部位被夹伤、割伤，甚至截肢。 ⇨ 即使水泵已断电，操作时也必须小心谨慎。 ⇨ 请远离运动部件。 ⇨ 使用必要的防护设备。

对操作人员进行技术指导和（或）培训。

7.3 集水箱维护

定期检查箱体内壁，清洁传感器。

用水管冲洗箱体，清除内壁沉积物。

7.4 维护合同

正如所有高性能、技术设备一样，必须进行维护保养从而确保 **Sanicubic SC**污水提升站的可持续性能水平。 建议与专业公司签署维护合同定期检查维护设备。 更多详细信息，敬请详洽。

8. 故障查找及解决方案

危险	
⚠	⇨ **操作本机前，请断开电源！**

财产损害	
⚠	**切勿拧松4颗六角头螺丝（编号16，见附录B）：此操作会导致漏油、机械密封件损坏并使保修失效。** **- 仅拆卸电机块时，拧松4颗编号13的螺丝。** **- 拆卸整个泵时，松开4颗编号23的螺母。**

主要问题	故障原因	解决方案
1、电机不运转。	电压过低或无电压	检查电源
	电源连接不正确	纠正
	电源线故障	更换/联系售后
	转子或叶轮卡死	清洁
	电机接触器因过热、卡死或电压故障而断开	检查/联系售后
	控制失灵/压力开关故障	检查/联系售后
	气动软管或连接处泄漏	检查/更换
	电机故障	更换/联系售后

主要问题	故障原因	解决方案
2、电机空转不排水。	叶轮堵塞或磨损	清洁/更换
	止回阀堵塞	清洁
	截止阀堵塞或关闭	清洁/开启
	排水管堵塞	清洁
	吸水管堵塞	清洁
	转向错误	纠正
	水箱缺水	关闭/联系售后
	水箱通气孔堵塞	清洁
	泵壳排气孔堵塞	清洁
3、电机间歇运行。	电压异常或波动	纠正/联系售后
	温控开关安装不当	检查/联系售后
	电流消耗过高	联系售后
4、电机无法停机。	控制故障	联系售后
	压力开关功能异常	更换/联系售后

