



TC 2060- 4580



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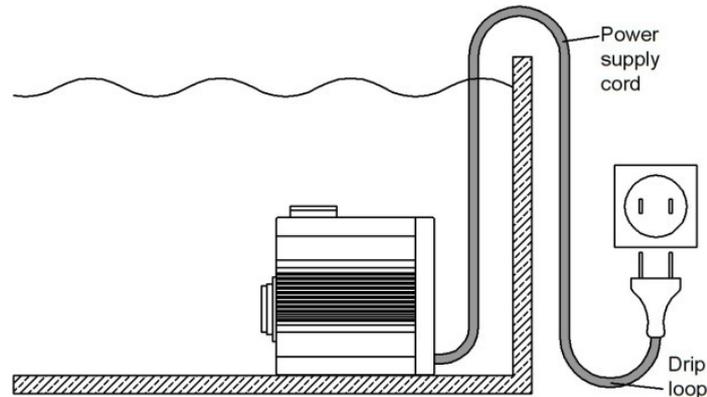
IMPORTANT SAFETY INSTRUCTIONS

WARNING To guard against injury, basic safety precautions should be observed, including the following.

- 1) READ AND FOLLOW ALL SAFETY INSTRUCTIONS.
- 2) DANGER – To avoid possible electric shock, special care should be taken since water is employed in the use of aquarium equipment. For each of the following situations, do not attempt repairs by yourself; return the appliance to an authorized service facility for service or discard the appliance.
 - a) Do not operate any appliance if it has a damaged cord or plug, or if it is malfunctioning or has been dropped or damaged in any manner.
 - b) To avoid the possibility of the appliance plug or receptacle getting wet, position aquarium stand and tank to one side of a wall-mounted receptacle to prevent water from dripping onto the receptacle or plug.

A "drip-loop", shown in the figure below, should be arranged by the user for each cord connecting an aquarium appliance to a receptacle. The "drip-loop" is that part of the cord below the level of the receptacle, or the connector if an extension cord is used, to prevent water travelling along the cord and coming in contact with the receptacle.

If the plug or socket does get wet, **DON'T** unplug the cord. Disconnect the fuse or circuit breaker that supplies power to the appliance. Then unplug and examine for presence of water in the receptacle



- 3) Close supervision is necessary when any appliance is used by or near children.
- 4) Do not use an appliance for other than intended use. The use of attachments not recommended or sold by the appliance manufacturer may cause an unsafe condition.
- 5) Make sure an appliance mounted on a tank is securely installed before operating it.
- 6) Read and observe all the important notices on the appliance.
- 7) If an extension cord is necessary, a cord with a proper rating should be used. A cord rated for less amperes or watts than the appliance rating may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
- 8) This appliance has a polarized plug (one blade is wider than the other). As safety feature, this plug will fit in a polarized outlet only one way. If the plug does not fit, contact a qualified electrician. Never use with an extension cord unless plug can be fully inserted. Do not attempt to defeat this safety feature.

Exception: This instruction may be omitted for an appliance that is not provided with a polarized attachment plug.

Removing of the plug invalidates the warranty!

SAVE THESE INSTRUCTIONS

Deltec **Protein Skimmer TC 2060 – TC 4580**

Deltec "TC" series protein skimmer are very compact, highly efficient and are fitted with a special low energy skimmer pump.

