

**Marine Toilet
Installation**

Warning! Read and understand the warnings listed in this document before you install, operate, or service this system. If you do not obey these warnings, there is a risk of property loss, injury, or electrocution. Do not make any changes to this unit as this could result in property damage, injury, or electrocution.

Tecma accepts no responsibility or liability for damage to equipment, injury, or death that may result from the system's improper installation, service, or operation.

Tecma recommends that plumbing and electrical work be performed by a licensed tradesperson. Local permit and code compliance is required.



Warning! Danger of Electric Shock, Fire and Flooding. Failure to heed these warnings can result in loss of property, injury and death.



Warning! - Do not leave children unattended to use the toilet. Do not put body parts inside the toilet.

**HAZARD WARNING
Contact with moving part**

ALWAYS disconnect power to the toilet before servicing. There is a serious injury risk by placing hands/fingers in the bowl discharge because of the high-speed macerating impeller located directly below the bowl discharge. NEVER attempt to dislodge an obstruction in the pump by placing your hands/fingers in harm's way while it is running.

- Always use ABYC-RECOMMENDED CIRCUIT BREAKER/FUSE AND WIRE GAUGE.
- Always be sure unit's ELECTRICAL POWER is TURNED OFF and that SEACOCKS are CLOSED or in the "OFF" position before beginning work.
- If Toilet is connected to any through-hull fittings, ALWAYS CLOSE or TURN OFF ALL SEACOCKS when BOAT IS UNATTENDED – even if only for a minimal time.
- For units using fresh water that are (at any time) connected to shore side municipal water supply systems, SHORE SIDE SYSTEM must be DISCONNECTED IF BOAT IS LEFT UNATTENDED – even if only for a minimal time.
- If unit is connected to any through-hull fittings, ALL flexible tubing connected directly or indirectly between toilet and ANY through-hull fitting must be of marine quality and must be connected to each fitting with TWO (2) STAINLESS STEEL WORM DRIVE HOSE CLAMPS. These HOSE CLAMPS must be INSPECTED FREQUENTLY TO ENSURE TIGHTNESS, thereby preventing leaks.
- If unit is connected to any through-hull fittings, PROPERLY INSTALLED SEACOCKS MUST BE INSTALLED to these lines. All seacocks (or secondary valves fitted in connecting, intermediate tubing) MUST BE FULL-BORE VALVES and READILY ACCESSIBLE to all toilet users. Use lever-actuated, full-bore, marine quality seacocks and valves. Screw-down gate valves are not recommended.
- IF WATER DOES NOT FLOW INTO TOILET DURING THE FIRST TWO OR THREE FLUSH CYCLES, it has been improperly installed or has malfunctioned. Discontinue use of toilet until installation has been corrected or repairs are made. Please review this manual's Installation section or refer to the Troubleshooting section.
- Use ONLY STAINLESS STEEL mounting hardware. DO NOT INSTALL WITHOUT PLASTIC MOUNTING HOLE INSERTS IN PLACE. Failure to properly mount toilet may result in toilet becoming loose or damaged.
- Only human waste and toilet paper should be put into the toilet. Never flush FOREIGN MATERIALS (e.g., paper towels, pre-moistened wipes, condoms, feminine hygiene products, dental floss, household garbage, etc.).

Discharge Hoses

This toilet is designed to discharge waste into a 1.5" ID marine-grade sanitation hose/pipe.

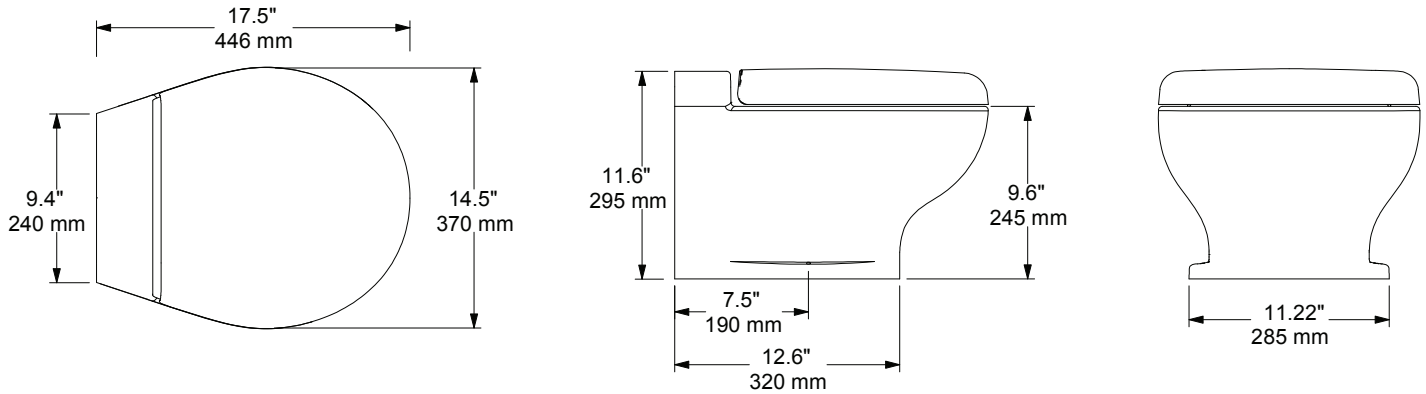


IMPORTANT: Use only marine-quality reinforced hoses for installation. Rigid PVC pipe may also be used for the discharge line. If using flexible hoses, avoid sharp bends that may cause the hose to kink and restrict flow, and secure the hoses to prevent abrasion. Always inspect the final installation for leaks.

Dimensions

Fig. A

Weight : 37,5 lbs.



Note: Ceramic base dimensions may vary slightly in size.

