TROUBLESHOOTING PLANT & EQUIPMENT

1500 SERIES MEDIA PLANTS & ALL OTHER MODELS

- The 1500 gpd series includes 500, 750, 1000, 1250 & 1500 gpd plants.
- With a few exceptions, this literature covers every plant Jet has produced.
- Where an asterisk ✱ appears in the copy before page 9, it indicates that the asterisked copy applies to the current Jet BAT® media plants as well as other models.

✱ Jet has the largest selling home plant in the country for one good reason – very few problems! 99 out of 100 JET® installations will work perfectly. But nothing is perfect all the time and JET® Plants are no exception. However, remember the problems outlined here occur only on a very, very small percent of a distributor's total installations. The majority of problems can be corrected or prevented with proper installation & service.

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✱ When Owner Calls

- ☐ Ask owner to describe his problem fully—get all details.
- ☐ Determine plant age and service history from your "Installation & Service Record" card.
- ☐ If owner does not have an inspection / service policy, recommend he take one out. Let him know if he takes one out that this call will be the first call on new policy and he will not be charged. Also, let him know he will be charged if he does not take one out.

✱ Troubleshooting Sequence

If a plant has a problem, nature gives an immediate safety warning – it smells! The smell is actually a benefit in disguise, because it not only notifies the owner that a problem exists, but also gives him a strong incentive to have it corrected immediately. Before taking any corrective action with the plant, always positively identify the real source of the odor.

- ☐ First perform all steps in a routine maintenance call, as described in the Notebook sheet "Plant Inspection & Service." If plant has not been maintained properly, going thru these steps may well eliminate the problem.
- ☐ Check to see if the odor comes from a neighbor's septic tank or absorption field. If it does, ask your customer to notify his neighbor of problem. Also check if the odor is coming from another outside source such as storm sewer or collection tile that has a septic tank discharging into it.
- ☐ If normal servicing does not solve the problem, go through "Installation" steps listed below. Next work through steps in "Treatment," "Electrical", "Mechanical" and other sections here. Do not stop when you correct one problem. It may be only part of the overall picture. Check entire system for proper operation – this can save service calls later.
- ☐ Always note all service, inspections and repairs on plant's "Installation and Service Record" card. A plant history can be your greatest single troubleshooting aid in the future.

INSTALLATION ☑

✱ Odors from Roof Vents

- ☐ All wastewater disposal systems vent gases back through soil pipe and out roof vents. Improperly installed roof vents can cause odor problems. In some cases vents are not extended high enough above roof for odors to dissipate properly. Sometimes vents stop under roof overhangs and

trap odors. In these cases recommend that owner have vents carried through overhang above roof level. If this does not correct problem all roof vents should be extended higher.

* Odors from Basement Drains

☐ Traps in basement and other drains prevent odors from entering house. To function they must contain water. If traps are dry, run water into them. If odors still escape from traps with water in them, recommend that owner install new traps.

* Water Softener Backwash

☐ Water softener backwash must not be routed through plant. Backwash can cause chemical and biological imbalance in plant by upsetting pH (acidity) and destroying bacteria vital to the treatment process. It can also create a hard crust on surface of the pretreatment compartment and/or pretreatment tank, causing wastewater to back up into the facility. Lines carrying water softener backwash must never discharge into plant or disposal field. Use storm drains to dispose of water softener backwash.

Wrong Aerator or Aspirator Shaft Installed

☐ Plants equipped with tube settler and skimmer must have aerators which operate at 3450 rpm or higher.

☐ Be sure original shaft or an exact replacement is used with aerator. If shafts are interchanged between models, it can cause aerator failure and improper treatment.

* Improperly Constructed or Damaged Tank

☐ If pretreatment compartment wall is broken, raw wastewater and/or odors can flow into treatment compartment. Stick wire through aerator mounting casting or pretreatment compartment inspection riser. Prod along top of wall to determine if it is joined to top of tank. Also check wall for cracks or holes. Repair as needed.

☐ Is Transfer Tee through which wastewater flows from pretreatment to treatment compartment in proper position? Is transfer hole for Transfer Tee at proper depth and in proper position? Correct if necessary.

