

Turf Boss 3-5 HP

The Turf Boss is designed for applications moving high volumes of water, such as timer-operated irrigation systems, commercial dewatering, residential water transfer, rainwater drainage, light agricultural irrigation, sump drainage, and industrial liquid transfer. A premium self-priming sprinkler pump, the Turf Boss is approved for indoor or outdoor operation through CSA and UL.



This product is covered by a limited warranty for a period of 1 year from the date of original purchase by the consumer. For complete warranty information, refer to www.FranklinWater.com.

Specifications

Pumps

Model	HP	Suction x Discharge (in)	Motor Enclosure	Phase	Volts
FTB3CI	3	2 x 2	ODP	1	230
FTB3CI-T				3	230/460
FTB3CI-E			TEFC	1	230
FTB3CI-TE				3	230/460
FTB3CI-T5E					575
FTB5CI	5	2½ x 2	ODP	1	230
FTB5CI-T				3	230/460
FTB5CI-E			TEFC	1	230
FTB5CI-TE				3	230/460
FTB5CI-T5E					575

Pump Ends

Model	HP	Suction x Discharge (in)	NEMA Motor Frame Size Fitment		
FTB3CI-PE	3	2 x 2	143-184JM	4.5 AK	.875" Shaft
FTB5CI-PE	5	2½ x 2			

SAFETY INSTRUCTIONS

This equipment should be installed and serviced by technically qualified personnel who are familiar with the correct selection and use of appropriate tools, equipment, and procedures. Failure to comply with national and local electrical and plumbing codes and within Franklin Electric recommendations may result in electrical shock or fire hazard, unsatisfactory performance, or equipment failure.

Know the product's application, limitations, and potential hazards. Read and follow instructions carefully to avoid injury and property damage. Do not disassemble or repair unit unless described in this manual.

Failure to follow installation or operation procedures and all applicable codes may result in the following hazards:

DANGER



Risk of death, personal injury, or property damage due to explosion, fire, or electric shock.

- Do not use to pump flammable, combustible, or explosive fluids such as gasoline, fuel oil, kerosene, etc.
- Do not use in explosive atmospheres or hazardous locations as classified by the NEC, ANSI/NFPA70.
- Do not handle a pump or pump motor with wet hands or when standing on a wet or damp surface, or in water.
- When a pump is in its application, do not touch the motor, pipes, or water until the unit is unplugged or electrically disconnected.
- If the power disconnect is out of sight, lock it in the open position and tag it to prevent unexpected application of power.
- If the disconnect panel is not accessible, contact the electric company to stop service.

WARNING



Risk of severe injury or death by electrical shock.

- To reduce risk of electrical shock, disconnect power before working on or around the system. More than one disconnect switch may be required to de-energize the equipment before servicing.
- Wire pump system for correct voltage.
- Be certain that this pump is connected to a circuit equipped with a ground fault circuit interrupter (GFCI) device if required by code.
- The pump includes a grounding connector. To reduce risk of electric shock, be certain that it is properly connected to ground.
- To avoid hazards when installing or servicing, install a double-pole disconnect near the pump installation.
- Use an appropriate discharge resistor to discharge the capacitor prior to working on the motor.
- Check local electrical and building codes before installation. The installation must be in accordance with their regulations as well as the most recent National Electrical Code (NEC) and the Occupational Safety and Health Association (OSHA), or Canadian Electrical Code (CEC).
- Employ a licensed electrician.