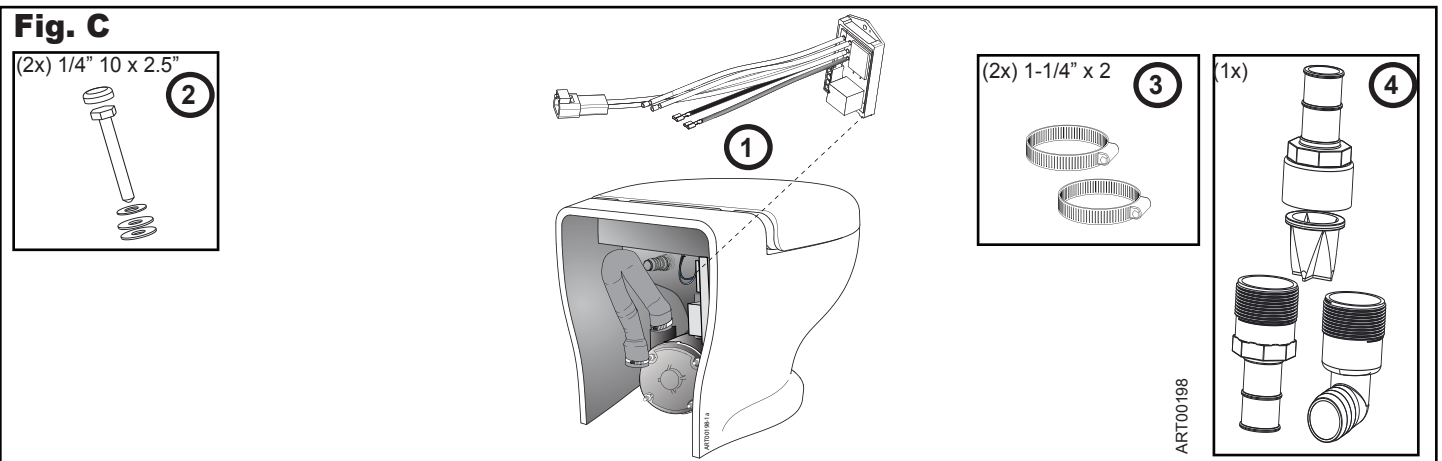
Electrical System

DANGER! FIRE HAZARD:
Failure to use ABYC/ISO recommended circuit breakers or fuses can result in fire!

- All circuits must follow ABYC/ISO standards.
- Wire gauge sizes must follow Wire Gauge Size Chart.
- Every toilet must have its own circuit breaker or fuse.
- Always use crimp-style connectors with Sealing provisions to avoid corrosion.

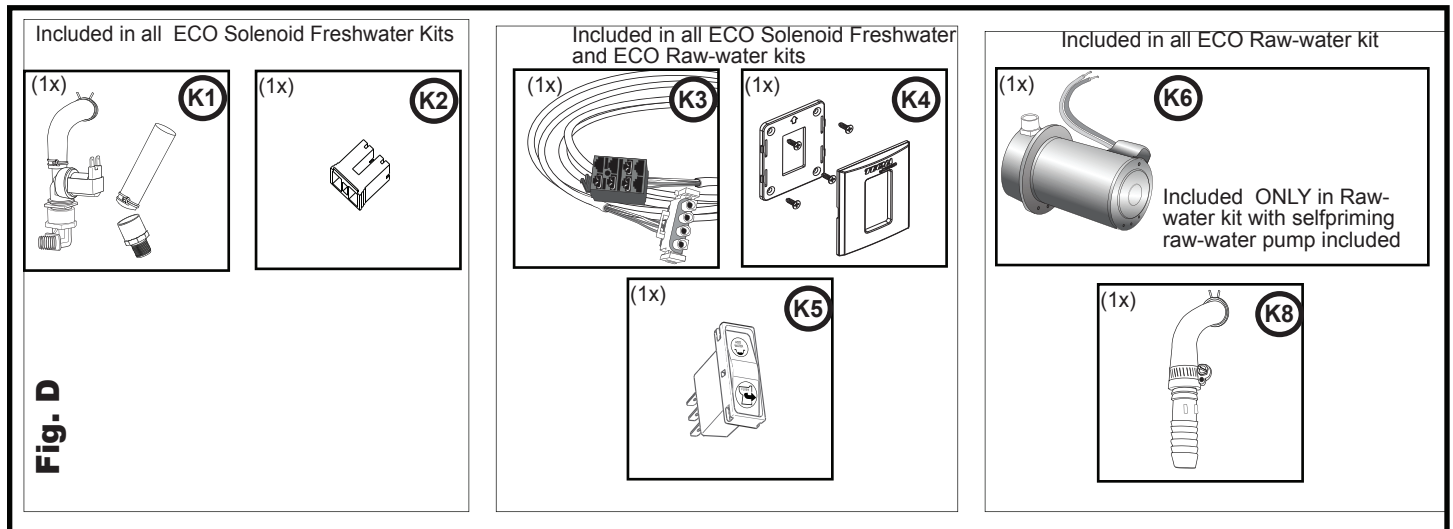
Fig. B	Wire Gauge Size Chart			
If Wire Gauge for distance from source* is:	0-20 feet	20-32 Feet	33-50 feet	Circuit Breaker
12 VOLTS - Install	10 Gauge	8 Gauge	6 Gauge	30 amp
24 VOLTS - Install	16 Gauge	14 Gauge	12 Gauge	30 amp
* Distance measured assumes power and ground wires				

Note: To install the Tecma Nano toilet, you MUST have the toilet and one of the Harness Kits pictured below!