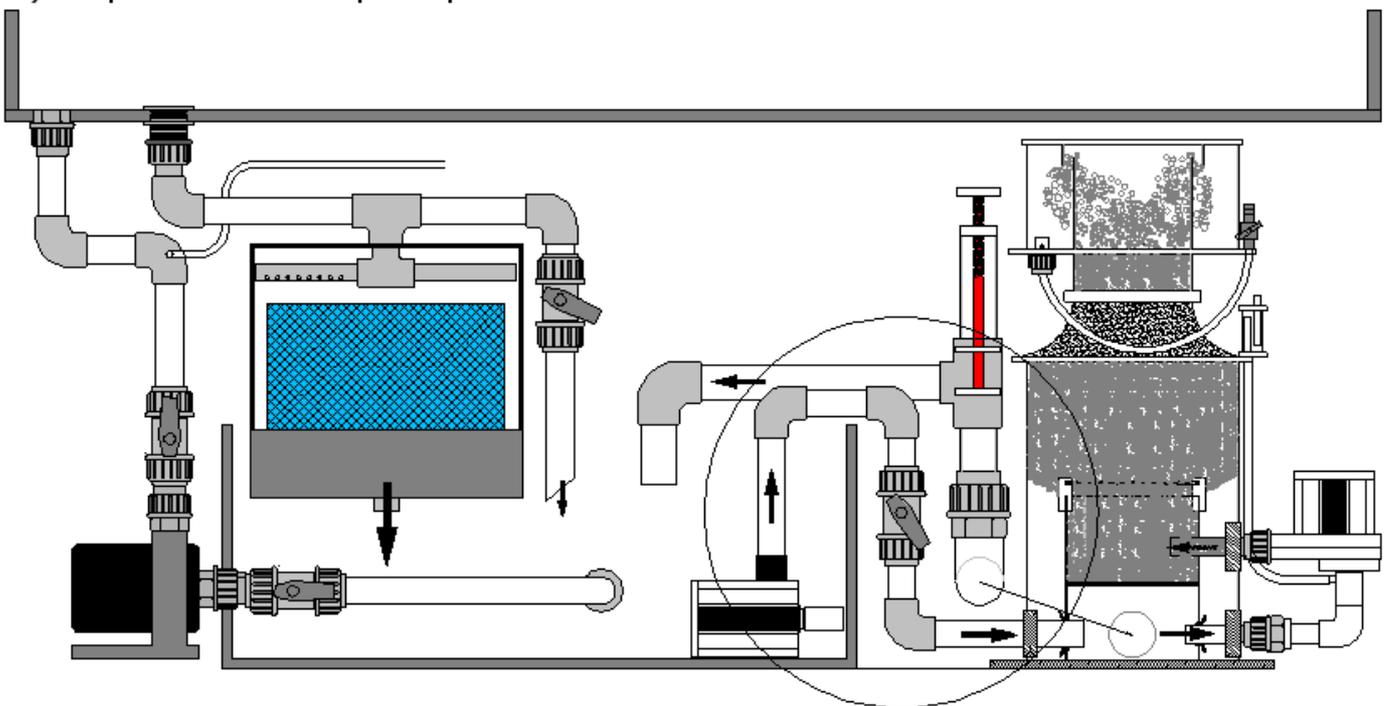
The "TC" skimmers feature

- precision water level adjuster
- remote skimmer cup drain
- silencer (the silencer can be opened for cleaning)

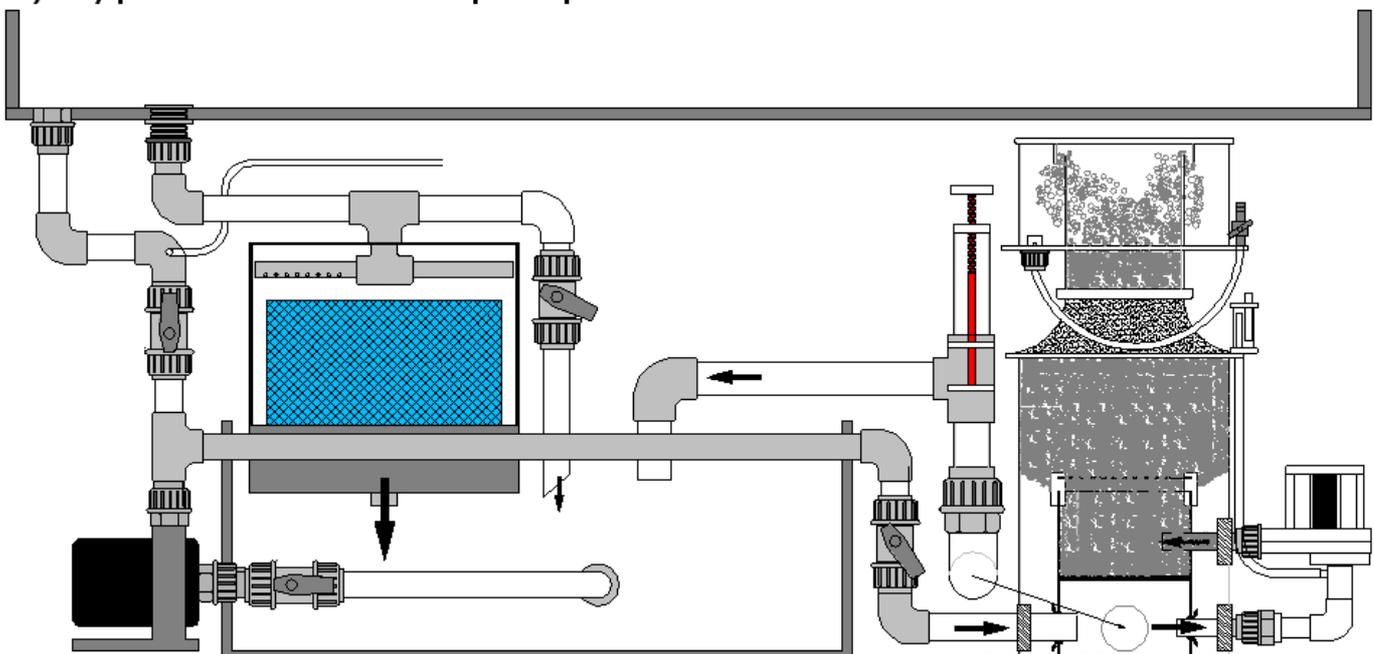
Installation

Protein skimmers of the "TC" series are mainly used in combination with an external filter. They are normally fitted outside the filter sump; if space permits they can be fitted also inside the sump. Please remember that the sump's capacity to accept water when the main aquarium pump is stopped, will be reduced. Installation with:

