

# MART Trouble Shooting Procedure: Pump Over Loading – Amps too high

## Checklist of possible Causes for Pump Motor Over-amping & Tripping overload

### **Step 1: The first group of task can all be checked with out disassembly**

1. Verify your solution concentration and sludge level are at the correct levels. Further issue with solutions are :
  - High viscosity wash solution
  - High specific gravity wash solution - High chemical concentration can cause high specific gravity or high viscosity wash solution. Change out wash solution.
2. Inspect and verify the following electrical components and settings:
  - Low voltage to machine. Measure voltage and compare to design voltage.
  - Amp reading wrong – meter is not calibrated – verify meter on known load or make measurements with another meter as a back-up reference
  - Overload trip setting is not adjusted to the standard set-point
  - Electrical service capacity inadequate- indicated by 8% or more voltage sag between static voltage and running voltage
  - Electrical connections loose
  - Overload is weak from repeated tripping – If overload trips when amp draw readings indicate that it should not the overload should be replaced
3. Inspect the pump and motor for:
  - Wrong motor size on pump
  - Motor bearings defective and binding
  - Pump throttle bushing or impeller is rubbing and causing excessive friction – should spin freely by hand when fully assembled in machine, you should feel no binding or excessively rough spots while rotating pump/motor coupling by hand. Pump rubbing or binding can be caused by pipe strain – the piping was too short or re-installed in a manner that pulls the pump casing and binds the pump.

### **Step 2: Further trouble shooting will require some disassembly**

1. To test the system first replace 4 nozzles ( for 16 or 20 nozzles manifold) or 5 nozzles (for 24 nozzles manifold) with ¼” npt plugs and take an amp reading (If this doesn't decrease your reading drastically please notify a MTS technician.) if this decreases your amps reading to near operating specs could indicate that:
  - Nozzles worn – replace nozzles
  - Verify your manifold cleanout plugs are installed on the two horizontal arms.
  - Wrong nozzle sizes – replace with correct size
  - Wrong number of nozzles- make sure only the specified number of nozzles are being used
  - Missing nozzle or nozzles – replace or plug unused openings
  - Missing clean out plugs in ends of manifold arms
2. Plug all nozzles and run pumping system. (Allow the washer to cool to room temperate and wear a face shield, apron, and gloves during this test) contact MTS for further assistance.
3. Nozzles leaking, not threaded properly
4. Swivel leaking at packing
5. Union leaking, flanges leaking, gaskets missing
6. Piping connection to pump leaking

### **Step 3: Remove the motor & pump/disassemble per the instructions in the pump manual and check**

1. Wrong impeller trim – measure impeller diameter and contact MTS.
2. Excessively worn pump throttle bushing, impeller, and suction head - replace if standard tolerance is exceeded per the pump manual
3. Pump bearings worn out and rubbing
4. Motor windings bad. Have electric motor service center test windings – do mega-ohm test.
5. Electrical voltage imbalance on the incoming power between the different phase legs
6. Motor wired wrong – has motor been disconnected and reconnected? Did problem begin after reconnection?



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If you have tried the checklist steps 1 & 2 and can not determine the cause of the over-amping please complete the following information to allow MART Tech Services to provide you help.

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Company: \_\_\_\_\_

Machine Serial Number: \_\_\_\_\_

Email address: \_\_\_\_\_

1. Count wash pump nozzles.
2. Measure incoming voltage with pumps off and with pumps running
3. Measure amp draw on each leg
4. Read and report motor nameplate data – HP, FLA and SFA

Total Number of nozzles	
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Voltage Static machine off	Leg 1=	Leg 2 =	Leg 3 =
Voltage Running – all pumps running	Leg 1=	Leg 2 =	Leg 3 =
Amp Draw – Main pump	Leg 1=	Leg 2 =	Leg 3 =
Amp Draw Booster pump	Leg 1=	Leg 2 =	Leg 3 =

Motor Name plate Data	Horsepower	Full Load Amps (FLA)	Service Factor
Main Pump			
Booster/suction pump			

1. When did you first notice the problem?
2. Did problem appear suddenly or has the overload tripping progressed from a nuisance to a constant repeatable problem?
3. Are fuses blowing instead of overloads tripping?
4. How many times has the overload tripped?
5. How long does it take for the overload to trip?
6. Does it trip every wash cycle or only after a long period of running?
7. When was the last time your solution was changed?
8. What type of chemical are you using? What is the concentration? How are you monitoring the concentration?

**FAX Form to MART Tech Services at 314-567- 6318**



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