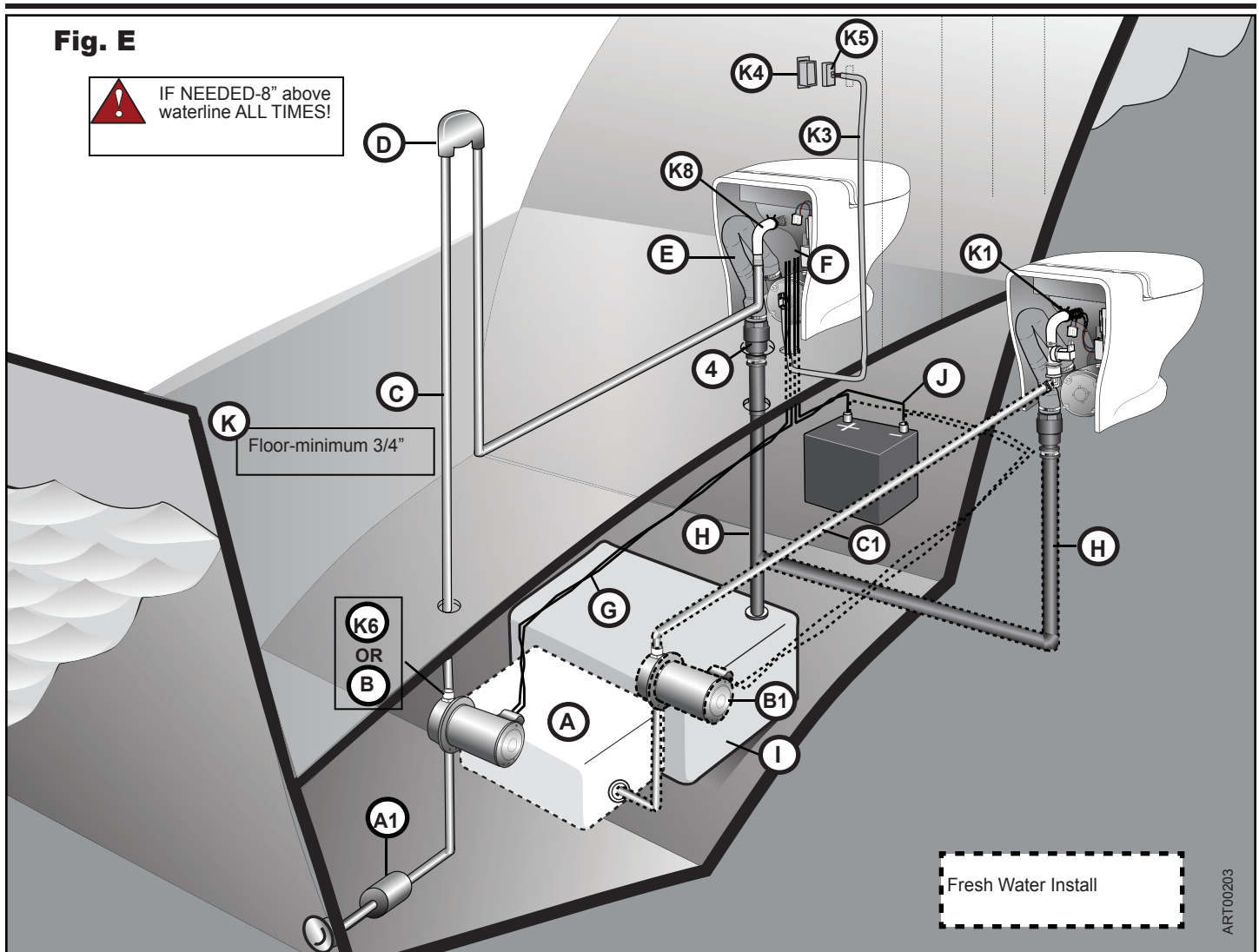


Harness Kit Parts

Parts shown below are supplied in Thetford's Harness Kits.



Orientation



- | | | |
|--|--|---|
| (K1) Fresh Water Hook-up | (A1) Filter or Strainer (Raw Water Install) | (E) Toilet Discharge Hose |
| (K3) Wiring Harness | (A) Water Tank (Fresh Water Install) | (F) Relay Module |
| (K4) Bezel (Fig. F) | (B) Non-Thetford Water Pump (Raw Water Install) | (G) Water Pump Wiring (Fig. B) |
| (K5) Wall Switch | (B1) Fresh Water Pressure Pump (Fresh Water Install) | (H) Discharge Line (above or below floor) |
| (K6) Thetford Water Pump (Raw Water Install) | (C) 3/4" Water Supply (Raw Water Install) | (I) Holding Tank |
| (K8) Raw Water Pump Hook-Up | (C1) 1/2" Water Supply (Fresh Water Install) | (J) Boat/Craft 12V DC Power Source |
| (#4) Lower Discharge Check Valve (Vertical) | (D) Vented Loop | (K) Minimum 3/4" floor |

Before starting the installation, consider and plan for the following:

Mounting Location

- Ideally, the Nano Eco toilet should be installed in a location that is higher than the holding tank. A (maximum) 6' rise between the toilet and holding tank will not impact performance.
- Using toilet and supplied template, verify that the installation site has:
 - sufficient clearance between toilet and nearby wall so that water supply hose and discharge hose are not kinked
 - room for maintenance accessibility
- The floor supporting the toilet is level and strong enough to support toilet and weight of any potential user.
- The floor structure is strong enough to securely anchor toilet using supplied screws; 3/4" minimum.
- The flooring is water-resistant so structure and anchoring integrity are maintained.

Raw Water Considerations

- The Raw Water pump must be securely mounted in a dry, well-ventilated area. It should be mounted not more than 6' at any time above the heeled waterline.