9. 标准

本设备符合建筑产品法规的 EN 12050-1 标准（粪便污水提升泵站）以及欧洲低电压、电磁兼容性和机器指令。

10. 保修

作为制造商，我们自设备购买之日起提供 24 个月的保修服务。

以您持有的发票为凭证。在本保修期内，我们将视情况对材料或制造缺陷导致的所有故障提供免费维修或更换服务。

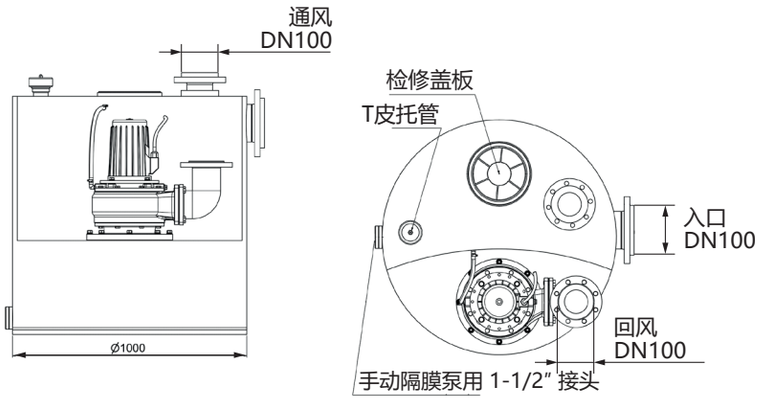
因安装不当和（或）使用不当以及磨损造成的损坏不在保修范围内。

对于设备故障引发的间接损失，我们概不负责。

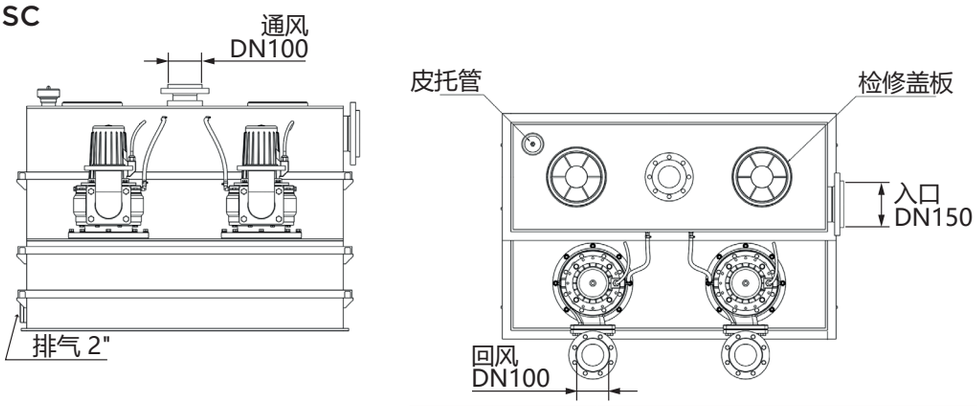
中文

附录 A : 概述

SANICUBIC 1 SC

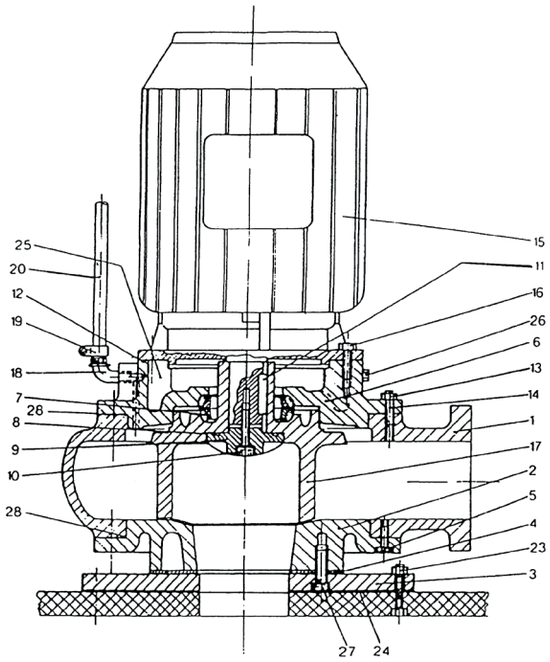


SANICUBIC 2 SC



附录 B : 备件清单

水泵剖面图



	商品编号	名称	数量
1	ZE1384	SANICUBIC SC 3.0 和 4.0 泵壳	1 (2)
	ZE1138	SANICUBIC SC 5.5 和 7.5 泵壳	1 (2)
2	ZE1129	QSHE/101 防护罩，用于 SANICUBIC SC 3.0 和 4.0 泵	1 (2)
	120141	QSHE/101 防护罩，用于 SANICUBIC SC 5.5 和 7.5 泵	1 (2)
3	200 005	固定法兰板	1 (2)
4	ZE1566	平垫圈 340 x 105 x 3	1 (2)
5	117724	六角头螺钉 M10x25	8 (16)
6	145015	GG 垫圈支架，用于 SANICUBIC SC 3.0 和 4.0 泵	1 (2)
	145023	GG 垫圈支架，用于 SANICUBIC SC 5.5 和 7.5 泵	1 (2)
7	279950	动态密封件，用于 3.0 和 4.0 kW 电机	1 (2)
	80115	淬火铸铁密封件，用于 5.5 和 7.5 kW 电机	1 (2)
8	80114	O型圈 50 x 3	1 (2)
9	120127	轮罩，用于 SANICUBIC SC 3.0 和 4.0 泵	1 (2)
	120143	轮罩，用于 SANICUBIC SC 5.5 和 7.5 泵	1 (2)
10	ZE1237	六角头螺钉 M10x30	1 (2)
	145013	铜制密封垫圈 10 x 20 x 2.0 mm	1 (2)
12	60107	O型圈 190 x 3	1 (2)
13	ZE1237	六角头螺钉 M 10 x 30，用于 SANICUBIC SC 3.0 和 4.0 泵	8 (16)
	ZE1516	六角头螺钉 M 12 x 30，用于 SANICUBIC SC 5.5 和 7.5 泵	8 (16)
15	111103	3.0 kW 电机组，带转子	1 (2)
	111104	4.0 kW 电机组，带转子	1 (2)
	111107	5.5 kW 电机组，带转子	1 (2)
	111108	7.5 kW 电机组，带转子	1 (2)
	22936	4.0 kW 60 Hz 电机组，带转子	1 (2)
16	ZE1130	六角头螺钉 M12x25	4 (8)
	ZE1302	弹性垫圈 B 12	4 (8)
17	120134c	转子 D=200 mm，3.0 kW	1 (2)
	120134e	转子 D=220 mm，4.0 kW	1 (2)
	120142a	转子 D=230 mm，5.5 kW	1 (2)
	120142b	转子 D=250 mm，7.5 kW	1 (2)
	22822	转子 D=184 mm，4.0 kW 60 Hz	1 (2)
18	117031	R3/8″ 弯头	1 (2)
19	ZE1582	管箍	2 (4)
20	117030	排气软管	1 (2)
23	ZE1382	六角螺母 M12	8 (16)
	ZE1302	弹性圈 B12	8 (16)
24	ZE1121	平垫圈 DN 100	1 (2)
25	14009	0.8 升油浴槽，用于 SANICUBIC SC 3.0 和 4.0 泵	1 (2)
	14009	1.0 升油浴槽，用于 SANICUBIC SC 5.5 和 7.5 泵	1 (2)
26	140025	注油塞 G 3/8″	1 (2)
	140030	铜制密封圈 17 x 22 x 1.5 mm	1 (2)
27	ZE1647	内六角螺钉 M 16 x 30	4 (8)
28	120131	O型圈 236 x 3 SANICUBIC SC 3.0 et 4.0	1 (2)
	120139	O型圈 270 x 3 SANICUBIC SC 5.5 et 7.5	1 (2)

1. SAFETY

1.1 IDENTIFICATION OF WARNINGS

	Meaning
DANGER	This term defines a high risk of danger, which can lead to death or serious injury, if not avoided.
WARNING	This term defines a medium risk of danger, which can lead to serious or minor injury, if not avoided.
NOTICE	This term characterises dangers to the machine and its proper operation.
	Warning of a general danger. The danger is specified by indications given in the table.
	This symbol characterises dangers associated with the voltage and provides information on voltage protection.

1.2 GENERAL POINTS

The operation manual at hand provides basic notes which have to be taken into account during assembly, operation and maintenance works. Therefore, before assembly and commissioning, this operation manual has to be read by the assembler as well as the responsible personnel/operator at all costs. It always has to be available on site of operation of the machine/plant.

The general safety notes listed under the main point safety are not the only notes to be taken into account. Please also observe the specific safety instructions, such as those for private use, listed under other main points.

1.3 INTENDED USE

Only use the pumping station in the fields of application described in this documentation.

