GC TEK

NishikigoiRDF-DRUM

Easy Startup & Gravity-Flow Installation Manual

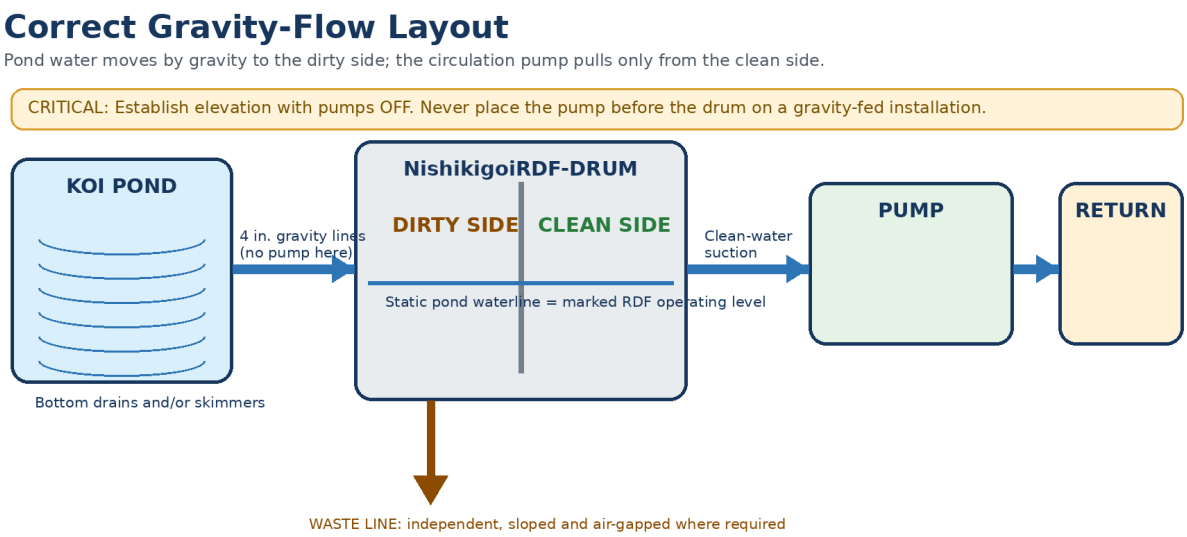
READ FIRST This quick-start guide covers the common gravity-fed arrangement. Confirm the exact model's inlet/outlet sizes, maximum flow, operating water level, electrical requirements, and controller settings before installation.

Owner / site _____

RDF model / serial _____

Installer / startup date _____

1. The installation in one picture



THE ONE RULE TO REMEMBER With all pumps OFF, the pond and the RDF seek the same static water level. Set the RDF elevation so that this level aligns with the operating-water-level mark for the exact model.

Water path

1. **Gravity in:** Bottom drains and/or skimmers feed the dirty side of the drum through large, continuously rising or level gravity lines.
2. **Screening:** Water passes through the drum screen from the dirty side to the clean side.
3. **Pump out:** The circulation pump draws from the clean-water outlet and sends water to biological filtration, UV, waterfalls, jets, or other returns.
4. **Automatic cleaning:** As the screen loads, the controller rotates the drum and activates the spray system. Collected solids leave through the separate waste line.

2. Before you install

Safety and site requirements

- Use a qualified electrician. Provide the voltage, circuit protection, GFCI/RCD protection, grounding, disconnect, and weather protection required by the equipment labels and local code.
- Keep the controller, plugs, junctions, and motors dry and accessible. Never handle electrical equipment while standing in water.
- Support the RDF on a rigid, flat, level, non-settling base sized for the unit when full of water.
- Provide safe access to the lid, screen, drive, sensors, spray nozzles, waste trough, valves, and controller.
- Plan overflow and drainage so a leak or cleaning cycle cannot flood the equipment area or discharge untreated pond water into a prohibited location.
- Isolate power before opening covers, reaching into the drum, servicing the drive, or cleaning spray components.

DO NOT Do not lift the unit by plumbing, controller, spray manifold, motor, lid, or fittings. Do not run the circulation pump dry. Do not operate the RDF with guards or covers removed.