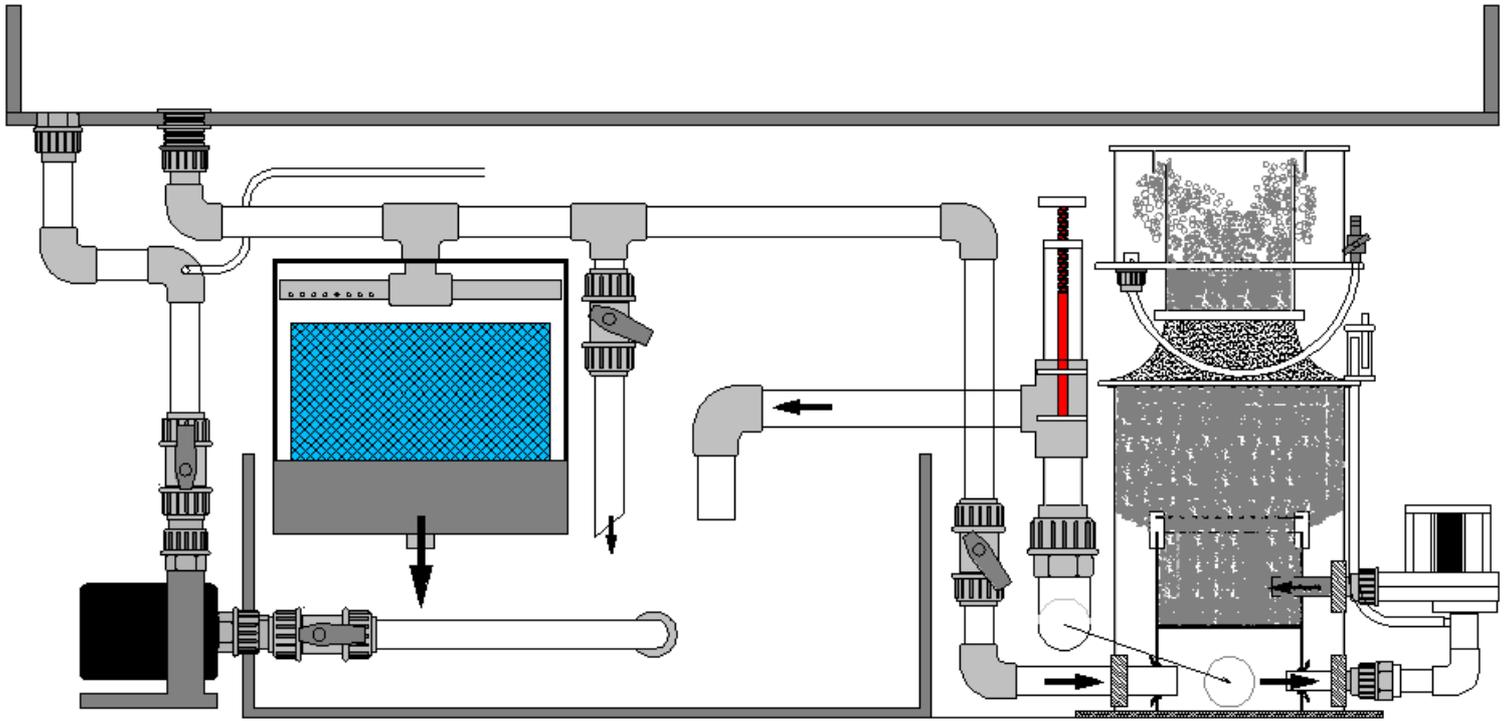
a) separate feed pump



b) Bypass from return pump



c) Bypass from overflow

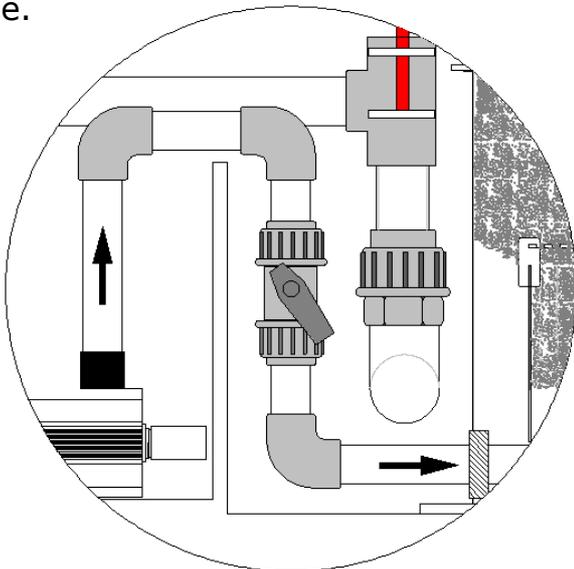


Feed line

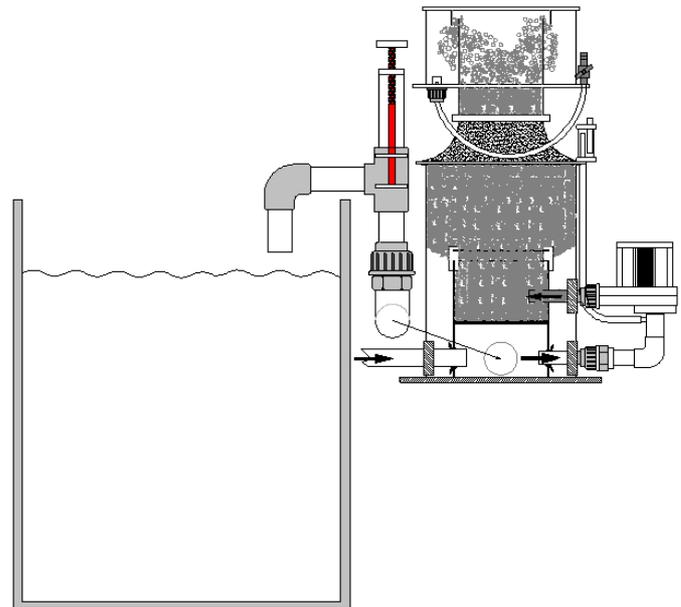
In order to achieve best results it is important to fit a shut off cock into the water feed line. This allows exact regulation of the water flow to compensate variations of existing salinity and water pollution. The diameter of the feed line should not be smaller than the skimmer inlet. When choosing a pump to supply the skimmer, the capacity should be somewhat higher than the recommended maximum flow through the skimmer (see technical data). The optimum flow through the skimmer can then be adjusted with the shut-off valve in the feed line (Diagram d).

Outlet

The skimmer must be installed in such a way, that the cleaned water can flow unrestricted back into the sump (or aquarium). Never fit an outlet pipe higher or smaller in diameter than existing on the skimmer. When installing the skimmer directly to the aquarium, the skimmer outlet must be positioned higher than the top rim of the aquarium (Diagram e). A degassing set can be supplied to reduce air bubbles entering the aquarium from the outlet pipe.