- The lifting station must only be operated in technically perfect conditions.
- Do not operate the partially assembled lifting station.
- The lifting station must only pump the fluids described in this documentation.
- The lifting station must never operate without pumped fluid.
- Consult us for operating modes not described in this documentation.
- Never exceed the usage limits defined in the documentation.
- The safe operation of the station is only ensured if it is used as described in this manual.

1.4 QUALIFICATION AND TRAINING OF STAFF

Commissioning and maintenance of this device must be performed by a qualified professional. Please refer to installation standard EN 12056-4.

1.5 SAFETY INSTRUCTIONS FOR MAINTENANCE, INSPECTION AND ASSEMBLY WORK

- Any alteration or modification of the pumping station will void the warranty.
- Only use original parts or parts recognised by the manufacturer. The use of other parts may void the manufacturer's liability for any resulting damage.
- The customer has to ensure that all maintenance, inspection and assembly work is carried out by authorised and qualified specialist personnel, who have been sufficiently informed through relevant and adequate study of the operating manual.
- Work on the machine is to be done only when it is shut down. The procedure for shutting down the machine is described in the operating manual and is to be precisely adhered to.
- Lifting stations that discharge fluids that are harmful to health must be cleaned. Before recommissioning, observe the commissioning instructions (see *5. Commissioning*).
- Keep unauthorised persons (e.g. children) away from the lifting station.
- Observe all safety instructions and instructions in this operating (and installation) manual.

This operating manual must always be available on site so it can be accessed by qualified staff and the operator.

1.6 RISKS AND CONSEQUENCES OF NONCOMPLIANCE WITH THE OPERATING MANUAL

Failure to comply with this operating and installation manual will result in the loss of warranty rights and rights to damages.

2. TRANSPORT, TEMPORARY STORAGE, DISPOSAL

2.1 RECEIVING INSPECTION

- When receiving goods, check the condition of the lifting station's packaging.
- In case of damage, note the exact damage and immediately notify the dealer in writing.

2.2 TRANSPORT

DANGER

Dropping the pumping station.

Risk of injury if the pumping station is dropped!
⇨ Keep the pumping station horizontal when moving it.
⇨ Observe the indicated weight.
⇨ Never suspend the pumping station by the power cord.
⇨ Use suitable means of transport.

- Always transport the lifting station in a horizontal position.
- Choose suitable means of transport.

	GROSS WEIGHT
Sanicubic 1 SC3.0 T	210 kg
Sanicubic 1 SC4.0 T	220 kg
Sanicubic 1 SC5.5 T	225 kg
Sanicubic 1 SC7.5 T	240 kg

	GROSS WEIGHT
Sanicubic 2 SC3.0 T	370 kg
Sanicubic 2 SC4.0 T	385 kg
Sanicubic 2 SC5.5 T	400 kg
Sanicubic 2 SC7.5 T	425 kg

- Inspect the pumping station to make sure there is no damage due to transport.

2.3 TEMPORARY STORAGE / PACKAGING

- The machine can be kept in interim storage and conserved in a cool, dark, dry and frost-free site.
- The systems should stand in horizontal position.
- In the case of commissioning after an extended storage period, take the following precautions to ensure storage of the pumping station:

NOTICE

Wet, dirty or damaged openings and junction points.

Leaks or damage to the pumping station!

⇨ Clear the pumping station's blocked openings at the time of installation.

2.4 DISPOSAL

The device must not be disposed of as household waste and must be disposed of at a recycling point for electrical equipment. The device's materials and components are reusable. The disposal of electrical and electronic waste, recycling and recovery of any form of used appliances contribute to the preservarion of our environment.

3. DESCRIPTION

3.1 GENERAL DESCRIPTION

The effluent lifting stations **Sanicubic SC** are single or double systems that are ready to plug in and safe against flooding, with collection chambers made of gas- and odour-proof plastic. They work with vertical cutting unit pumps with automatic pneumatic level control. They are completely equipped with switch boxes and all necessary switching elements.

3.2 APPLICATIONS

The effluent lifting units of the **Sanicubic SC** production series are used for the disposal (collection and conveying) of domestic and industrial wastewater located below the backflow level of the sewers.

The following liquids/substances are not allowed in discharge systems:

– Solid materials, fibres, tar, sand, cement, ash, coarse paper, hand towels, wipes, cardboard, rubble, rubbish, slaughterhouse waste, oils, greases, etc.,

– waste waters containing substances that could attack or damage the pumps or tank materials,

– Wastewater containing harmful substances (for example, untreated greasy waste from restaurants). Pumping these liquids and substances requires the fitting of a compliant grease trap.

3.3 OPERATING PRINCIPLE

The wastewater flows by gravity into the **Sanicubic SC** lifting station.

The collecting tank is designed for **non-pressure operation**. Wastewater is collected there at atmospheric pressure before being discharged to the sewer.

The water rising in the tank compresses the air in the dip tube screwed to the top of the tank. When the preset switch-on height is reached, the pump is activated and pumps the water out of the tank via the discharge line. A non-return ball valve (not provided) prevents the water from flowing back from the discharge line into the tank.

For double pumps models, both pumps operate each in turn, alternately. In case of abnormal operation, both engines run simultaneously (or if one pump fails, the other takes over).

The control box is equipped with an audible alarm that is activated in case of pump(s) failure or if the water level in the tank is too high. External alarm devices can be connected to the terminal blocks provided (refer to the control box manual). Their location is indicated on the wiring diagram of the switchgear.

3.4 SCOPE OF SUPPLY

The sewage lifting stations of the **Sanicubic SC** series are supplied with pneumatic control and a control box.