DANGER: The Raw Water pump must be powered by the toilet relay module. Use of any pump that draws more than 15 amps requires installation of a pump contactor relay. Do not wire pump directly to a D.C. power source so that it is controlled by its pressure-activated switch. If a leak were to occur when wired directly, the pump would run continuously and create risk of sinking of the boat and loss of life.

- An in-line strainer **MUST** be installed to protect the system. Failure to use an in-line strainer may void product warranty.
- A Vented Loop of proper diameter **MUST** be installed if – **UNDER ANY CIRCUMSTANCE** or **CONDITION** (including heel trim or load):
 - Toilet is connected to a through-the-hull fitting and rim of toilet could **EVER** be in a position below the waterline.



DANGER: Failure to use a Vented Loop in raw water pump installation sites can lead to water flowing into the toilet from the outside (siphoning) which can cause loss of property and life!

Required Tools

- 1-1/4" hole saw
- 1 3/4" - 2" hole saw
- 3-1/2" hole saw
- 7/16" socket and ratchet or 7/16" wrench
- Electric drill
- 1/8" drill bit

Bezel Installation

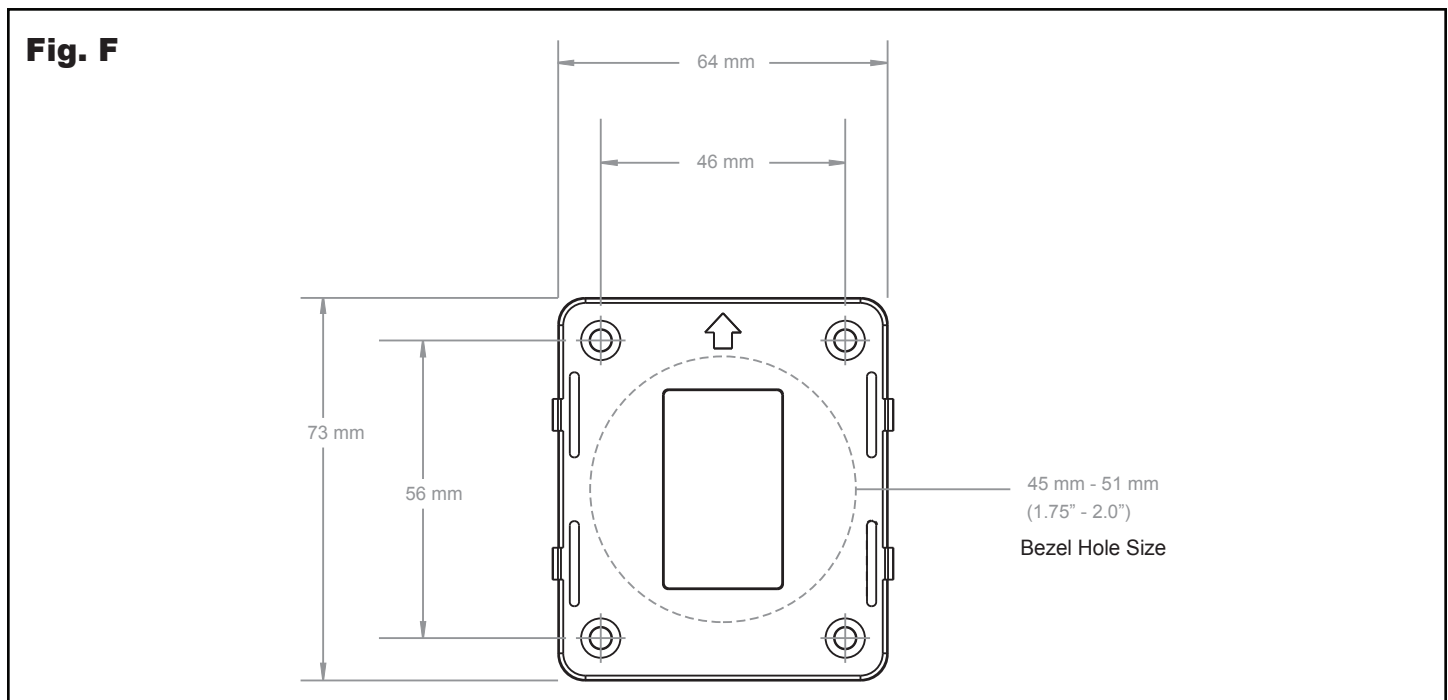
When planning the installation be sure to consider:

- Bezel placement wall thickness
- Distance between toilet and bezel; the harness is 12' in length



DANGER HAZARD OF FIRE: Always use recommended circuit breakers or fuses. Failure to follow the recommendations can result in fire.

Bezel Specifications



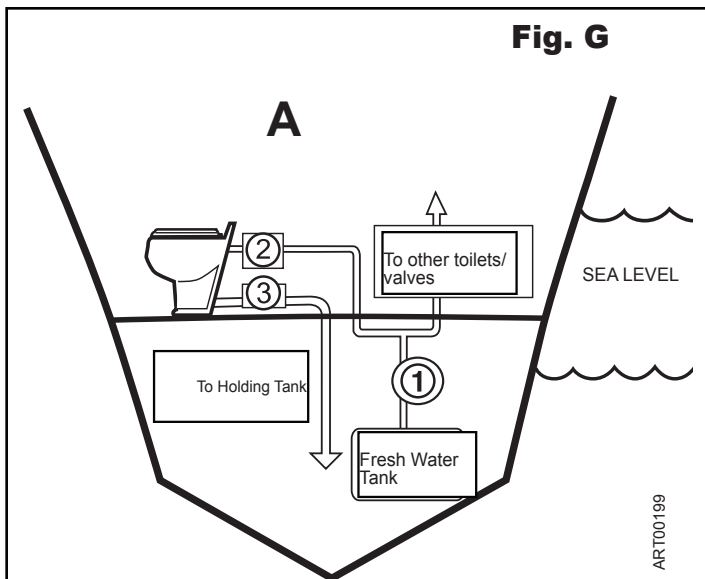
Installation Options

Choose the method that best fits your installation needs:

