TROUBLESHOOTING COMMON ISSUES
CENTRIFUGAL PUMPS AND CONTROLS
Troubleshooting Common Issues - Centrifugal Pumps and Controls

This guide was developed to assist you in troubleshooting common centrifugal pump issues for small turf and irrigation applications (5hp and below). If you need additional assistance, please contact Munro at 1.800.942.4270 or contact your local irrigation wholesaler.

Common Issues

“My pump is running, but the sprinklers are not acting normal.” See Reduced Performance (pg. 4)

“The pump is running, but there is no water coming out.” See Pump Runs But No Water (pg. 5)

“The water comes out, then goes away. Then it comes out…” See Pump Surging/Flow Cycles (pg. 6)

“The motor just sits there and hums.” See Motor Hums (pg. 7)

“When I turn the pump on, nothing happens.” See Motor Does Not Run At All (pg. 8)

“The pump runs for a little while and then stops and then starts again.” See Motor Cycles and/or Nothing Happens (pg. 9)

“Nothing is happening. I have a pump start relay.” See StartBox (pg. 10)

“My pump runs for 30 seconds and shuts off and does not restart.” See SmartBox (pg. 11)

Evaluating the System

1. Have there been any changes to the system environment?
   a. New fencing – Possible damage to pipework
   b. Added zones – Pump is now undersized
   c. Aeration or animals – Possible damage to sprinkler heads or pipework
   d. Water source – Lower levels than usual

2. Look for obvious problem areas
   a. Leaking from case or seal area
   b. Cracked or worn components
   c. Clogged filters or screens
   d. Damaged gaskets in camlocks and o-rings

3. Determine the primary issue
   a. Reduced Performance (pg. 4)
   b. Pump Runs but No Water (pg. 5)
   c. Pump Surging/Flow Cycles (pg. 6)
   d. Motor Hums (pg. 7)
   e. Motor Does Not Run (pg. 8)
   f. Motor Cycles (pg. 9)
   g. Munro StartBox (pg. 10)
   h. Munro SmartBox (pg. 11)

Safety Precautions

• Remember when using any tool, refer to the manufacturer’s guidelines for proper use.
• ALWAYS turn the breaker off to work on a pump. Some troubleshooting checks require the pump to be energized, be sure the area is secure prior to the task. Be sure to turn the breaker off again if problem persists.
• NEVER examine, make wiring changes, or touch the motor before disconnecting the electrical supply. Thermal overload protectors automatically reset and can close the electrical circuit without warning.
How To

Check Volts Entering Pump

While the motor is running, use a voltmeter to determine if line voltage getting to the motor is the same as indicated leaving the breaker box.

Check for Air Leaks Using Plastic Wrap

Wrap plastic wrap tightly around a potential air leak path (union joint or cam fitting), turn pump on. If an air leak exists, the plastic wrap will tighten to the area.

Clear Centrifugal Switch

Debris can get caught in the centrifugal switch inside the motor. A soft hammer or 2x4 board can be used to firmly tap the butt of the motor. After three or four taps, try to engage the motor. If necessary, repeat.

Access the Wrench Slot

Check the motor shaft for a slot to fit an open-ended wrench. This can aid in diagnosis and tear-down/assembly procedure.

Tear Down and Reassembly of a Pump, Including to Replace a Seal or Clean the Impeller

Refer to the Owners Manual for instructions on tearing down the pump to replace the seal, clean the impeller, or access the inside of the pump for any reason. Visit our YouTube channel for instructional videos: www.youtube.com/users/munrocompanies

Tools You May Need

- Soft faced hammer or 2x4 board
- Thin profile wrench – 9/16 and 5/8
- Wrench or socket set
- Voltmeter
- Pry bar
- Flathead screwdriver
- Plastic wrap
- Lubricant
- Pipe wrench

Possible Replacement Parts

- Gasket: case, diffuser, cam fitting
- Mechanical shaft seal
- Union o-rings

Did You Know?

80% of all pump issues are on the suction side.
Did You Know?
You cannot always find a suction leak by pressurizing a line. Air can seal under pressure but will enter pipe in a vacuum.

Troubleshooting Guide - Reduced Performance

Has anything in the system environment changed?

- Yes
  - Was it fencing, aeration, animals or something similar?
  - B

- No
  - Refer to “Pump Runs but No Water” troubleshooting guide. (pg. 5)

A

Check the pipework for damage or breaks. Repair if needed. Is the performance better?

- Yes
  - Pump works.
  - D

- No
  - Is there a change to the water source?

  - Yes
    - Refer to “Pump Surging” troubleshooting guide. (pg. 6)

  - No
    - Refer to “Pump Runs but No Water” troubleshooting guide. (pg. 5)

B

C

D

P

Refer to your pump’s performance curve. You may need to replace the pump. If the pump is appropriate for the system, refer to “Pump Runs but no Water” troubleshooting guide. (pg. 5)
**Troubleshooting Guide - Pump Runs but No Water**

**Did You Know?**
Cam fittings are best used with the handles to the top and bottom. It reduces the chance of leaking from the weight of the hose.