3.5 TECHNICAL DATA

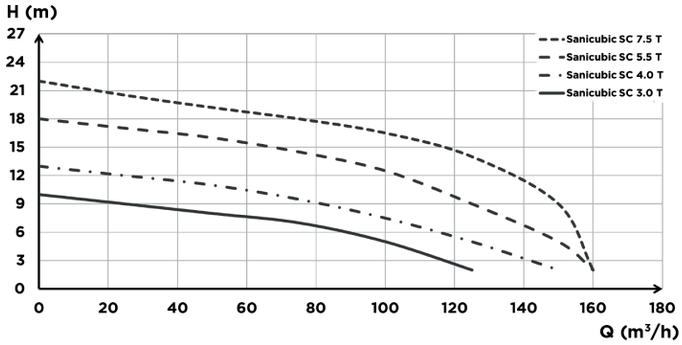
SANICUBIC 1 SC SANICUBIC 2 SC	3.0 T	4.0 T	4.0 T (60 Hz)	5.5 T	7.5 T
Power P1 (kW)	4.0	5.5		6.3	8.7
Power P2 (kW)	3.0	4.0		5.5	7.5
Voltage U (V)	400				
Maximum absorbed current (A)	6.9	11.2	9.3	12.1	16.9
Rated speed (n^{-1})	1400		1700	1400	
IP code	IP56				
Max. flow rate (m^3/h)	120	140		160	165
Max. discharge height (m)	10	13		18	22
Max. temperature of the pumped liquid	55°C				
Operating mode	S3 25%				
Discharge diameter	DN 100				
Inlet diameter	DN 150				
Ventilation diameter	DN 100				
Free passage (mm)	80			100	
Sanicubic 1 SC					
Total volume (L)	480				
Useable volume (L)	270				
Sanicubic 2 SC					
Total volume (L)	1,000				
Useable volume (L)	500				

Material

Tank	PE HD
Pump housing	EN-GJL-200
Motor housing	EN-GJL-200
Impeller	EN-GJL-200

Shaft sealing - motor side	lip ring seal
Shaft sealing - pump side	Mechanical seal (up to 4 kW) or chilled cast iron seal (from 5.5 kW)
Shaft	Stainless steel 1.4101

3.6 CURVE



3.7 OVERVIEW

See pg. **14**.

3.8 DIMENSIONS

See pg. 2.

4. INSTALLATION

4.1 PREPARATION

• The characteristics shown on the rating plate have been compared with those on the order and installation (supply voltage, frequency).

• The installation room must be protected against frost.

• The installation room is adequately lit.

• The work has been prepared in accordance with the standard EN 12056-4.

• The plant room where the **Sanicubic SC** will be installed must be large enough to allow a 600 mm clearance around and above the device to facilitate maintenance. The height of the room should be approximately 2 to 2.5 m.

• The alarm signal is always visible to the user (if necessary, use an external alarm contact switch).

• In case of discharge of greasy effluents, the use of a degreasing tank is essential.

• Wastewater other than those mentioned above, for example, of artisanal or industrial origin, must not be discharged into the pipes without prior treatment.

• The floor of the room must be able to support the load of the entire installation.

• In underground rooms or rooms where there is a risk of water infiltration, it is recommended to place a drainage pump in a manhole.

4.2 FITTING

• A hook in the ceiling above the set-up site of the lifting unit facilitates assembly and potential maintenance and repair work on the pump.

• Prior to assembly, all construction and connection measurements should be checked and compared with the dimensions of the system. Here you should pay special attention that the constantly downward-inclining supply connection never lies lower than the inflow height of the collecting tank.

• Fit the pumping station on the bare ground and level it with a spirit level.

• To avoid any risk of the pumping station floating, attach it to the ground using the mounting kit provided.

4.3 HYDRAULIC CONNECTION

NOTICE

⇨ The pumping station must not be used as a control point for piping.

⇨ Prop up the pipes upstream from the pumping station. Make connections without constraints.

⇨ Use suitable means to compensate for thermal expansion of the piping.

4.3.1 Inlet

IMPORTANT

It is recommended that you mount check valves and stop valves on the inlet pipes. These must be mounted so that they do not hinder disassembly of the pumping station.

NOTE

All piping connections must prevent the propagation of noise and be flexible.

The piping is supported.

Maintain a minimum slope of 3% on the inlet pipes to ensure proper flow to the plant.

Insert the inlet pipe into the opening.

4.3.2 Discharge

NOTICE

Improper fitting of the discharge pipe.

Leaks and flooding of the installation room!

⇨ The pumping station must not be used as a control point for piping.

⇨ Do not connect other drain pipes to the discharge pipe.

To prevent the risk of back-flow of water from the sewer, install the discharge pipe in a «loop» so that its base, at the highest point, is located above the back-flow level.

A bend 90° is mounted as standard on the horizontal pressure discharge of the pump, which ends in a vertical direction.

The installation of non-return ball valve(s) in the pressure line of the lifting unit is mandatory.

It is recommended to install a shut-off valve behind the non-return valve in order to facilitate maintenance and possible replacement of the non-return ball valve.

The pressure pipe must be laid steadily rising and without unnecessary jumps in a bend above the backflow level and then steadily falling to the sewer connection. Pipe and fittings must be supported with pipe clamps or brackets, if necessary.

4.3.3 Ventilation

IMPORTANT

According to the recommendations of EN 12050-1, it must be equipped with a vent above the roof. The pumping station must always be ventilated so that the tank is always at atmospheric pressure. The ventilation must be completely free and air must flow in both directions (no diaphragm valve fitted).