* Wastewater Backing Up

The unfortunate condition of having the home or facility served flooded with wastewater can occur with any wastewater plant or septic tank. Fortunately, most cases of flooding can be permanently corrected by installation of a "Wet-Weather Safety Valve" described here. Common causes of flooding follow. Check out the installation and correct where needed.

☐ A subsurface effluent disposal system that clogs and blocks flow from plant.

☐ Failure of pump to lift effluent to point of discharge.

☐ Tank settling or shifting which cracks inlet or outlet lines and blocks or restricts flow.

☐ Flooding storm sewer or stream that rises above final outlet or backs into discharge line.

☐ Outlets clogged with ice.

☐ Outlets blocked by grading of roadside ditches.

☐ Cracked or crushed line. Frequently caused by heavy equipment running over it.

☐ Dirt or debris blocking lines. Often happens during construction.

☐ Water softener backwash should not be routed through the plant. If it is, it can create hard crust on surface of the pretreatment compartment and/or pretreatment tank, causing wastewater to back up into the home or facility.

☐ Discharge line with insufficient fall.

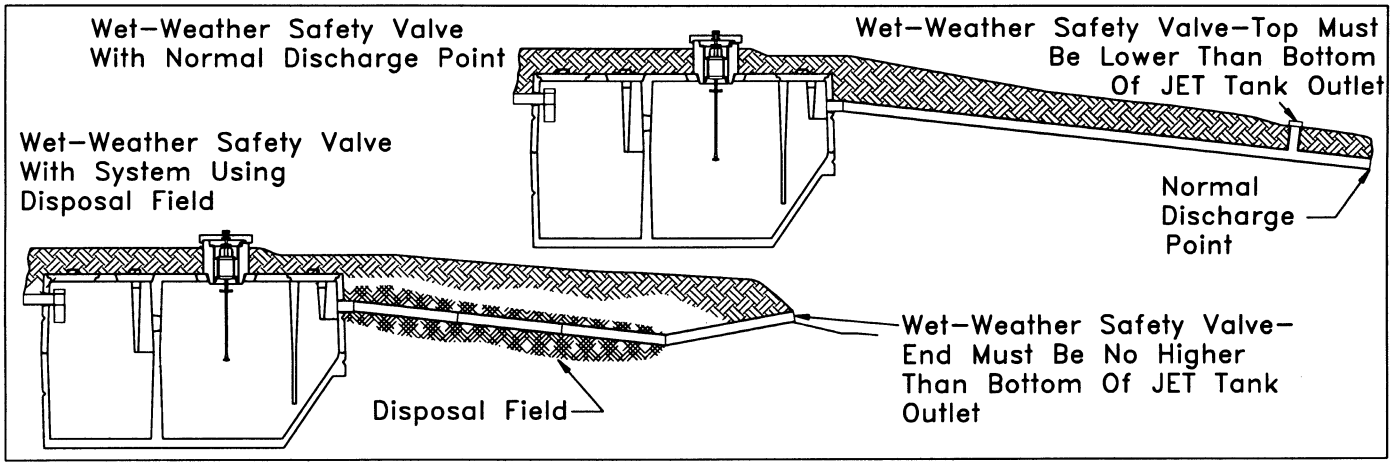
☐ Small animals crawling up discharge line can die, bloat & clog discharge line.

☐ Roof downspouts from home discharging into same line as plant. Downspouts should never discharge into plant sewer line either before or after plant. They should be on separate sewer line.

☐ Plant set in low land that gets all surface drainage from surrounding area.

* Wet-Weather Safety Valve

This simple, inexpensive addition to the system is just an outlet to the surface between the normal discharge point (storm sewer, stream, etc.) and the plant. The Wet-Weather Safety Valve protects the plant and the facility it serves from flooding during very heavy rains when the usual discharge point cannot accept unusually large amounts of water. If the Safety Valve is ever needed, excess water escapes out the Safety Valve to the surface of the ground—rather than backing into the plant. Any water or treated effluent that passes through the Safety Valve is greatly diluted by rainwater and is carried away immediately by natural drainage. During dry weather the Safety Valve never comes into use. On most installations the Wet-Weather Safety Valve will never be used, but it is low-cost insurance against a possible emergency.