CAUTION

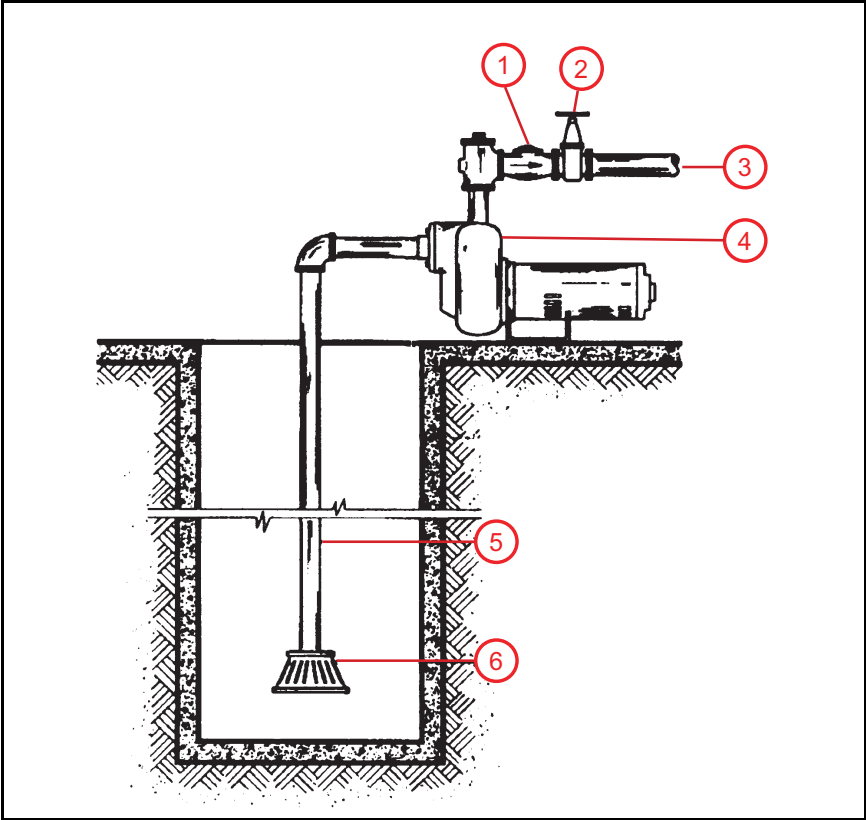


Risk of bodily injury, electric shock, or equipment damage.

- This equipment must not be used by children or persons with reduced physical, sensory or mental abilities, or lacking in experience and expertise, unless supervised or instructed. Children may not use the equipment, nor may they play with the unit or in the immediate vicinity.
- Do not run the pump dry. If run dry, the surface temperature of the pump will rise to a high temperature that could cause skin burns if touched and will cause serious damage to your pump.
- Equipment can start automatically. Lockout-Tagout before servicing equipment.
- The pump has been evaluated for use with water only. Pump should only be used with liquids compatible with pump component materials.
- An inoperative or malfunctioning pump could lead to flooding, resulting in personal injury or property damage.
- Pump may become hot during operation. Allow pump to cool before servicing.
- Operation of this equipment requires detailed installation and operation instructions provided in this manual. Read entire manual before starting installation and operation. End User should receive and retain manual for future use.
- Keep safety labels clean and in good condition.
- Keep work area clean, well-lit, and uncluttered.
- Wear safety glasses while installing or performing maintenance on the pump.

INSTALLATION

Typical Installation



1	Check Valve	3	Discharge	5	Suction Line
2	Gate Valve	4	Pump	6	Strainer

Pump Location

- Install the pump in a clean, dry, and ventilated location shielded from direct sun and precipitation.
- Provide adequate room for future servicing, protection from freezing temperatures, flooding, and equipment drainage.
- Bolt unit down evenly on a good foundation, preferably concrete, to prevent unnecessary stresses from pump movement.
- Install as close as possible to water source to minimize suction piping length.

Piping Instructions

- Properly support all suction and discharge piping to avoid strain on the pump.
- Piping should match the pump inlet and outlet connection sizes.
- For long runs, increase connections by one pipe size.
- Use pipe thread sealant.
- Avoid the use of unions on the suction line if possible. All suction line connections must be airtight.
- Do not over-tighten piping connections.

Suction Line

Suction Lift Applications

NOTE: The total suction lift should not exceed 25 feet.

1. Install a new, clean pipe or hose.
 - Make sure piping rises vertically or is sloped continually upward from the water source to the pump inlet connection.
 - Check that there are no high spots that cannot be evacuated of air during the priming process.
2. Install a strainer at the end of the suction line.
 - Ensure the strainer remains well submerged at all times.

Discharge Line

1. Tighten the discharge pipe, using an opposing pipe wrench on the pump discharge.
2. Install a check valve.
 - All discharge piping must have a pressure rating capable of withstanding the incoming inlet pressure plus the pump's maximum shut-off head pressure.

IMPORTANT: Do not operate the pump under a no-flow/shut-off head condition.

Electrical Connections

WARNING



Risk of severe injury or death by electrical shock.

- To reduce risk of electrical shock, disconnect power before working on or around the system.

1. An electrician should be employed to do the wiring.
2. Provide a separate circuit from the distribution panel to the pump unit, properly protected with a fuse or circuit breaker.
3. Install a proper fused disconnect switch in the line. Make sure the correct gauge of cable is used to carry the load.

