

DAC- SC/Y AND DAS TYPE SUBMERSIBLE WASTE WATER AND SEWAGE PUMPS

MAIN SPECIFICATIONS :

Turbosan DAC-SC/Y and DAS series pumps designed for pumping fluids which contents large solids. They have large range of capacities range and are available with large range of powers. Capacity range is 3 - 800 l/s discharge head range is 2 - 60 m and power range is 3 kW 400 kW. There are several models and sizes.

FIELDS OF APPLICATION :

- Domestic and industrial raw sewage water pumping
- Waste water handling plants
- In biological cleaning plants for pumping active sludge.
- Pumping of floating solids in settlement pools.
- Pumping waste water to active screens
- Pumping industrial and chemical waste water.
- Draining rain water
- All kinds of drainage and dewatering
- Pumping miscallenous waters in industrial plants

FLUID TYPES :

- Unscreened sewage and other waste water types with high solids concentration Pumps are designed to tolerate large solids (Ø 30 Ø - 200 mm diameter) without clogging.
- Water with sand content. Maximum grain size (20 - 30 mm). Liquid, sand ratio can be maximum % 6. For higher sand concentration preventive provisions must be taken against wear.
- Maximum allowed fluid temperature is 40°C
- Maximum allowed medium density is 1,2 gr/cm³, maximum allowed medium viscosity is 1,5 x 10-6 m²/s. Measures must be taken to lower these values.



TECHNICAL DETAILS :

SUBMERSIBLE ELECTRIC MOTOR: Turbosan DAC series pumps have submersible electric motors which operate with 3 phase 380 V power supply. Insulation class of motors is F, protection class is IP 68. Upon request H class insulation is available so as different power supply options like different frequency or voltage (60 Hz).

SHAFT SEALING: Between motor and pumped fluid a high quality double mechanical seal is used, which operate in oil chamber. (Up to 11 kW single mechanical seal)

BEARINGS: Rotor is supported by means of two heavy duty ball bearings on upper and lower sides. These bearings are selected to support axial and radial loads. In DAC-Y type the bearings operate in cooling oil as a result they do not overheat. In DAS and DAC-SC types bearings are grease lubricated.

MOTOR OVER HEAT PROTECTION SYSTEM: Stator windings are protected against over heat by 120 °C thermistors. Two thermistor contacts are connected to cable and must be connected to the thermistor relay.

WATER LEAKAGE WARNING SYSTEM: An electrode system is used which generates a warning signal in case of water leakage caused by worn out mechanical seal or any other reason. In order to have this system operational it must be connected to the Turbosan STR-1 protection relay.

CABLE CONNECTION: H07RN-F type rubber coated cables with flexible cores used. They are durable against corrosiveness of sewage water. Pumps supplied with 10 m cable as standard. Do not transport pump by pulling the cable.

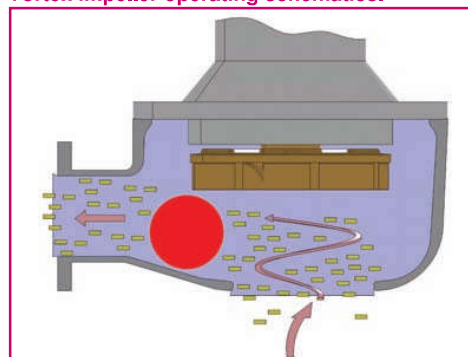
VOLUTE CASING: Volute casings are with concentric discharge and have large cross-section. They are designed not to be clogged by the solid that can pass through impeller. In special applications Flush valve can be fitted to the pump. Pumps can be manufactured with different material types if requested by client or it is needed because of liquid properties.

MATERIAL

| PUMP COMPONENT | | MATERIAL |
|------------------------------|----------------|------------------------------|
| Motor casing - volute casing | | Cast iron GG-25 (EN-JL 1040) |
| Impeller | | Cast iron GG-25 (EN-JL 1040) |
| Shaft | | Stainless steel (1.4021) |
| Bolts - Nuts | | Stainless steel |
| Mechanical seal | | SIC/SIC |
| Cable | | H07RN-f |
| Coating | Primer | Epoxy primer |
| | Final coat | Coal tar epoxy paint over |
| | Inner surfaces | Rapid primer |

CAUTION: If the submersible pump will be stored without operation for long time, it must be operated for short of time every 25-30 days. Submersible pumps manufactured according to CE directive.

Vortex impeller operating schematics.



SUBMERSIBLE PUMP DESIGNS

Turbosan submersible waste water pumps manufactured in 3 different design.