ACTIVATED SLUDGE PLANTS ☑

Proper operation of the plant can be determined by comparing the treatment compartment liquor with the Plant Condition Chart following. To do this, test a sample of the liquor from the treatment compartment according to the "Sludge Volume Testing" section. Next, match your findings with the condition given in the "Plant Condition Chart". Adjustments or action required to get the plant operating properly are given in "Action Needed".

Aerator Running Time

☐ In some cases an adjustment in plant running time is needed. Aerator running time adjustments are an important part of plant troubleshooting and are necessary to achieve optimum plant performance.

☐ Plants must be allowed 6 months to reach a stable condition. When plant is over 6 months old, read "Plant Condition Chart" and increase or decrease aeration time accordingly.

☐ Before making any running time adjustments always record the date, the old and new running times and the plant condition on the "Installation and Service Record" card. In some cases more than one adjustment may be required. In these cases wait at least 2 weeks so the plant can adjust to the new cycle before making another running time change.

☐ Wait at least one month after time cycle change before rechecking sludge volume and making any additional changes in time cycle.

☐ When adjusting running time to achieve optimum plant performance, it is better to make several adjustments in smaller increments until the goal is reached rather than make one very large adjustment and overshoot the mark. It is very important to keep good records of all adjustments made during this procedure.

☐ When adjusting running time to correct problems, larger adjustments can be made.

☐ Full-time running does not greatly increase an electricity bill and it does not "wear out" an electric motor. The starting and stopping cycles of cycled operation use more electricity and age the motor somewhat more than full-time running. Electricity consumption and motor life are very close in either full-time or part-time operation.

☐ In making adjustments, full-time running should not be avoided. In many installations, it is preferred.

PLANT CONDITION CHART

PLANT CONDITION	TREATMENT COMPARTMENT LIQUOR			ACTION NEEDED	
	COLOR	CHARACTERISTICS	SLUDGE VOLUME – SEE "SLUDGE VOLUME TESTING"	TIMER CYCLE	OTHER ACTIONS
Proper Operation	Chocolate	Normally little or no foam	20 to 50%	Adjustment not needed	None
Organic Underloading	Light muddy (Normal in new tanks until pretreatment solids reaches proper level, generally 3 to 6 mos.)	Foam at surface	5 to 15%, poor separation of solids from liquid	Decrease aeration time until chocolate color is maintained	Check for volumetric overloading (dilution) – See "Volumetric Overloading" section
Organic Overloading	Black or gray	Floating chunks of sludge below surface	Sludge does not settle well. Black particles	Increase aeration time until chocolate color can be maintained. Full time operation is OK if necessary	Pump tank – See "Tank Needs Pumping" & "Organic Overloading" sections
Toxic Influent	Gray-black	Septic Odor	Little or no settling – fine particles	No change	See "Toxic Influent" section that follows

Sludge Volume Testing

☐ All you need to test sludge volume is a one liter graduated cylinder. These are available from any lab supply store. You can also make your own from any tall, straight-sided, clear glass container, about 1 quart in capacity. Affix piece of masking tape vertically to side of container. Using waterproof ink, mark 11 lines across width of tape ½" apart. First line should be even with inside bottom of the container. Label first line "0", second line 10%, third line 20%, etc., with final line marked 100%. Test is performed as follows:

1. Fill graduated container to 100% mark with sample from aeration compartment. Sample should be taken immediately after aerator has been operating so sludge is uniformly mixed.

2. Allow sample to stand for 30 minutes.

3. Measure sludge volume by locating top of settled sludge layer on graduations. Top of sludge layer from well-functioning plant should be between 20% and 50% marks. It should have appearance of very small particles of dark brown sponge. See "Plant Condition Chart" for further information.

4. Note sludge volume and other plant conditions on plant's record card.

✱ Volumetric Overloading

☐ Volumetric overloading or too much liquid going into plant may be caused by toilets or faucets that do not shut completely off. Check them all and correct as needed.