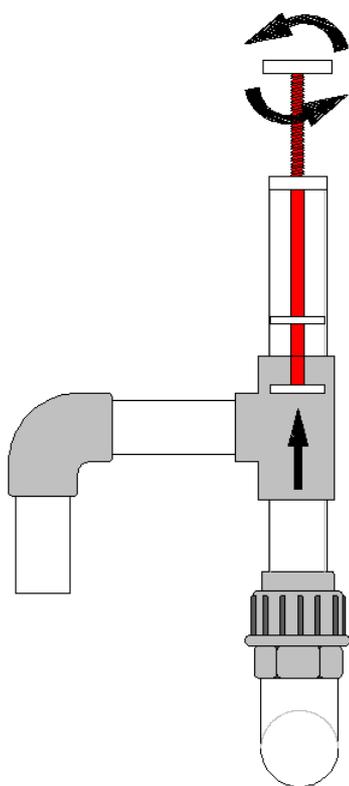
d) Shut off valve inlet



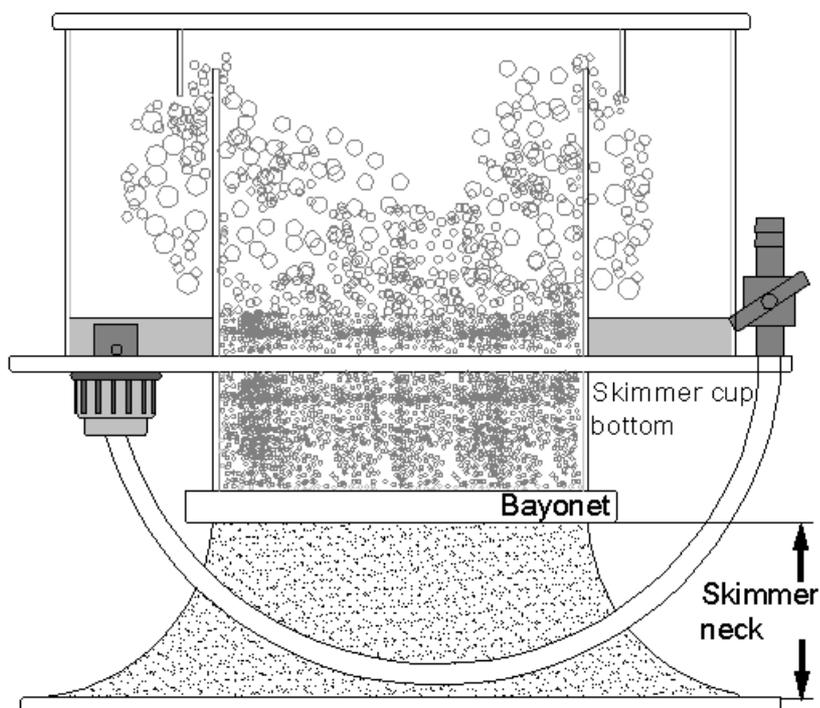
e) Skimmer directly to the aquarium

Starting the skimmer

- open the water level adjuster (WAL) fully by turning it anti-clockwise (Diagram f)
- switch on water supply through skimmer
- adjust the water level inside the skimmer with the feed line shut-off cock and the WAL to somewhere between the top and bottom of the skimmer neck, see (Diagram g)
- check the skimmer for possible damage and check the whole skimmer installation for leaks.
- switch on the skimmer pump
- to prevent initial over foaming and flooding of the skimmer cup, adjust the fine foam level in the cup's riser tube to the bottom plate of the skimmer cup. This is achieved by turning the WAL
- wait a minimum of 24 hours for the final adjustment. Turn the WAL so that the fine bubbles start bursting app. half way up the cup's riser tube.
- for dry foam turn the (WLA) anti clockwise, for wet foam clockwise.
- **Important:** Never allow the pump to run dry.



f) Water level adjuster (WAL)



g) Skimmer cup

Operation with ozone

Ozone is an extremely aggressive gas which - if not used properly - can damage one's health. For this reason, ozone should never be breathed in directly.

In addition, at high doses ozone can damage the skimmer.

The dosing of ozone must be set so that no free ozone can be discerned on the skimmer lid. Deltac skimmers can be operated with between 20 and 50 mg/hours of ozone per pump. An ozone-resistant T-piece is placed in the air hose above the skimmer pump. The free end of the T-piece is connected to the ozonizer by means of an ozone-resistant hose. The air valve of the skimmer must be throttled until air is independently sucked through the ozonizer.

Safety information:

- The maximum ozone quantity of 50mg/hour per pump must not be exceeded.
- The air passage can be reduced as a result of dust deposits in the ozonizer. This can result in an increase in the water level in the skimmer, which - in extreme cases - can overflow. To avoid this, check the ozonizer regularly to make sure that there are no deposits of dust. If necessary, clean it.
- Never breathe in free ozone.
- The ozonizer may not be directly connected to the air valve or silencer.
- In order to avoid water damage, the ozonizer must be placed high enough to ensure that no water can penetrate it when the skimmer pump is switched off.

Fresh salt water