1. **Is your pump primed? (is it filled with water?)**
   - **Yes**
     - Check to make sure the valves are open. Does the water flow now? A
       - **Yes**
         - Pump works.
       - **No**
         - Check the suction assembly for air leaks (tip on pg. 3) and repair/replace if needed. Does the water flow now? E
           - **Yes**
             - Pump works.
           - **No**
             - Check/ clean impeller for debris. Does the water flow now? B
               - **Yes**
                 - Pump works.
               - **No**
                 - Contact qualified service repairman.
2. **No**
   - Fill the case with water. Does the water flow now? B
     - **Yes**
       - Pump works.
     - **No**
       - Check suction assembly for air leaks (tip on pg. 3) and repair/replace if needed. Does the water flow now? E & D
         - **Yes**
           - Pump works.
         - **No**
           - Check foot valve, filter and strainer for debris. Does the water flow now? C
             - **Yes**
               - Pump works.
             - **No**
               - Check/ clean impeller for debris. Does the water flow now? B
                 - **Yes**
                   - Pump works.
                 - **No**
                   - Contact qualified service repairman.

*Refer to the pump Owners Manual for tear down and reassembly instructions.*
**Troubleshooting Guide - Pump Surging (Flow Cycles)**

*Did You Know?*
Union joint O-rings and cam fitting gaskets should be inspected or replaced every year or two. O-rings and gaskets can harden over time and become brittle, causing air leaks.

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**Flow Cycles Troubleshooting Flowchart**

1. **Did You Know?**
   Union joint O-rings and cam fitting gaskets should be inspected or replaced every year or two. O-rings and gaskets can harden over time and become brittle, causing air leaks.

2. **Is this a new install or has something changed on the suction side of your pump?**
   - Yes
     - Check/replacement gaskets and unions for air leaks? (tip on pg. 2). Is the flow normal? E
       - Yes
         - Pump works.
       - No
         - Check the suction assembly for air leaks and repair or replace if needed (tip on pg. 2). Is the flow normal? D
           - Yes
             - Pump works.
           - No
             - Contact qualified service repairman.
   - No
     - Check the level of the water source. Is the foot valve fully submerged? A
       - Yes
         - Pump works.
       - No
         - Contact qualified service repairman.

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*Refer to the pump Owners Manual for tear down and reassembly instructions.*
**Troubleshooting Guide - Motor Hums**

**Did You Know?**
To avoid an unnecessary trip, try jostling any debris inside the pump free before bringing your pump to a repairman. (Tip on pg. 3 “Clear Centrifugal Switch”)

- **Yes**
  - While the pump is turned on check voltage at the motor & with a voltmeter (tip on pg. 3). Is the voltage within 10% of breaker voltage?
    - Yes
      - Firmly tap built of motor 3-4 times with a soft-faced hammer or 2x4 to jostle free debris. Does the pump turn over?
        - Yes
          - Pump works.
        - No
          - Take the pump to a motor shop for diagnosis.
    - No
      - Call an electrician to troubleshoot wiring.

- **No**
  - With a wrench in the wrench slot on the shaft, does the shaft spin freely?
    - Yes
      - Does the pump run now?
        - Yes
          - Pump works.
        - No
          - Remove housing and diffuser to clean. Reassemble. Does the pump run now?
    - No
      - Now that the impeller is free, go to the top question and begin again.

* Refer to the pump Owners Manual for tear down and reassembly instructions.
Did You Know?
A motor may start with low voltage but cannot maintain running at low voltage. It will eventually wind down to a stop or burn the winding’s insulation.

Check the breaker. Is it on? T

Yes
While the pump is turned on, check voltage at the motor with a voltmeter (tip on pg. 3). Is the voltage within 10% of breaker voltage? B & T

Yes
Take motor to motor shop for diagnosis.

No
Call electrician to troubleshoot wiring.

Yes
Motor works. Is the pump working?

Yes
Pump works.

No
Refer to "Pump Runs but No Water" troubleshooting guide. (pg. 5)

Yes
Take motor to motor shop for diagnosis.

No
Call electrician to troubleshoot wiring.

Did You Know?
A two-pole motor with 60 cycle current will run at a nominal 3600 RPM.

Note: For systems without a pump start relay, also see pg. 9. For systems with a pump start relay, also see pg. 10.
Did You Know?
A capacitor start motor has an average of 1.5 times more torque during the start process.
Troubleshooting Guide - StartBox

Did You Know?
A pump start relay can be signaled by a float switch.

Note: Start/Stop signals include, but not limited to, float switches, HOA’s, timers etc.

Note: The StartBox & SmartBox troubleshooting guides do not apply to 2-wire decoder systems.
Troubleshooting Guide - SmartBox

* Turn the time delay down to 5 seconds. Next, cross the red and blue wire. The “on” light should turn on. After 5 seconds the system should shut off and both the “on” and “up” lights should be on.

Note: Filling system lines may require multiple run cycles to build enough pressure to initiate the sensor.