■ INSTALLATION A:

FRESH WATER - Single or Multiple Toilets

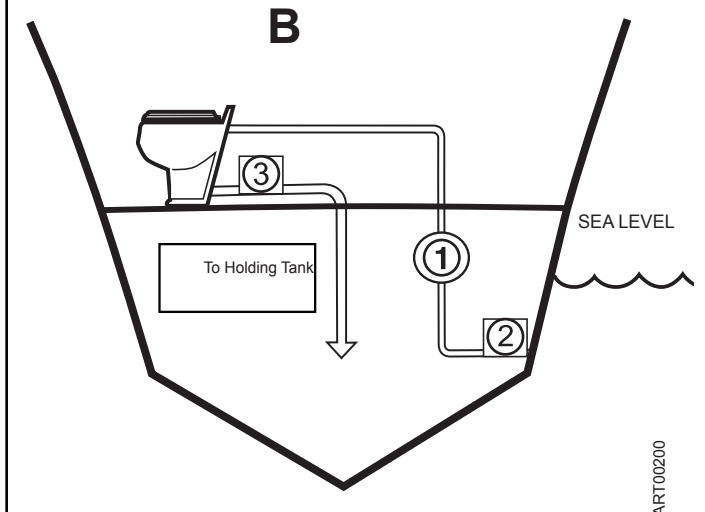
1. Automatic Fresh Water Pressure Pump
2. Marine Electric Solenoid Valve electronically controlled by toilet
3. Lower Discharge Check Valve



■ INSTALLATION B:

RAW WATER PUMP - Toilet ABOVE SEA LEVEL

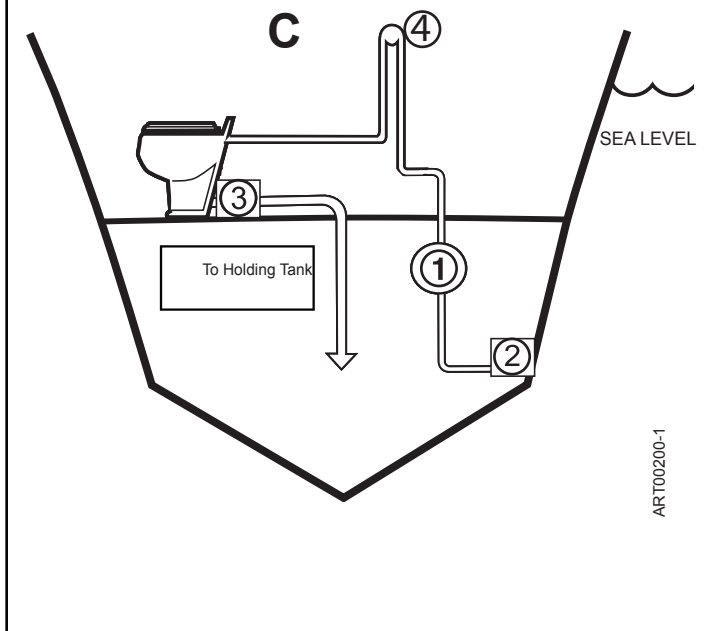
1. Raw Water Pump
2. Filter or Strainer
3. Lower Discharge Check Valve



■ INSTALLATION C:

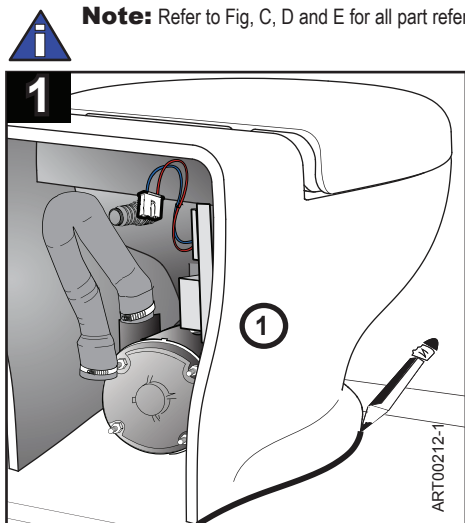
RAW WATER PUMP - Toilet BELOW SEA LEVEL

1. Raw Water Pump
2. Filter or Strainer
3. Lower Discharge Check Valve
4. Vented Loop (minimum 3/4" diameter)

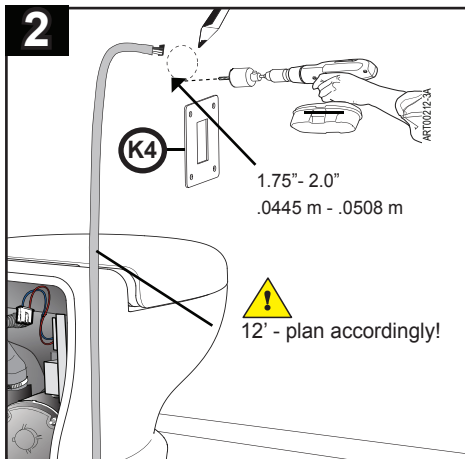


Installation

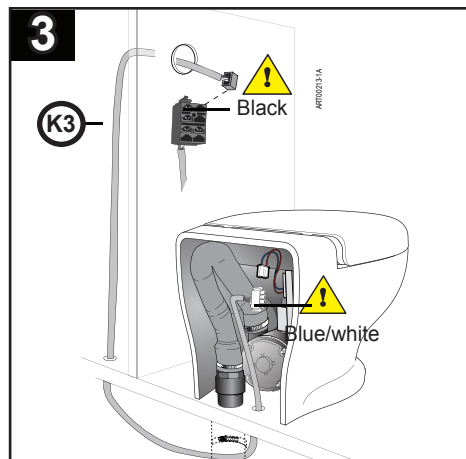
Note: Refer to Fig. C, D and E for all part references.