IMPORTANT: Undersized wire between the motor and the power source will adversely limit the starting and load carrying abilities of the motor.

4. Wire the motor according to the motor nameplate to achieve clockwise rotation when viewed from the motor end.
 - Very long leads will require a larger cable.
 - If needed, remove motor end compartment for viewing.
5. Make sure the insulated green or bare ground wire is securely connected to the green ground terminal screw on the motor terminal board.

6. For 3-phase motors, install a separate manual thermal overload switch or a magnetic starter with proper size heater elements.
 - Failure to provide proper overload protection to the motor will void any warranty.

OPERATION

⚠ WARNING



Risk of severe injury or death by electrical shock, high temperatures, or pressurized fluids.

- To reduce risk of electrical shock, disconnect power before working on or around the system.
- Do not continuously run pump against closed discharge. Release all system pressure before working on any component.

NOTICE

Risk of damage to pump or other equipment.

- Do not let the unit run dry (without liquid). It is designed to be cooled by pumping fluid. The seal may be damaged and the motor may fail if the pump is allowed to run dry.
1. Prime the pump.
 - Remove priming plug.
 - Pour water into the priming port.
 - Fill the pump and suction line with water.
 - Rotate motor shaft to let air in casing escape.
 - Refill at the priming port and replace priming plug.
 2. If installing a 3-phase motor, check pump rotation by turning on power for a second.
 - The impeller must rotate in a counterclockwise direction while facing the pump from the front of the casing.
 - If direction is wrong, interchange any two of three wires either at the motor or starter.
 3. Start the pump.
 4. Gradually open the discharge valve to the halfway point.
 - If the pump does not deliver water within seconds, stop the motor and prime pump again.
 - Several starting attempts may be necessary to expel all air from the pump and suction lines.
 5. Once the pump is fully functioning, completely open the discharge valve and a system outlet.

MAINTENANCE

WARNING



Risk of severe injury or death by electrical shock.

- To reduce risk of electrical shock, disconnect power before working on or around the system.

NOTE: For replacement parts, consult the catalog available on www.FranklinWater.com.

- Check the pump periodically for loose or rubbing parts.
- Service immediately if any unusual noise, leaks, or vibrations develop.
- Drain the pump should it be subjected to freezing temperatures.

Draining the Pump

Drain all piping and water tanks exposed to freezing conditions.

1. Remove the pipe plug from bottom of pump case.
2. Allow the water to drain.
3. Install the pipe plug to the pump case.

Disassembly

1. Shut down system and lock out power.
2. Allow pump components to adequately cool.
3. Drain the pump. Refer to [“Draining the Pump” on page 6](#).

Pump Shaft Disassembly

1. Unbolt and remove the casing, laying aside the case gasket.
2. Take the diffuser and square ring off the volute.
3. Remove impeller and shaft key:

IMPORTANT: Beware of breaking the back side of the impeller.

- Remove the impeller bolt and washer.
 - Pry the impeller from the shaft. For corroded assemblies, flip the pump vertically and apply a penetrating oil to the impeller.
 - Remove the shaft key.
4. Spray the shaft sleeve with WD-40 and remove the rotating portion of the mechanical seal.
 5. Unbolt the motor adapter from the motor and remove.

IMPORTANT: Be sure not to damage the stationary part of the mechanical seal.

6. Gently tap the stationary part of the mechanical seal from the motor adapter using a flat-blade screwdriver and rubber mallet.
7. If necessary, remove the shaft sleeve and slinger.
 - Clean the shaft sleeve with 000 steel wool and WD-40.
8. Inspect disassembled components. Replace the worn parts with new during reassembly.

Pump Check Valve Disassembly

1. Unbolt and remove the check valve from the volute.
2. Loosen the nut and set aside.
3. Pull the bolt and set aside the flat washer, top weight, flapper, and bottom weight.

NOTE: The top weight is heavier, and sits on the pump side of the check valve.

4. Inspect disassembled components. Replace the worn parts with new during reassembly.

Reassembly

Pump Check Valve Reassembly

1. Insert the flapper bolt through bottom weight and flapper.
2. Add the top weight and flat washer to the bolt.
3. Screw on the nut.
 - Torque to 65 in-lbs.
4. Bolt the check valve assembly to the volute.
 - Torque to 20 ft-lbs.