☐ 1. Run a garden hose into roof downspouts, floor drains and footer drains to see that they discharge into separate line, not plant. They must not discharge into wastewater treatment system at any point before or after the plant. Make sure only sanitary wastes (toilets, sinks, bathtubs, etc.) go into system — nothing else.

2. After running hose through these fixtures, observe plant discharge point for at least 15-20 minutes to see there is no flow from these fixtures. It often takes this long for water to go through the system. Also, the flow will be only a trickle – not a heavy flow.

✱ Organic Overloading

This means the wastewater entering the plant is much stronger than the plant was designed to treat, resulting in plant malfunction. Make sure that no additional facilities were added to the plant after it was installed. If additional facilities were added, the most cost effective solution is to add an additional plant(s) to the existing wastewater treatment system.

* Toxic Influent

☐ Toxic materials can cause plant malfunction. Examples of these are: water softener backwash; toilet bowl disinfectants; petroleum products; paints; paint thinners; photographic darkroom waste, etc.

☐ Ask owner if any of above are used or if there are any commercial operations involving large amounts of waste. If so, explain to the owner that this appears to be the cause of the problem with their wastewater treatment system. Suggest that they discontinue use of the offending waste for 3 weeks and see if that doesn't solve the problem. During this test/recovery period have them use BIO JET-7® according to directions on the bottle.

☐ If the above instructions do not solve the problem, pump tank pre-treatment and treatment compartments.

Tank Needs Pumping

☐ Pumping is recommended every 3 years. Always pump both the pretreatment and treatment compartments. The aeration compartment should be pumped down to a level of 6". Never attempt to pump the settling compartment because the hose fittings can destroy the tube settlers. To clean the settling compartment, use a high pressure hose and thoroughly wash anything left in the settling compartment back into the treatment compartment. Then complete the pumping of the treatment compartment.

ELECTRICAL ☑

* When Owner Calls

☐ If owner reports aerator warning light, aerator warning buzzer, alarm, etc., is on, instruct him to reset circuit breaker. This often solves problem if it was caused by temporary electrical overload. If circuit breaker continues to interrupt circuit or aerator operates intermittently, troubleshoot electrical system.

* Control Panel & Wiring

☐ Test for power to panel with neon glow tester. If no power to control panel, replace fuse or reset circuit breaker on home or facility main electrical panel.

☐ Control panel must be on separate circuit. Have owner correct if needed.

☐ Make sure that the overload protection for the aerator is the same as specified in the following chart:

MODEL	OVERLOAD PROTECTION
Early 100-G	3.5 amp Buss Fustat
Later 100-G	3.5 amp Circuit Breaker
101-FP	5.0 amp Circuit Breaker
360-S	3.5 amp Circuit Breaker
460-FP	7.0 amp Circuit Breaker
560-S	4.0 amp Circuit Breaker
660-FP	7.0 amp Circuit Breaker

☐ Check control panel and its wiring by referring to Notebook sheet "Control Panel Instructions" for control panel model installed. These instructions are in your "Field Service Manual."

☐ Circuit breakers which won't reset (reset button will not "click" into set position) are usually damaged by direct short circuit. First correct short circuit by performing following steps and then replace circuit breaker. Circuit breakers can easily be replaced in field without removing control panel. Replacement circuit breakers are available from Jet.

☐ Check for short circuits in underground cable and in electrical connector as follows:

1. Turn power to control panel "Off" at main electrical panel by removing fuse or turning circuit breaker "Off."
2. Turn control panel switch "Off."
3. Disconnect aerator underground cable leads from control panel.
4. Disconnect underground cable from aerator. First, note where each terminal should be re-connected and then disconnect each separate terminal using pliers if necessary. Do not disconnect terminals by pulling on cable or wires.
5. Set "Multimeter" to "resistance scale" measure resistance between two underground cable leads removed from clock terminals. Also measure resistance between each lead and ground. Meter should read "infinity" on both tests.
6. If meter does not read "infinity" between all leads tested, underground cable must be replaced. Reconnect aerator and leads in control panel.