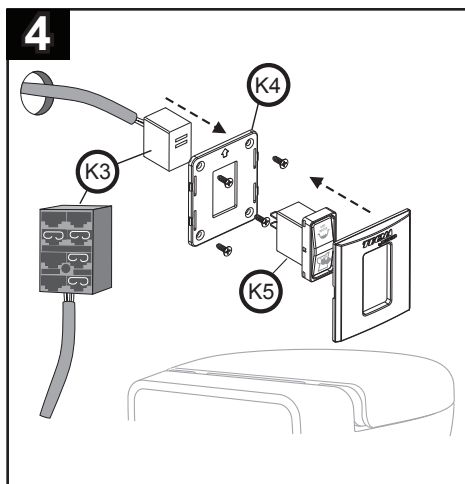
Place **(K1)** in permanent position; trace outline.



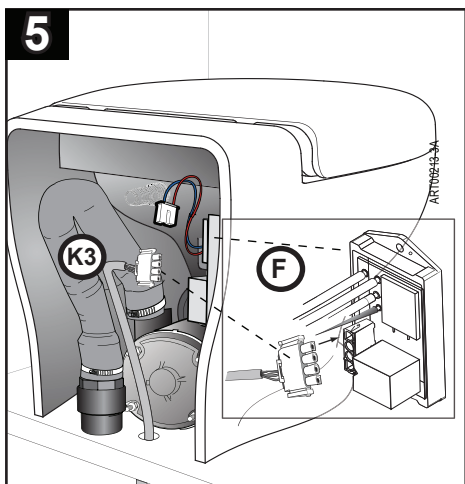
1. Mark / cut wall 1.75" - 2" wall hole.
2. Place **(K4)** over hole; drill screw holes.



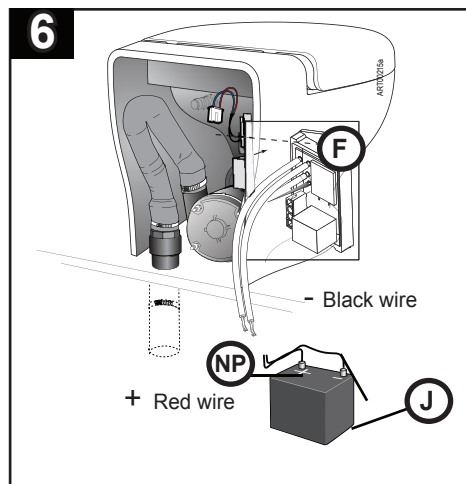
! Position connectors; feed **(K3)** through wall.



Slide **(K3)** through **(K4)**; connect to **(K5)**; cover hole and secure **(K4)** with screws.



Connect **(K3)** to **(F)**.



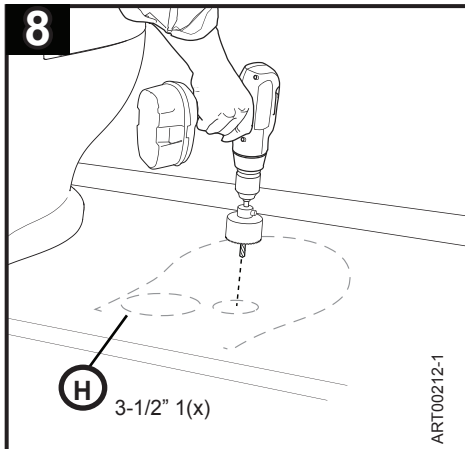
Connect **(F)** to **(NP)** connector; then to **(J)**

7 Attach Water Supply

- Fresh Water Installations - refer to the Solenoid Harness and Accessory Kit instructions
- Raw Water Installations - refer to the Pump Harness and Accessory Kit instructions

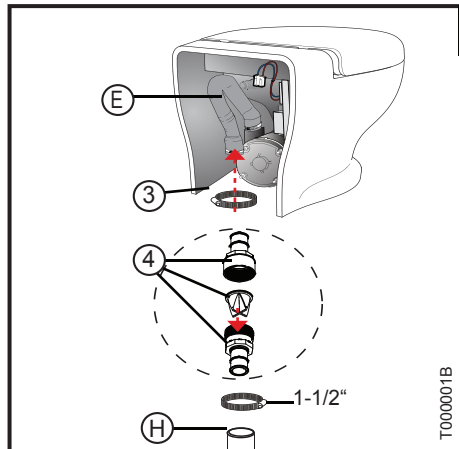
Materials Not Provided **(NP)**

- In-line Strainer (if applicable)
- 3/4" - diameter water supply line (Raw Water installation)
- 3/4" - diameter minimum Vented Loop – if required (Raw Water installation)
- 1/2" - diameter water supply line (Fresh Water installation)
- 1-1/2" - diameter minimum Vented Loop – if required
- 1-1/2" - diameter Marine Discharge Hose
- 1-1/2" - straight or 90° coupling (as needed)
- Silicone caulk (white or clear)
- Various Electrical Connectors



Locate H position; cut hole.