- Connect the station's ventilation pipe, either directly to the building's ventilation pipe or installed separately and directed above the roof.
- The connection should be made vertically to the ventilation opening DN100.
- The connection must be smell-proof.
- The vent pipe must not be connected to the vent pipe on the inlet side of a grease trap.

NOTICE

Insufficient ventilation.

Risk that the pumping station will not work!

⇨ Do not connect to a mechanically controlled ventilator.

⇨ Ventilation must remain free.

⇨ Do not block the vent outlet.

⇨ Do not install an air intake valve (diaphragm valve).

4.4 ELECTRICAL CONNECTION

DANGER

⇨ **Disconnect electrical power before working on the unit!**

DANGER

Electrical connection work performed by an unqualified individual.

Risk of death by electric shock!

⇨ The electrical connection must be performed by a qualified and licensed electrician.

⇨ The electrical installation must meet the current standards in the country.

- All electrical installations used must comply with IEC 60364/ NF C 15-100, which means that sockets must, for example, be equipped with earth terminals.
- The electrical power supply must be protected with a high sensitivity circuit breaker set to 30 mA upstream of the control unit, or to prevent a failure of the control unit when the residual current circuit breaker responds, one residual current circuit breaker per pump must be installed between the control box and the lifting station.

This connection must be used exclusively for the **Sanicubic SC** power supply.

- Please observe the regulations of EN 12056-4.
- The external protection must generally be 3-pole mechanically interlocked with automatic circuit breakers. This ensures complete disconnection from the mains and prevents 2-phase operation.
- All electrical devices such as control system, alarm transmitter and socket must be installed in dry rooms so that they are protected against flooding.
- The motor can overheat due to overload. In case of overheating, never touch the hot surfaces on the motor.

WARNING

Hot surface.

Burn Hazards!

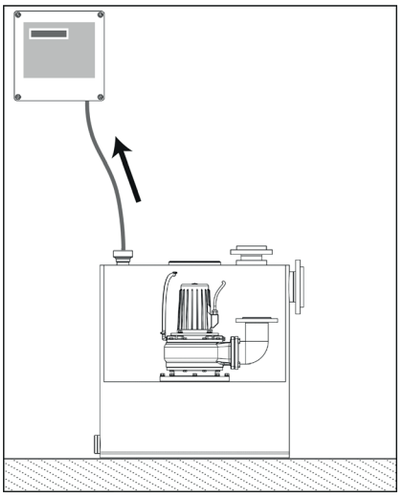
⇨ Never touch the surface of the motor housing without protective equipment.

The wiring diagram of the lifting station is available in the instructions manual fo the control box and should be kept there to facilitate the work of the maintenance and service personnel.

5. COMMISSIONING

5.1 PREPARATION

- Before commissioning, all connections have to be checked again for correct installation. It must have been made sure that the safety regulations have been complied with.
- Install and connect the control box: refer to the installation instructions supplied with the control box.
- The control must be installed in such a way that the blue pneumatic hose for the level control can be laid rising steadily from the lifting unit to the connection at the switch box.



This is the only way to ensure proper functionality of the automatic control.

NOTICE

Pneumatic hose with downward slope, low points.
Control line kinked or squeezed.
Control line extended.

Risk of condensation!

Risk of signal disruption !

⇨ Follow the installation rules above and in the control box manual.

5.2 COMMISSIONING OPERATIONS.

The control box is prepared by the factory with these settings:

Switch-off point N1	Switch-on point N2	Switch-on N3 Double system only	Alarm level HW	Delayed stop: «overrun» menu
30 mm	350 mm	370 mm	400 mm	10 s

NOTICE

Insufficiently filled pump housing.
Danger of de-priming!
⇨ It is imperative that the level sensor is set correctly so that the pump casing is completely filled for immediate pumping.

- Switch on the power.
- Check the phase connection:

The control box is equipped with a phase monitor to prevent two-phase operation. Force start the pump (pumps, one after the other on two-pump systems). In case of a «Phase» alarm, switch off the power at the station, connect the 3 phases correctly at the control box.

- Check the direction of rotation of the pump:

Using a coin, unscrew the small cover on top of the pump. The upper part of the motor shaft is now visible and marked with a trace of paint. Turn the pump on by hand. Observe the direction of rotation of the mark and compare it with the direction of the arrow (motor housing). If they are not identical, switch off the power and invert 2 of the phases at the control box. Screw the cover back on. Two-pumps installation: do the same with the other pump.

WARNING

Presence of cutting impeller.
Risk of pinching, cutting or amputating fingers or other body parts.
⇨ Keep away from moving parts.

- On the control box, press the button «Auto» to carry a test Run:

– Open the inspection cover.

– Fill the collecting tank via the normal inlet (washbasin, toilet...) until the pump switches on. The station must automatically switch on, pump the tank empty and siwtch off again. After switching off, no wtare may flow from the pressure line back into the tank.

– Double installations: both pumps must be switched on alternately.

– Correct the delay time according to the installation conditions and the discharge height so that the pump empties the collection tank as much as possible and only runs briefly in snore mode (louder noise during pumping). The dip tube must no longer be immersed in the liquid at the end of the pumping process (display 0 cm in the control). The delay time can be changed on the control box.

– During the initial test run, check pipes for tightness and reseal them, if necessary.

– Close the inspection cover.

If the station is working properly, leave it in automatic mode.