Verify before plumbing

Item	Confirm	Recorded value
Model rating	Maximum system flow and pond application	
Connections	Dirty inlets, clean outlets, waste, spray supply	
Water elevation	Manufacturer's marked operating water level	
Power	Controller, motor, spray pump and circuit	
Discharge	Approved waste destination and drain capacity	

3. Set the RDF elevation correctly

1. **Establish the true pond waterline:** Fill the pond to its intended normal operating level. Shut off every circulation pump and allow the water to stop moving.
2. **Find the RDF operating-level mark:** Use the exact model's label, drawing, or full manual. Do not use the top of the tank, a pipe centerline, or another model as the reference.
3. **Transfer the elevation:** Use a laser level, builder's level, or water level to transfer the pond's static waterline into the equipment area.
4. **Set and level the RDF:** Raise or lower the rigid base until the transferred pond waterline matches the model's operating-level mark. Level the unit front-to-back and side-to-side.
5. **Recheck after plumbing:** Pipe weight must be independently supported. Recheck the cabinet level and waterline after all connections are made.

WHY THIS MATTERS Too high or too low an elevation can reduce gravity flow, expose the screen, flood the waste trough, cause repeated cleaning, allow a low clean-side level, or make the pump draw air.

Elevation record

Pond static water elevation / benchmark: _____

RDF operating-level reference used: _____

Final cabinet level checked by: _____

Date: _____

4. Plumb the gravity-fed system

Dirty-water inlets

- Connect bottom drains and skimmers to the ports identified as DIRTY INLET on the exact model. Verify labels and internal flow path before gluing pipe.
- Use the specified pipe diameter; 4-inch lines are common for gravity-fed koi pond circuits, but the approved size and number depend on model flow and system design.
- Use long-radius fittings and minimize elbows, restrictions, high spots, and unnecessary elevation changes.
- Install a full-port isolation valve on each incoming circuit, close to the RDF and accessible for balancing and service.
- Provide cleanouts or purge provisions on long bottom-drain lines. Pressure-test piping before concealing it.

Clean-water outlets and pump

- Connect the circulation pump only to the RDF clean side. The pump must not push dirty pond water into a gravity-fed drum.
- Size the suction manifold for low velocity and balanced withdrawal when multiple clean-side outlets are used.
- Install service unions and isolation valves without creating a trap that starves the pump. Support all pipe independently.
- If the pump can exceed the gravity-feed capacity or the RDF model rating, limit flow with proper pump selection, speed control, or a valve on the pump discharge - never by throttling pump suction.

Waste and cleaning-water piping

- Route the waste outlet independently to an approved drain or collection point. Maintain continuous fall and adequate capacity for the cleaning discharge.
- Do not combine the waste line with the pump suction or pond return. Prevent backflow or siphoning; use an air gap where required by code.
- Connect the spray pump or water supply exactly as shown for the model. Keep strainers accessible and verify that every spray nozzle is aimed at the screen.

5. Pre-start inspection

☐ RDF cabinet is solidly supported and level in both directions.

☐ Pond static waterline matches the correct model's operating-level mark.

☐ Every port has been positively identified: dirty inlet, clean outlet, waste, spray supply and overflow (if equipped).

☐ Gravity lines are flushed; construction debris, glue, stones and string algae have been removed.

☐ Inlet valves are open for the circuits being started; unused ports are securely capped.

☐ Pump suction and discharge valves are in the correct start position; pump and downstream filters are ready.

☐ Waste trough and waste pipe are clear and able to drain freely.

☐ Drum rotates freely by the approved manual procedure; drive and screen show no shipping damage.

☐ Spray nozzles, spray manifold, strainer and pump are connected and clean.

☐ Water-level sensor/float moves freely and is installed in the correct orientation.

☐ Controller, motor and spray pump match the labeled voltage and are protected and grounded.

☐ Covers and guards are installed; tools and hands are out of the unit.

STOP IF A port is uncertain, the waterline reference is unknown, the unit is not level, the waste cannot drain, wiring does not match the labels, or the drum binds. Correct the condition before energizing.