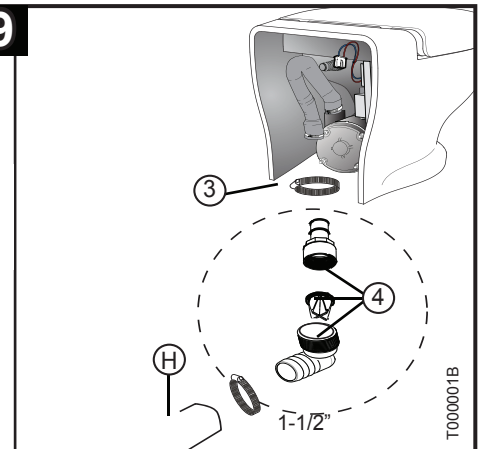
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Vertical Installation

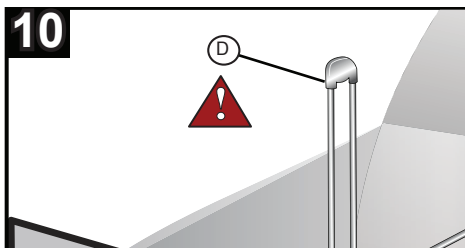
1. Choose installation method.
2. Run (H); assemble parts as shown.
3. Tighten 1-1/2" to secure in place.

T000001B



Horizontal Installation

T000001B



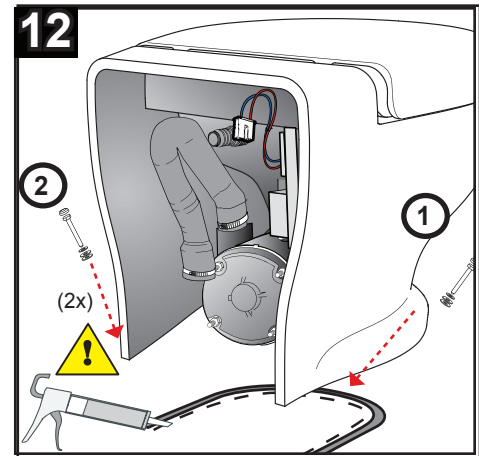
! DANGER: Failure to use a Vented Loop in raw water pump installation sites can lead to water flowing into the toilet from the outside (siphoning) which can cause loss of property and life! Refer to Installation Planning - "Raw Water Considerations" to determine if a Vented Loop is needed!

11

Test Toilet

BEFORE permanently attaching the toilet:

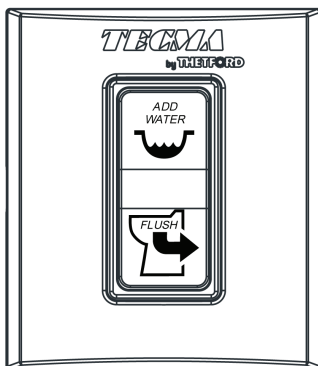
- Flush the toilet to check toilet operation.
- Verify no leaks; correct as needed.
- Permanently insert (K4) and (K5) into wall.



1. Caulk along inside of trace line.
2. Place (1); insert (2) into floor; secure.
3. Caulk around (1) base.

! Caution! Seal with silicone or latex base sealant. Do not use Polysulfide base sealants that can damage plastic.

Operation



The ECO Rocker switch has two operation modes : "Add Water" (before use) and "Flush " (after use) to be respectively activated by keeping pressed the upper or lower switch. The functions are clearly indicated on the switch.

The "Add Water" function adds water in the bowl as long as the upper button is kept pressed. The "Flush" function (after use) together activates the macerator pump and adds water inlet during the flush as long as the lower button is kept pressed.

Maintenance

Cleaning

Use only non-abrasive, non-petroleum products to clean the pump. Thetford's Aqua-Clean is a non-abrasive, all-purpose cleaner specially formulated to be safe for all components of your toilet system.

Never use household cleaners, which can contain bleach, in the toilet system. Household toilet bowl cleaners contain harsh acids. Bleach, petroleum-based products, strong acids and abrasives can cause irreversible damage to the toilet system and components.

Winterizing

Use only propylene glycol based, non-toxic antifreeze when storing toilet during freezing conditions. Never use automotive antifreeze or windshield washer solvent to winterize.

Make sure that both the entire supply and discharge systems are thoroughly winterized to ensure complete protection for your system.

Tissue

To facilitate flushing, it is recommended that you only use toilet tissues specifically designed to disintegrate rapidly (unlike household tissues), such as Thetford's Aqua-Soft® (2-ply) and RV/Marine Toilet Tissue (1 ply).

Troubleshooting

PROBLEM	CAUSE	ACTION/SOLUTION
Toilet does not flush or flush performance is poor	Waste tank is full	Empty waste tank before continuing to use toilet.
	Clog at pump inlet	Clear clog. DO NOT flush foreign objects.
	Solid object in macerator	DISABLE power. Attempt to remove object. If unsuccessful, contact Tecma Service (+39 0744 709071). DO NOT flush foreign objects.
	Low voltage	Check that toilet supply voltage is 12V+/-2V (24V+/-2V) AND that there is no more than a 10% decrease in voltage when macerator is running. If voltage decreases more than this, there may be a wiring problem in the boat.
Water does not enter bowl during flush or water add cycle	Water supply line kinked or not connected	Check that supply line is properly connected to fresh water supply. Check for kinks in the supply line.
	No power to water pump	Check that fuse/circuit breaker has not tripped. Ensure all electrical connectors to water pump are fully mated.
	Water supply has been turned off	Open water supply valves or reconnect power to supply pump.
	Solenoid not plugged into relay module (where applicable)	Ensure wiring harness to solenoid is fully connected.
Water continues dripping briefly into bowl after flush cycle is complete	Toilet is installed below water line with vented loop in water supply line	Normal operation – if only a small amount of water drips from nozzle.
Bowl drains dry after flush	Water is siphoning out of bowl due to discharge hose pulled down	Discharge hose (E) from macerator pump is pulled down. Straighten hose so that top of discharge hose is in line with toilet nozzle.