☐ A broken underground cable can be detected as follows:

1. Check to be sure there is power to control panel.
2. In gray plastic control panels (Model CP-100), set switch to "Cont." position. Check for power between terminals 2 and 5.
3. In gray metal control panel, set power switch and time clock switch on front of clock mechanism to "On" position. Check for power between terminals 4 and 5.
4. Test cable end in mounting casting with neon glow tester between the hot and neutral wires.

☐ If tester glows, underground cable is OK. If it does not glow, cable is broken.

☐ If aerator is operating properly for long periods of time between malfunctions, you can test to see if cable is cause of this intermittent failure by operating aerator for several days using temporary cable laid on top of ground.

☐ Loose connections can also cause intermittent aerator operation. Check circuit, tighten all connections in control panel and both halves of electrical connector.

✱ Aerator Overloads

Once you know you have consistent power to the aerator, by completing previous electrical checks, remove the aerator and check as follows:

☐ Go through all shaft and foam restrictor checks in "Mechanical" section.

☐ Check whether problem is an aerator malfunction or low voltage condition by test-running aerator in good condition in installation. If it operates properly, have original aerator repaired. If test aerator does not start or trips circuit breaker, check for low voltage condition & "Intermittent Plant Surcharging".

✱ Low Voltage Conditions

Aerator motors are designed to operate at ± 10% of their rated voltage. Whenever the voltage drops below this, the motor draws excessive current which overheats the windings and trips the circuit breaker. Intermittent low voltage conditions can be detected by lights dimming in the house. Ask the homeowner if he has observed this occurring, and do the following:

☐ Check voltage with volt meter or "Multimeter" at wire terminals in mounting casting and at main electrical panel.

☐ If voltage is OK at main panel but low at wire terminals, check for loose connections, wire splices or runs of more than 400' of wire between control panel and aerator. Cable with splices must be replaced with unspliced cable. Runs of more that 400' must have cable with larger conductors to reduce voltage drop.

☐ If voltage is low at main panel or you suspect intermittent low voltage, have power company check their system and correct problems.

✱ Intermittent Plant Surcharging

☐ If wiring and aerator are satisfactory, but aerator service is intermittent, plant may be fully or partially surcharging. If water rises above foam restrictor with aerator running, extra load causes circuit breaker to trip. If you suspect this condition, test tank for proper drainage (see Notebook sheet "Plant Installation Instructions"). Correct the condition if necessary.

MECHANICAL ☑

✱ Shaft

☐ Be sure Foam Restrictor is at proper position on aspirator shaft. On the current models, 560 & 660, the proper Foam Restrictor position is flush against bottom of coupling & the distance to the water level is approximately 8-3/8". On all 5 previous models, the distance from the Foam Restrictor to the water level is approximately 10". If Foam Restrictor is too low, normal small changes in water level can cause water to rise above foam restrictor. If this happens with aerator running, it will overload motor and trip circuit breaker.

☐ Clean shaft if rags or any other material are wrapped around it. Make sure shaft turns freely without binding.

☐ Clean inside of aspirators, aspirator shaft and hollow motor shaft. Cleaning instructions are in Notebook sheet "Plant Inspection & Service."

✱ Outside-Air-Hose or Vent Cap Blocked

☐ Clean outside-air-hose and vent cap as needed.

If hose is too long, it may bend or kink when cover is put in place. Install shorter hose or shorten existing hose if necessary.

Tube Settler Clogged

☐ If tank has a tube settler, check it by carefully pushing piece of wire coat hanger down several tubes and gently stirring. If black sludge floats to surface, tube settler needs to be cleaned. Septic odor coming from settling compartment is also a good indication tube settler needs cleaning.

Skimmer Clogged

If tank has a skimmer, check the settling compartment for any buildup of floating solids. If floating material is present:

☐ Clean surface skimmer by spraying high pressure stream of water into skimmer from settling compartment end and thoroughly washing it out.

☐ After cleaning, run aerator and check skimmer operation.

☐ If skimmer is still not working properly, check plant flow line to be sure it is within 1" of center of surface skimmer. If it is not, plant outlet must be relocated so that it is.