If the skimmer is used with new water it is common to find an excessive quantity of small bubbles and often the skimmer cup fills with a clear liquid. This is due to the high surface tension of the new water which prevents the bubbles from bursting. Once the water matures this effect will go away but it can take up to 2-3 weeks. The effect is different on different salt brands and is often dependant on levels of conditioning agents added to the salt. Once these are skimmed out then the skimmer will act normally.

Heavier feeding in the initial stages will give the chemically pure water something to react with and allow it to mature into proper aquarium salt water rather than the initial chemical soup which is new salt water.

Technical Data

technical data TC Serie	Dimensions mm			Aquarium size litre		Wather flow rate litre/h	Power consumption	Air	Connections Ø mm	
	Footprint	height	Height under outlet pipe	high stocking	normal stocking	recommended	Watt	Litre / h	Feedline	Outlet
TC 2060	280x400	600	281	1400	1700	2500	22	1300	32	50
TC 2560	320x430	600	270	2000	2400	3600	34	1800	32	50
TC 3070	380x450	700	265	4000	4800	3600	68	3400	32	50
TC 3070S	380x450	680	265	5000	6000	4000	74	3800	32	50
TC 4080	570x590	780	280	8000	10000	9000	111	5700	40	63
TC 4580	640x690	780	280	11000	14000	12000	148	7600	40	63

Fault finding

malfunction	cause	remedy
Pump produces insufficient air	silencer, airline or venturi blocked	clean
	airline kinked	remove kink
	ozonizer blocked	clean
	Pump flaps blocked	clean
excessive air bubbles in aquarium water	caused by additives in certain sea salts and water conditioners	use different salt or feed heavily for a period, empty skimmer cup frequently. This condition may last for several weeks.
Pump does not start	Front bearing of the impeller stuck. When the pump (after having been used) has been stored dry for a period of time, the front bearing can "dry out".	Remove impeller with the extractor tool as illustrated and loosen the bearing by moving the bearing plate around and along the ceramic shaft in tap water.
	Impeller incorrectly fitted	See service hints

Maintenance

The Deltec skimmer range should need very little adjustment and maintenance once set correctly however due to the high levels of calcium in marine aquariums it is common for deposits to build up on moving parts requiring periodical cleaning. Deltec pumps are fitted with little flaps inside the outlet of the pump and inside the housing, which flip from one side to the other depending on the direction of rotation thus ensuring that the pump always operates at full duty. It is recommended every 6 months, or when required, that the pumps are removed from the skimmer having first drained the body of Water.