Pump Shaft Assembly

1. Slide water slinger onto motor shaft.
2. Install the shaft sleeve onto motor shaft.
 - Apply Loctite 7649 primer to motor shaft and inside of shaft sleeve.
 - Apply a ring of green Loctite 648 retaining compound around the inside leading edge of the shaft sleeve and a line along the motor shaft.
 - Rotate the sleeve at least two times before fully seating the sleeve against shaft shoulder.
 - Wipe off excess lubricant.
 - Let stand 3 minutes.
3. Insert a new stationary portion of the mechanical seal into the motor adapter.
 - Ensure the bracket socket is clean before installation.
 - Lubricate seal and socket with P-80 lubricant to ease installation.
 - Do not contaminate the seal face.
4. Bolt the motor adapter to the motor.
 - Use Blue Loctite 243 on bolts.
 - Torque to 20 ft-lbs.

IMPORTANT: Be sure not to damage the stationary part of the mechanical seal.

5. Install the rotating portion of the mechanical seal onto the shaft sleeve so that the rotating ring sits against the stationary ceramic seal face.
 - Lubricate seal with P-80 lubricant to ease installation.
 - Do not contaminate the seal face.

NOTE: If there is a retainer on the seal spring, discard it.

6. Install the shaft key and impeller
 - Slide the shaft key onto the shaft.
 - Install the impeller with its washer and bolt onto the shaft.
 - Use Red Loctite 271 on the impeller bolt.
 - Torque the impeller bolt to 20 ft-lbs.
7. Ensure the impeller eye is perpendicular to the adapter flange.
8. Ensure the impeller spins freely.

MAINTENANCE
Troubleshooting

- 9. Place the square ring and diffuser on the volute.
- 10. Reposition the case gasket and bolt the volute to the motor adapter.
 - Use Blue Loctite 243 on bolts.
 - Torque to 20 ft-lbs.

Troubleshooting

Problem	Probable Causes	Corrective Action
Motor Fails to Start or Not Running	Motor thermal protector tripped	Correct cause for high amperage, such as low voltage or excessive pumping.
	Open circuit breaker or blown fuse	Check electric wiring and motor for short circuits and correct.
	Impeller binding	Remove pump case and check for debris.
	Motor improperly wired	Check complete suction line and all fittings for air leaks and verify foot valve has adequate submergence.
	Defective motor	Take to an authorized motor shop for repair or replacement.
Little or no discharge	Pump is not primed: air or gases in pumpage	Check suction line and foot valve for leaks. Make sure that water level has not dropped to uncover suction inlet. Prime pump.
	Discharge or suction plugged or valve closed	Clear obstructions from suction and discharge lines.
	Incorrect rotation (3-Phase only)	Interchange any two of three wires either at the motor or starter.
	Low voltage or phase loss	Correct incoming power to match motor nameplate requirements.
	Impeller worn or plugged	Clean or replace impeller.
	System head too high	Reduce system head (back-pressure on pump) or resize pump.
Low pump capacity or pressure	Excessive suction lift or losses, or NPSHA too low for the pump	Locate pump closer to the water source, increase pipe size or resize pump.
	Valves in suction or discharge lines partially closed	Open valves to reduce possible restrictions.
	Suction or discharge line partially plugged	Clear obstructions from discharge line.
	Wrong pump rotation	Correct to proper rotation.
Excessive power consumption	Impeller binding	Remove pump case and check for debris.
	Discharge head too low creating excessive flow rate	Close down discharge valve to increase pressure and throttle back flow rate.
	Fluid viscosity: specific gravity too high	Modify fluid properties or resize pump.
Excessive noise and vibration	Impeller binding	Remove pump case and check for debris.
	Pump is not primed: air or gases in pumpage	Check complete suction line and all fittings for air leaks and verify foot valve has adequate submergence.
	Discharge or suction plugged or valve closed	Clear obstructions from suction and discharge lines.
	Impeller worn or plugged	Clean or replace impeller.
	Excessive suction lift or losses. NPSHA too low for the pump	Locate pump closer to the water source, increase pipe size or resize pump.
	Discharge head too low, creating excessive flow rate	Close down discharge valve to increase pressure and throttle back flow rate.
	Worn bearing	Check bearing for damage and replace if necessary.
	Pump, motor, or piping loose	Verify all connections and mountings are secure and piping supported.
Water leakage at pump shaft	Defective seal assembly	Replace seal.



For technical assistance, parts, or repair, please contact:

800.348.2420 | franklinwater.com

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