- Setting at the control box:

Activate the option «Automatic start every 24 hours» («24h start» then «is activated» on the display of the control box). The pump(s) is (are) then activated briefly even if no load is applied via the switch-on level. This prevents blocking due to non-use.

5.3 OPERATING LIMITS

NOTICE

Pressure and temperature limits exceeded.
Leakage of hot or toxic fluid!
⇨ Observe the operating specifications in the documentation.
⇨ Avoid running the pump with the valve closed.
⇨ Dry running, without pumped fluid, must be avoided.

When in use, observe the following parameters and values:

Parameter	Value
Max. allowed temperature of the fluid	35°C up to 55°C when pumped 5 min max.
Operating mode	Intermittent service S3 25%

- The lifting unit is not designed for continuous operation! The conveying data stated on the factory plate apply only for intermittent periodic duty (S3 25 %).
- The maximum permissible feed flow must always be smaller than the feed volume of a pump (see 3.6).
- Do not leave the lifting station unused for a long time (see 5.2).

NOTICE

Lifting station not in use for a long time.
Risk of seal blockage.
⇨ Activate the option «24 hours start» on the control box.
⇨ Do not disconnect the power supply to the lifting station when not in use.

6. DECOMMISSIONING

1. Close the valve on the inlet pipes.
2. Drain the tank by pressing the forced mode button on the control box. Close the valve on the discharge pipes.
3. Switch off the electrical power supply and record the installation.
4. Inspect the hydraulic parts and shredding blades (depending on the model). Clean them if necessary.

WARNING

Presence of cutting impeller.
Risk of pinching, cutting or amputating fingers or other body parts.
⇨ Even when switched off, care must be taken when handling a pump.
⇨ Keep away from moving parts.
⇨ Never touch the impeller without protective equipment.

5. Clean the tank.

7. CLEANING/MAINTENANCE

DANGER

⇨ **Disconnect electrical power before working on the unit!**

WARNING

Work performed on the pumping station by unqualified staff.
Risk of injury !
⇨ Repairs and maintenance must be performed by specially trained staff

WARNING

Work on the pumping station without adequate preparation.
Risk of injury!
⇨ Properly stop the pumping station and secure it against inadvertent operation.
⇨ Close the inlet valves.
⇨ Drain the pumping station.
⇨ Close the valve on the discharge pipes.
⇨ Allow the pumping station to cool to room temperature.

7.1 INSPECTION AND MAINTENANCE SCHEDULE.

In accordance with EN 12056-4, pumping stations must be maintained to ensure the proper disposal of wastewater and to detect and eliminate malfunctions at an early stage.

The proper functioning of pumping stations must be checked by the user once a month by observing at least two operating cycles. While doing so, attention has to be paid for abnormalities, e.g unusual running noises of the pump. If irregularities are noted, call qualified staff.

According to DIN EN 12056-4, lifting units have to be regularly checked within the following time intervals:

- every 12 months in case of installation in detached houses,
- every 6 months in apartment blocks,
- every 3 months in case of installation in commercial and industrial enterprises.

In order to guarantee permanent operational safety of the lifting unit, we recommend to conclude a maintenance agreement.

7.2 CHECKLIST FOR INSPECTION AND MAINTENANCE

Check the power supply. Compare the values with those of the rating plate.

Check the connection of the power supply to the earth.

Check the connection of the power supply to a 30 mA GFCI breaker.

Check the proper operation of the motors by pressing the forced mode buttons. If abnormal, make sure the pump is not clogged, check the resistance values of the engine coils.

Check the motor rotation direction.

Perform a functional test over several cycles.

Check the correct installation and state of wear of the couplings.

Check the proper operation and effectiveness of the alarm device.

Check the proper operation and seal of the shut-off valves and non-return valves.

Dismount and clean the pitot tube.

Check the control line, check connections on the tank and on the control box.

Consult the alarm log (control box)

Consult the pump operation log (control box)

Inspect the hydraulic parts and cutting blades. Clean them if necessary.

WARNING	
	**Presence of cutting impeller.** Risk of pinching, cutting or amputating fingers or other body parts. ⇨ Keep away from moving parts.

Advise and/or train operating staff.

7.3 COLLECTING TANK

Inspect the tank, check for possible deposits, the presence of grease and foreign bodies. Thoroughly clean the tank and remove foreign bodies.

7.4 MAINTENANCE CONTRACT

As with any technical, high-performance equipment, **Sanicubic SC** pumping stations must be maintained to ensure a sustainable level of performance. We recommend you take out a maintenance contract with a qualified company to carry out regular inspection and maintenance work. For more information, please contact us.

8. INCIDENTS, CAUSES AND SOLUTIONS

DANGER	
	**⇨ Disconnect electrical power before working on the unit!**

NOTICE	
	**Never unscrew the 4 hex head screws no. 16 (see Appendix B): this will cause oil leakage, damage to the mechanical seal and invalidate the warranty.** **- To dismantle the motor block only, unscrew the 4 no. 13 screws.** **- To dismantle the whole pump, loosen the 4 nuts no. 23.**

Malfunction	Cause	Remedies
Motor does not rotate.	Too low voltage, voltage missing.	Check voltage supply.
	Incorrect power connection.	Correction.
	Power cable defective.	Replacement (after-sales service).
	Fault on the capacitor - only with single-phase station.	Replacement (after-sales service).
	Impeller blocked.	Clean.
	Motor protection switched off due to overheating, blockage, voltage error.	Check/Customer service.
	Control error.	Check/Customer service.
	Pneumatic hose or connection leaky.	Check/Customer service.
	Motor defective.	Replacement (after-sales service).
Motor rotates, but does not deliver.	Impeller clogged or worn.	Clean/Replace.
	Check valve clogged.	Clean.
	Shut-off valve clogged or closed.	Clean/Open.
	Pressure line clogged.	Clean.
	Intake socket clogged.	Clean.
	Direction of rotation incorrect.	Correction.
	Water shortage in the tank.	Switch off/Customer service.
	Tank ventilation clogged.	Clean.
	Pump housing ventilation clogged.	Clean.
Motor rotates, but switches off.	Voltage wrong or fluctuates.	Correction/Customer service.
	Overcurrent release incorrectly set.	Set properly.
	Power consumption too high.	Customer service.
Motor does not switch off.	Control error.	Customer service.