1- DAC- SC SeriesCooling is by cooling jacket.

2- DAC-Y SereisOil cooling.

3- DAS series :Cooled by surrounding medium

1- DAC-SC pumps cooling system:

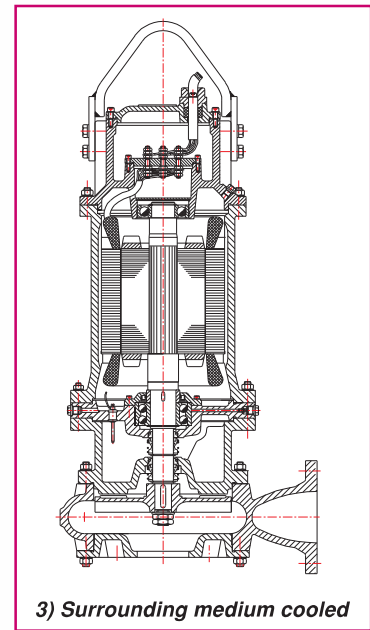
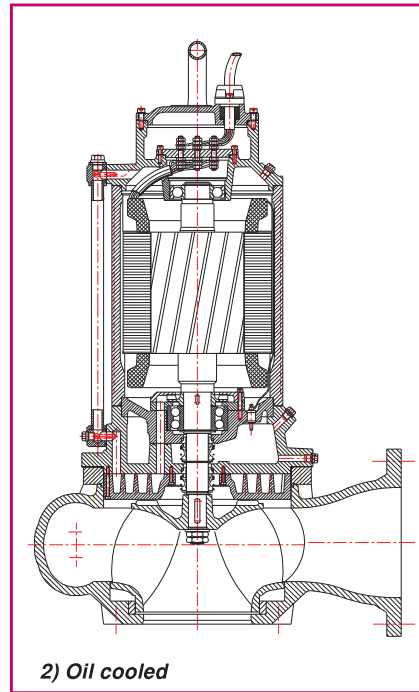
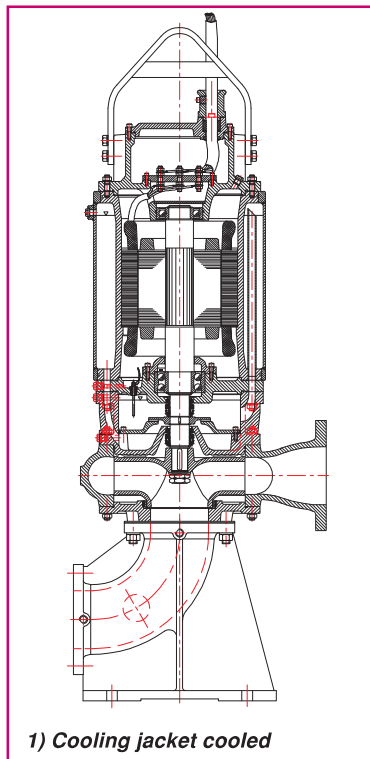
Around the motor of the submersible pump a cooling jacket is fitted. Coolant liquid circulates within this jacket by an impeller inside the oil chamber. Liquid circulating in the jacket dissipates the heat regardless of installation type and cools the motor. Oil chamber behind the pump impeller cools the coolant fluid.

2- DAC-Y pumps cooling systems:

Submersible pumps motor are cooled by oil which fill the motor casing and circulates in motor stator windings. Cooling system has a small pump and heat exchanger. This small pump circulates the cooling oil.

3- DAS pump cooling:

Das type pumps are cooled by surrounding medium in which the pump is submerged. In order to have appropriate cooling, the pump has to be submerged completely. These pumps do not operate in a dry installation.



DAC – SC and DAC-Y type pumps designed to operate both submerged and dry installation



Single vane double angled non clogging impeller: These impellers have large solid passages, high efficiencies and they do not strain motor power at low discharge head values.

Double vane impeller: In general they are used in large sized pumps. Rotational symmetry lets them operate without vibration and stable. They are with high efficiency and they do not strain motor with excessive load in case of low discharge head. Large channels between vanes allows pumping of solids.

Vortex type impeller: This type of impellers do not have closed channels. Impeller located deep inside the volute casing. Pumping action is generated by vortex created within the fluid by rotation of the impeller. With this geometry they can tolerate large solids than other impeller types more specifically they tolerate fibrous materials in the pumped liquid. Disadvantage of this impeller type is lower efficiencies. Pump impellers statically and dynamically balanced according to ISO 1940 class 6.3

P-Impeller: Open type non-c logging impeller operates with in close proximity suction piece.