Check and clean the impellor of debris. Ensure that the direction flaps move easily and if necessary soak the neck of the pump housing in white vinegar or lime scale remover to dissolve any calcium carbonate deposits. A build up of calcium, dust and salt can restrict or block the venturi inlet on the connecting pipe work and reduce the skimming efficiency. This should be checked and carefully cleaned with a toothpick or fine drill rotated between the fingertips. It is advisable to stop the pump for approximately 15 minutes once every week in order to dissolve any dust or salt crystals that may have collected in the venture tube.

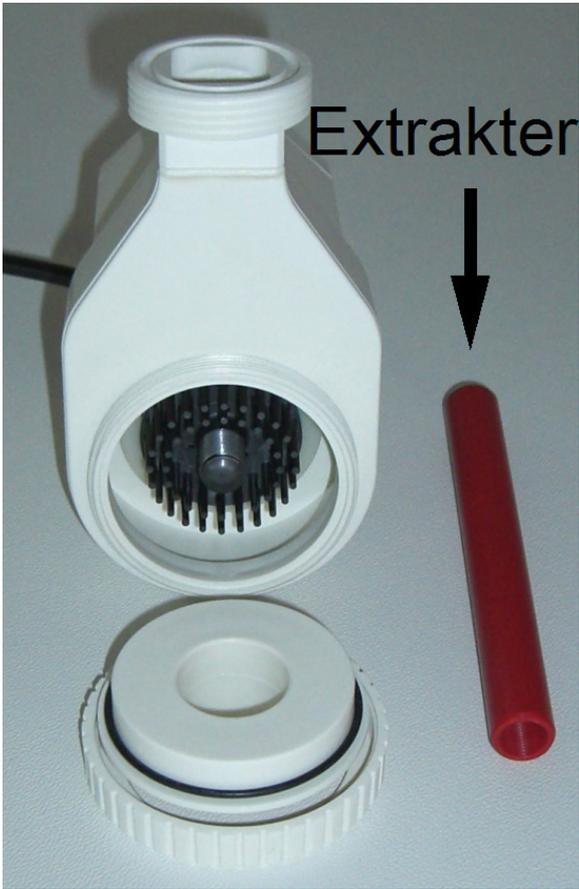
Please observe: The water level adjuster must be checked at regular intervals (at least once a week) for accumulation of dirt or other substances with may inhibit or interfere with its proper function. If required please clean. For this purpose the water level adjuster can be simply removed by pulling it upwards. After reinstallation of the water level adjuster please make sure it is correctly set. Any foreign bodies, limestone build up ect. can cause the skimmer water level to rais, in extreme cases the skimmer may get flooded.

Service hints

The skimmer pump is fitted with a very powerful rotor magnet. To remove the rotor from the pump use only the special extractor tool (Picture 1). Screw the extractor onto the rotor's centre piece (Picture 2) and pull the rotor out of the pumps housing slowly and deliberately in a straight line (Picture 3). Be careful not to put any side forces onto the ceramic rotor shaft as this might brake the hard and brittle material.

Use the same tool when inserting the rotor into the pump housing.

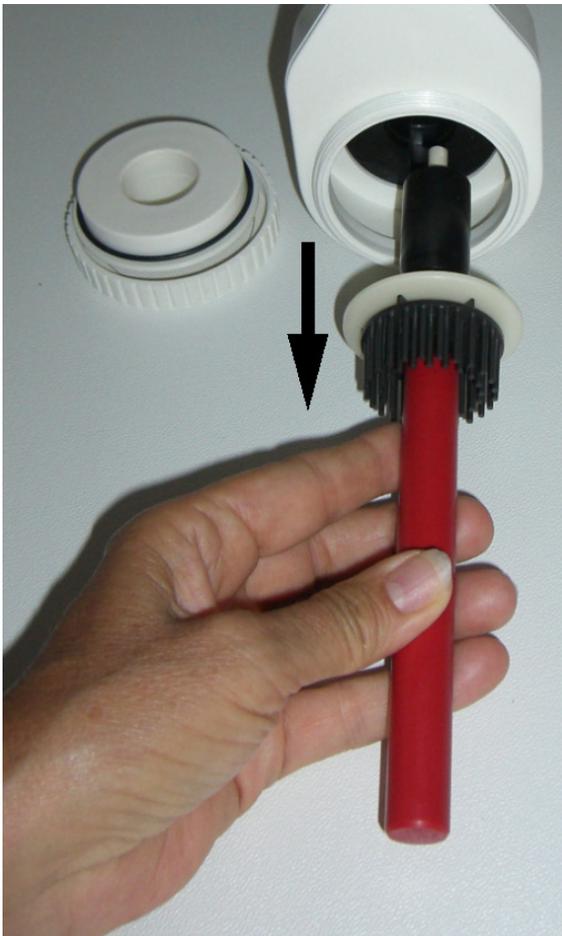
Make sure that the guide fitted to the bearing plate is located in the slot of the stator (Picture 4). The Impeller is fixed inside the stator by an o-ring. It requires a certain pressure to push the impeller the last 2-3mm into its correct position.