9. STANDARDS

The lifting stations **Sanicubic SC** conform to Low Voltage, EMC and Machinery directives, and to EN 12050-1 Construction Products Regulation.

10. GUARANTEE

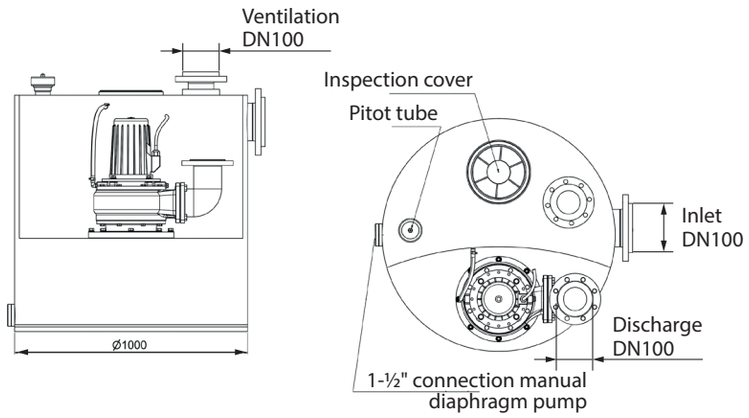
As the manufacturer, we provide a 24-month warranty for this appliance from the date of purchase.

Your reciept of purchase is valid as proof. Within this warranty period, we will, at our discretion, remedy all defects attributable to material or manufacturing faults by repair or replacement free of charge.

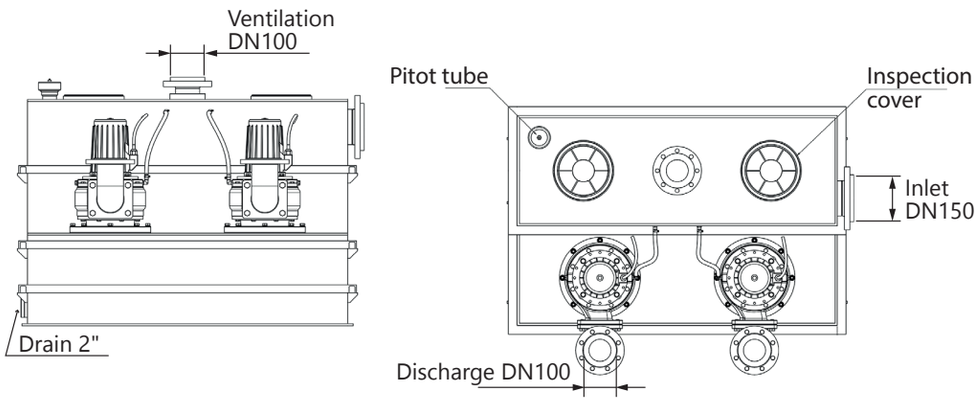
Damage caused by improper installation and/or use, and wear and tear is excluded from the warranty. We shall not be liable for consequential damage caused by failure of the device.