6. First startup - follow this order

1. **Power OFF:** Keep the RDF controller, spray pump and circulation pump off.
2. **Fill by gravity:** Slowly open one gravity inlet valve. Allow the RDF dirty and clean chambers to fill and equalize with the pond. Check every joint for leaks.
3. **Open remaining inlets:** Open additional gravity circuits one at a time. Purge trapped air and debris using the system's cleanout procedure.
4. **Prime the circulation pump:** Confirm the pump suction is flooded and the downstream path is open. Follow the pump manufacturer's priming instructions.
5. **Start circulation at low flow:** Start the circulation pump at its lowest practical flow. Watch the clean-side water level; it should remain stable and must not fall enough to pull air.
6. **Energize the RDF:** Turn on the controller and spray system. Use the controller's manual-clean function to observe one complete rotation/cleaning cycle.
7. **Verify the cleaning cycle:** Confirm drum rotation, spray coverage, free waste discharge, correct sensor response, no abnormal noise, and no water escaping from unintended locations.
8. **Increase flow gradually:** Raise pump flow in small steps. Pause after each change. Stop increasing if the clean side falls excessively, cleaning becomes nearly continuous, or the system approaches the model's rated flow.
9. **Set normal pond level:** With the system running, set the pond's refill control to maintain the intended operating level. Recheck the static level again with pumps off.
10. **Observe:** Remain with the system through several automatic cleaning cycles and inspect again after 15 minutes, 1 hour and 24 hours.

NORMAL FIRST-DAY BEHAVIOR A new or dirty pond may trigger frequent cleaning while accumulated solids are removed. Frequency should settle as the pond clears. Near-continuous cleaning is a fault condition to investigate.

7. Commissioning record

Measurement / check	Target or method	Recorded result
Pond static level, pumps OFF	Matches marked RDF operating level	
RDF level	Front/back and side/side	
Pump operating flow	Within RDF model rating	
Clean-side drawdown	Stable; no vortex or air entry	
Automatic clean trigger	Sensor initiates correct cycle	
Drum rotation	Smooth; correct travel/direction	
Spray pattern	All nozzles clear and aligned	
Waste discharge	Free, fast, no backup	
Cleaning frequency after 24 h	Record cycles per hour	
Leaks / abnormal noise	None	

Final handoff

Installer name / company: _____

Installer signature: _____

Owner acceptance: _____

Date: _____

8. Quick troubleshooting

Symptom	Likely causes	Check first
Clean side runs low	Pump flow exceeds gravity supply; inlet valve shut; gravity line blocked/airlocked; pond level low	Reduce pump discharge flow; verify pond level and inlet valves; purge/inspect each gravity line.
Pump draws air	Low clean-side level; vortex; undersized or restricted suction; leak before pump	Stop pump; restore flooded suction; correct flow and suction layout before restarting.
Cleans continuously	Heavy solids load; screen blinded; spray weak; sensor stuck/mis-set; excessive flow or wrong elevation	Reduce flow; inspect screen, sensor, spray pressure/nozzles, waste and static elevation.
Will not clean	No power; controller mode; sensor fault; drive jam; spray pump/valve fault	Isolate power before inspection; verify labeled power and controller status; use only approved manual test.
Waste backs up	Blocked, undersized or uphill waste line; receiving drain full	Stop automatic operation if overflow is possible; clear and correct the waste path.
Water leaks into waste	Wrong elevation; waste trough overflow; drum/seal issue; blocked waste	Check static waterline and cabinet level first, then inspect trough, seals and discharge.
Abnormal noise	Debris in drum/trough; drive alignment; dry pump; loose support	Shut down and isolate power. Do not continue until the cause is found.

SERVICE NOTE Before requesting support, record the model, serial number, pond level with pumps off, pump flow, controller indication, cleaning frequency, and clear photos/video of the plumbing and symptom.

9. Owner's daily and weekly checks

Daily - 30 seconds

- Look and listen for normal water levels, drum rotation and spray sound.
- Confirm the waste is draining and there are no leaks or alarms.
- Check the pond level and verify the pump is not drawing air.

Weekly

- Inspect and clean the spray-water strainer as required.
- Observe the entire screen and every spray nozzle during a manual clean.
- Remove string algae or debris only with power isolated and according to the full manual.
- Inspect the waste trough, sensor/float, drive area, seals and pipe supports.
- Record cleaning frequency; a sustained change is an early warning of flow, spray, screen or pond-load problems.

Use only approved service procedures

- Do not pressure-wash, acid-clean, bleach, lubricate, adjust, or disassemble components unless the exact model manual authorizes the method.
- Do not bypass safety devices or alter controller settings to mask a hydraulic or installation problem.
- Keep this quick-start guide with the model-specific manual, wiring diagram and warranty information.

TECHNICAL REVIEW REQUIRED BEFORE PUBLICATION GC Tek should insert the exact model table for flow ratings, connection sizes, operating-water-level dimensions, controller settings, spray-water requirements, and contact/warranty information. Those values are intentionally not generalized in this guide.

Support record

Dealer / installer: _____

Phone / email: _____

GC Tek support contact: _____

Warranty registration / reference: _____