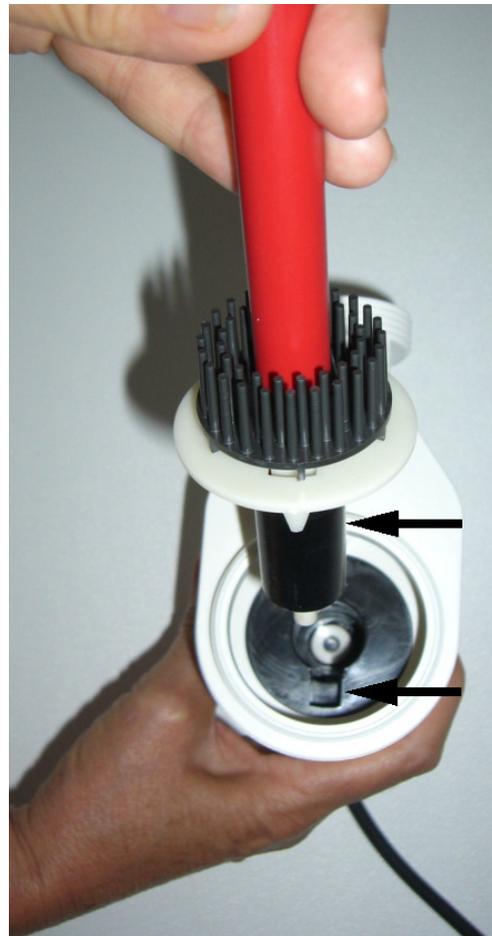
Picture 1



Picture 2



Picture 3



Picture 4

Important Notice

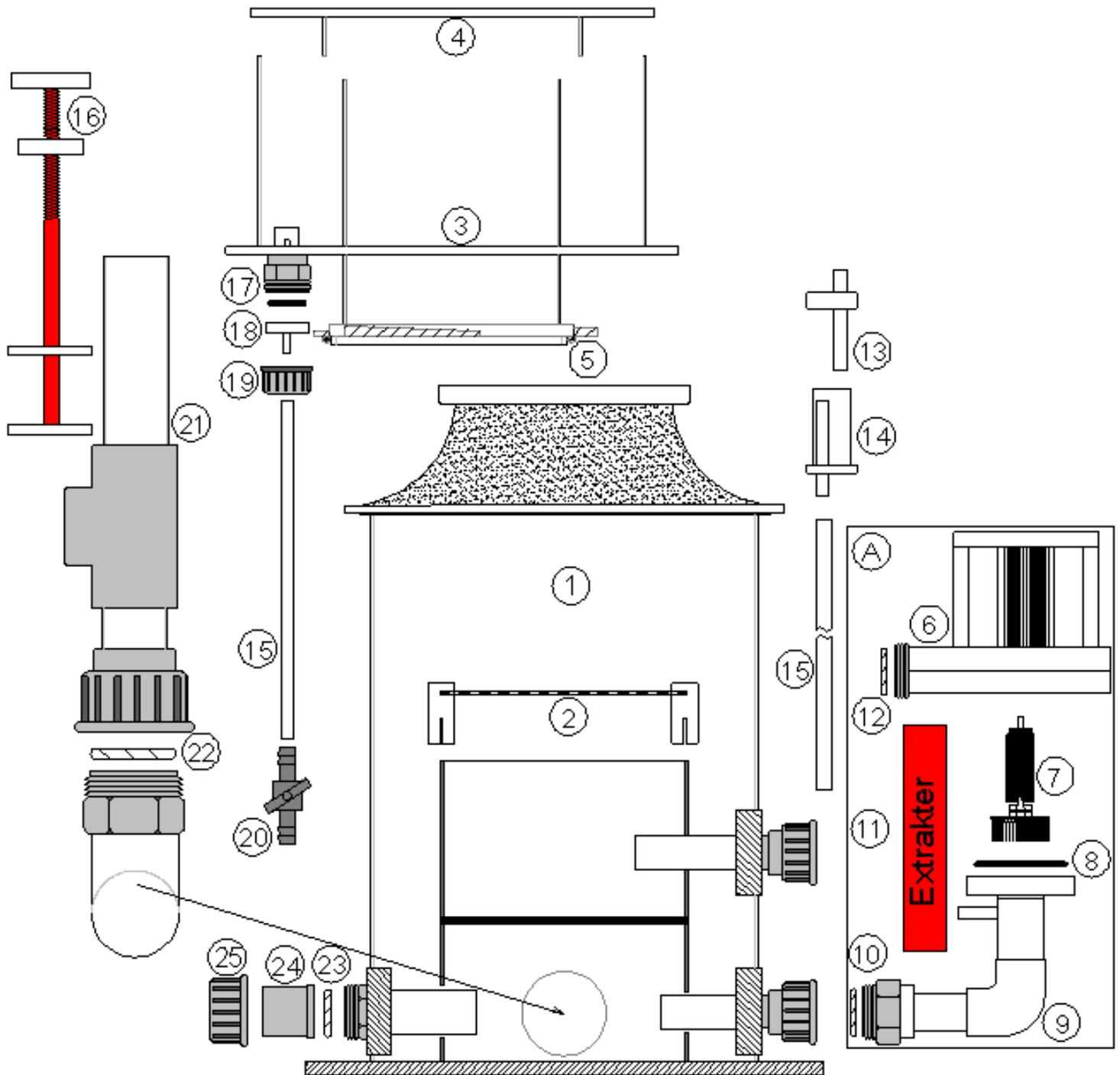
Deltec TC high performance skimmers are very efficient and achieve longlasting optimum results with the patented TC skimmer it is necessary to provide enough water flow through the skimmer (see page 16).