APPENDIX A: OVERVIEW

SANICUBIC 1 SC

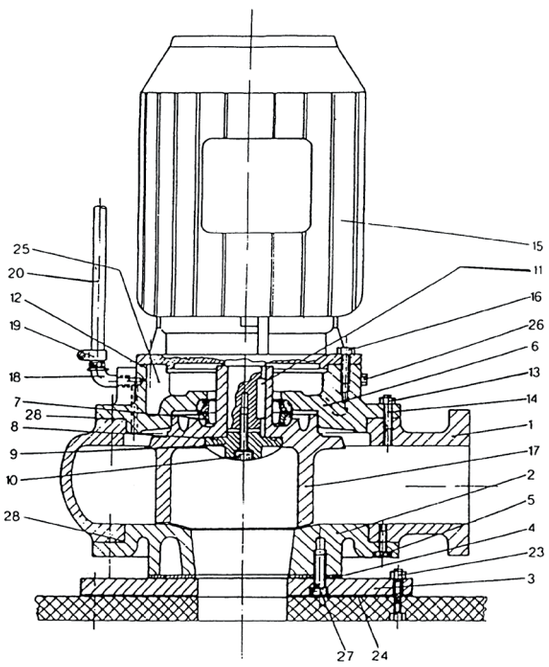


SANICUBIC 2 SC



APPENDIX B: LIST OF SPARE PARTS

Sectional drawing of the pump



ITEM	QUANTITY	DESIGNATION	ART-NO
1	ZE1384	Pump housing SANICUBIC® SC 3.0 and 4.0	1 (2)
	ZE1138	Pump housing SANICUBIC® SC 5.5 and 7.5	1 (2)
2	ZE1129	Cover QSHE/101 SANICUBIC® SC 3.0 and 4.0	1 (2)
	120141	Cover QSHE/100Z-3 SANICUBIC® SC 5.5 and 7.5	1 (2)
3	200 005	Reception flange plate	1 (2)
4	ZE1566	Flat seal 340 x 105 x 3	1 (2)
5	117724	Hexagon screw M10x25	8 (16)
6	145015	Seal carrier GG SANICUBIC® SC 3.0 und 4.0	1 (2)
	145023	Seal carrier GG SANICUBIC® SC 5.5 und 7.5	1 (2)
7	279950	Mechanical seal 3.0 and 4.0 kW	1 (2)
	80115	Chilled casting seal 5.5 and 7.5 kW	1 (2)
8	80114	O-ring 50 x 3	1 (2)
9	120127	Impeller cap SANICUBIC® SC 3.0 and 4.0	1 (2)
	120143	Impeller cap SANICUBIC® SC 5.5 and 7.5	1 (2)
10	ZE1237	Hexagon screw M 10 x 30	1 (2)
	145013	Sealing disc Cu 10 x 20 x 2.0 mm	1 (2)
12	60107	O-ring 190 x 3	1 (2)
13	ZE1237	Hexagon screw M 10 x 30 SANICUBIC® SC 3.0 and 4.0	8 (16)
	ZE1516	Hexagon screw M 12 x 30 SANICUBIC® SC 5.5 and 7.5	8 (16)
15	111103	Motor unit 3.0 kW with impeller	1 (2)
	111104	Motor unit 4.0 kW with impeller	1 (2)
	111107	Motor unit 5.5 kW with impeller	1 (2)
	111108	Motor unit 7.5 kW with impeller	1 (2)
	22936	Motor unit 4.0 kW with impeller 60 Hz	1 (2)
16	ZE1130	Hexagon screw M 12 x 25	4 (8)
	ZE1302	Spring washer B 12	4 (8)
17	120134c	Impeller D=200 mm, 3.0 kW	1 (2)
	120134e	Impeller D=220 mm, 4.0 kW	1 (2)
	120142a	Impeller D=230 mm, 5.5 kW	1 (2)
	120142b	Impeller D=250 mm, 7.5 kW	1 (2)
	22822	Impeller D=184 mm, 4.0 kW 60 Hz	1 (2)
18	117031	Angle grommet R 3/8"	1 (2)
19	ZE1582	Hose clamp	2 (4)
20	117030	Venting hose	1 (2)
23	ZE1382	Hexagon nut M 12	8 (16)
	ZE1302	Spring washer B 12	8 (16)
24	ZE1121	Flat seal DN 100	1 (2)
25	14009	Oil filling 0.8 l, SANICUBIC® SC 3.0 and 4.0	1 (2)
	14009	Oil filling 1.0 l, SANICUBIC® SC 5.5 and 7.5	1 (2)
26	140025	Oil filling screw 3/8" thread	1 (2)
	140030	Seal ring 17 x 22 x 1.5 mm, Cu	1 (2)
27	ZE1647	Hexagon socket screw M 16 x 30	4 (8)
28	120131	O-Ring 236 x 3 SANICUBIC® SC 3.0 and 4.0	1 (2)
	120139	O-Ring 270 x 3 SANICUBIC® SC 5.5 and 7.5	1 (2)

SFA GROUP

Shaking up water

SERVICE HELPLINES

France
Tél : +33 1 44 82 25 55
Fax : 03 44 94 46 19
sav@sfa.fr

Australia
Phone: +1300 554 779
technical@sfapumps.com.au

Benelux
Tel: +31 475 487100
service@sfabeneluxbv.nl

Brazil
Tel: (11) 3052-2292

Česká Republika
Tel: +420 266 712 855
sfa@sanibroy.cz

Deutschland
Tel: +49 6074 309280
Fax: +49 6074 3092890
info@sfa-deutschland.de

España
Tfno: +34 935 44 60 76 (ext 2)
pedidossat@sfa.es

Ireland
Tel: 1850 23 24 25 (Low Call)
info@sfasaniflo.ie

Italia
Tel: +39 02 3055 9420
assistenza@sfa.it

México
Tel: + 52 5570031086.
sfasaniflo@sfasaniflo.mx

New Zealand
Phone: 0800107264
technical@sfapumps.co.nz

Norge
Tlf: +46 (0)8 40 415 30
service@sfasverige.se

Magyarország
telefon: +40 722 560 010
service@saniflo.ro

Österreich
Tel: +43 1 7106070
Fax: +43 1 7106070
info@sfa-oesterreich.at

Россия
Тел: (495) 258 29 51
Факс: (495) 258 29 51

Polska
Tel: (+4822) 732 00 33
serwis@sfapoland.pl

Portugal
Tel: +351 219 112 785
+351 938 598 884
sfa@sfa.pt

România
telefon: +40 724 364 543
service@saniflo.ro

South Africa
Tel: +27 (0) 21 286 0028

Suisse Schweiz Svizzera
Tel: +41 32 631 04 74
Fax: +41 32 631 04 75
info@sfa-switzerland.ch

Sverige
Tlf: +46 (0)8 40 415 30
service@sfasverige.se

Türkiye
Tel: +90 212 275 30 88
servis@sfapompa.com.tr

United Kingdom
Tel: 08457 650011
(Call from a land line)
technical@saniflo.co.uk

Việt Nam
Tel: +84 (0)977889364

中国
电话 : +86(0)21 6218 8969
info@sfachina.cn

भारत
Tel: +91 (0)22 6993 1900
service@sfapumps.in

한국
Tel: +82 2 6925 5614
technical@sfa-korea.co.kr

Service information : www.sfa.biz