Warranty

- All TECMA finished products have a warranty of 2 years from the date of registration of the boat
- All TECMA replacement parts have a warranty of 2 years from date of purchase
- This warranty does not apply to products which have been subjected to misuse, negligence, accident, fire, improper repair, improper installation, or any other unreasonable use deviating from the manufacturer recommendations.

Warranty parts request

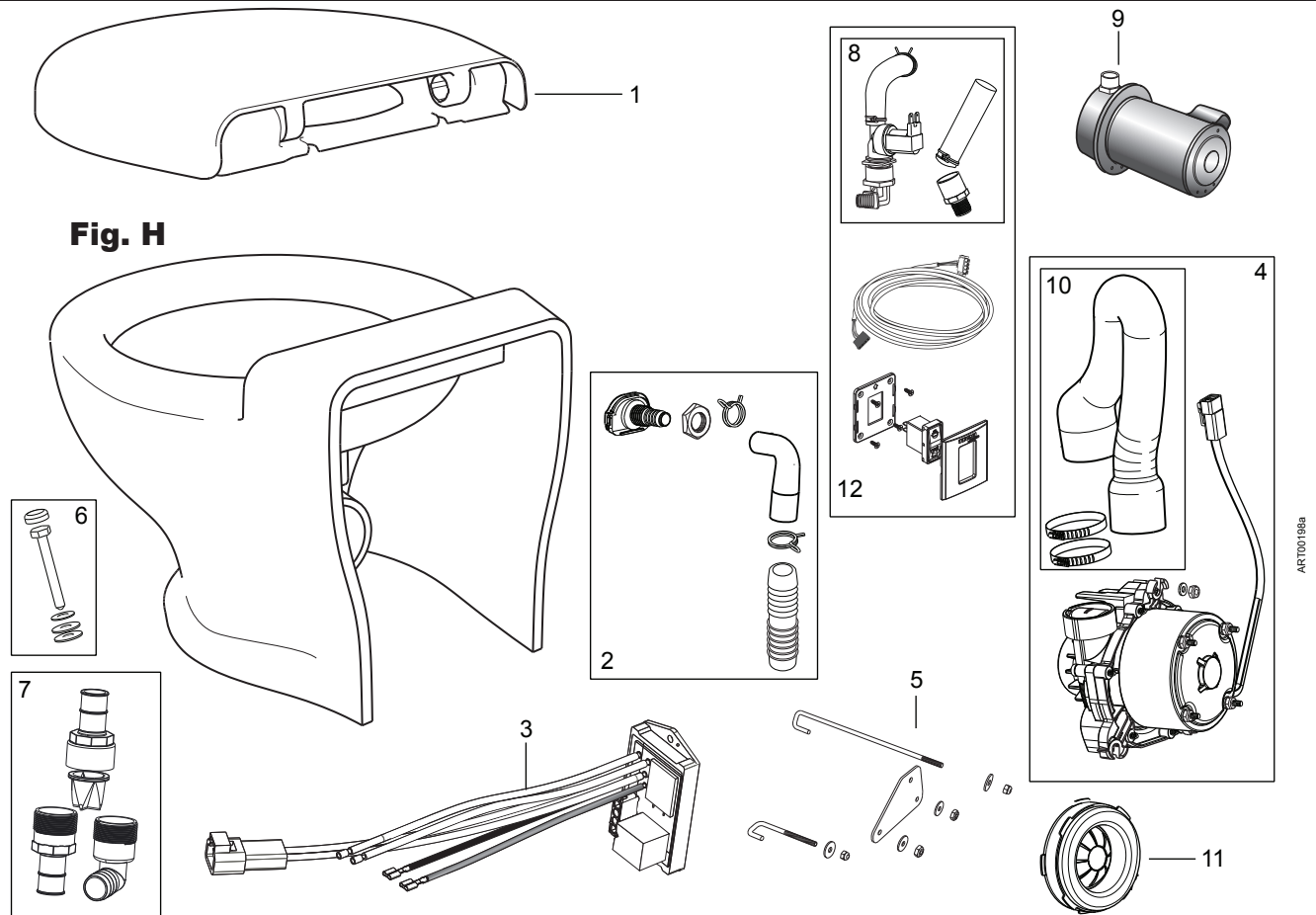
- Claims under warranty must be filed only through the authorized TECMA service centers .
- 1) Copy of the certificate of registration of the boat / purchase invoice
- 2) Brief description of the fault / problem
- The complete list of TECMA authorized service centers can be downloaded from our website www.thetfordmarine.com or can be obtained from our Customer service at the following contacts:

R.O.W.(rest of the world): info@tecma.eu / Tel. +39 0744 71 98 33

U.S.A.: 1-800-543-1219

NOTE: This Troubleshooting Guide is intended to provide a basic service aid in the case of incorrect toilet operation. If the suggested actions above do not resolve the issue, it may be necessary to bring unit in for professional service. Tecma Customer Service – +39 0744 709071 .

Service Kits



No./	Description
1	Seat & Cover
2	Inlet Nozzle Kit
3	Controller Eco
4	Motor Pump kit (S)
5	J-Bolt kit
6	Floor Mount Hardware
7	Lower Discharge Check Valve (Double Duck Bill)
8	Invensys Solenoid 12V/ 24V
9	Raw Water Pump 12V/24V
10	Short Discharge Tube Kit
11	Grommet
12	ECO Solenoid/Rocker Switch Kit
Not Shown	Raw Water Kit ECO