The rated capacities of many aquarium pumps will not be achieved in reality, in particular, when the feed line into the skimmer are small, fitted with hose tails, pvc fittings and other items which restrict the flow. If in doubt measure the water volume which exits the skimmer. Insufficient flow through the skimmer results in poor performance in some cases caution and possible damage to the skimmer pump. It is recommend to use the Eden pump Type 159 or Eheim compact 5000 or pumps with similar performance.

Please note:

Always switch off the skimmer pump(s) before switching off the feed pump (for instance when cleaning the skimmer cup).

Spare part list



		TC2060	TC2560	TC3070	TC 3070S	TC 4080	TC 4580
	Description	Art. No.					
A	Pump with piping	80000000	80001000	80001000	80009000	80009000	80009000
1	Body only	80201000	80251000	80301000	80351000	80401000	80451000
2	Strainer	80202000	80252000	80302000	80302000	80402000	80452000
3	Skimmer cup	80203000	80253000	80303000	80353000	80403000	80453000
4	Lid skimmer cup	80204000	80254000	80304000	80354000	80404000	80454000
5	O-Ring skimmer cup	80500110	80500139	80500160	80500200	80500200	80500250
6	Stator	80010000	80011000	80011000	80011000	80011000	80011000
7	Rotor	80014000	80015000	80015000	80015000	80015000	80015000
8	O-Ring pump	80016000	80016000	80016000	80016000	80016000	80016000
9	Piping pump	80209000	80259000	80259000	80359000	80259000	80259000
10	O-Ring	93042400	93042400	93042400	93042400	93042400	93042400
11	Extractor	80020000	80020000	80020000	80020000	80020000	80020000
12	O-Ring peruse side	80019000	80019000	80019000	80019000	80019000	80019000
13	Silencer 1	80205000	80205000	80205000	81205000	81205000	81205000
14	Silencer 2	80206000	80206000	80206000	81206000	81206000	81206000
15	Silicone hose	61770000	61770000	61770000	61770000	61770000	61770000
16	Water level adjuster	80207000	80207000	80207000	80207000	80407000	80457000
17	O-Ring 16	xxx	93040400	93040400	93040400	93040400	93040400
18	Collar skimmer cup	xxx	80258000	80258000	80258000	80258000	80258000
19	Cap nut 16	xxx	93040100	93040100	93040100	93040100	93040100
20	Shut-off-valve 12	93419000	93419000	93419000	93419000	93419000	93419000
21	Outlet pipe	80208000	80258100	80308000	80358000	80408000	80458000
22	O-Ring	93045400	93045400	93045400	93045400	93046400	93046400
23	O-Ring	93043400	93043400	93043400	93043400	93044400	93044400
24	Collar coupling	93043200	93043200	93043200	93043200	93044200	93044200
25	Cap nut	93043100	93043100	93043100	93043100	93044100	93044100

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