UPFLOW FILTER ☑

Backwashing Needed

On the average an Upflow Filter not equipped with an automatic backwashing system must be backwashed a minimum of every 6 months. The first step in filter troubleshooting is to backwash it according to the instructions given in the Notebook sheet "Home Plant Upflow Filter."

Maintenance Indicator Light Glowing

☐ When filter maintenance indicator light glows, it indicates filter is clogged and needs immediate service. If given recommended maintenance (see "Home Plant Upflow Filter"), filter should not clog.

☐ Backwash the filter every 6 months following steps outlined in the Notebook instruction sheet "Home Plant Upflow Filter." When filter is clogged it activates warning light & stones must be thoroughly raked & filter backwashed several times.

Automatic Backwashing Malfunction

☐ If filter has an automatic backwashing system, refer to the following "Notebook" & "Field Service Manual" literature: "Home Plant Upflow Filter Instructions"; "Drawing J-158-B", Upflow Filter with Automatic Backwashing; "Home Plant Upflow Filter". Examine and test the function of each component listed in above literature. Repair or replace as required.

Check Aerator Model

☐ Check aerator model installed in plant. Upflow filter must only be used with 3450 rpm current model aerators. Only these aerators supply enough air to meet filter's oxygen requirements. If earlier model aerators are used, odors can develop.

Filter Not Level

☐ Filters which are not level will require backwashing more frequently and will not provide the best treatment. Check to be sure filter is set level and if not, level it. If filter is not leveled properly only one side of it may be functioning. In this case, flow through low functioning side will be heavier, causing this side to clog faster. Also, fluid in inactive side may become septic, causing odors.

Improper Plant Operation

☐ Since the upflow filter was specifically designed to work with the Plant, its performance depends upon performance of plant. Always check for proper operation of plant when troubleshooting filter. An apparent problem with filter could be caused by improper plant operation.

* CHLORINATOR ☑

JET-CHLOR® Tablet Chlorinators are designed and sized to provide proper chlorination for plant effluent. To make sure the chlorinator is operating properly, the chlorine residual in the final effluent should be checked after the plant is in operation. The term "chlorine residual" means the amount of chlorine left in the effluent. This is proof that all oxidizable substances have been destroyed with chlorine to spare.

☐ To check chlorine residual, a test kit is needed. If you do not already have one or cannot readily buy one locally, a simple inexpensive test kit can be ordered from Jet. Easy-to-follow instructions are included.

☐ To test chlorine residual, follow these steps:

1. Take a post-chlorinator sample and, using the test kit, test for residual chlorine.
2. Normally 1-ppm (parts per million) residual is considered adequate.
3. Local condition and codes vary. Check with the health department to see how much residual is required.

Too Much Residual Chlorine

☐ If you find too much chlorine remaining in effluent, these steps will tell you how to locate and correct problem:

CAUSE	CORRECTION
☐ Flow abnormally light or organic.	Remove JET-CHLOR® tablets from one tube.
☐ Channel not draining properly.	1. Check channel for blockage and clear if necessary. 2. Check to see if contact chamber is level. Level if necessary.

Too Little Residual Chlorine

☐ If you find too little chlorine remaining in effluent, these steps will tell you how to locate and correct problem:

CAUSE	CORRECTION
☐ Out of JET-CHLOR® tablets.	Refill feed tubes.
☐ Tubes not resting in channel.	Adjust tubes so bottoms rest in channel in chlorinator floor.
☐ Improperly loaded or jammed tablets.	Reload properly so all tablets drop down.
☐ Volumetric overloading.	1. Check roof downspouts with garden hose to make sure they do not discharge into lines before or after JET® Plant. 2. Check facility for toilets or faucets that do not completely shut off.

Final Effluent Check

☐ After correcting for "Too Much" or "Too Little" residual chlorine, re-check the effluent a few days after the correction was made. Make further adjustments, if necessary. If plant owner signs chlorinator service contract, checking chlorine residual when restocking should be part of the service.

BAT. MEDIA PLANTS ☑

Treatment

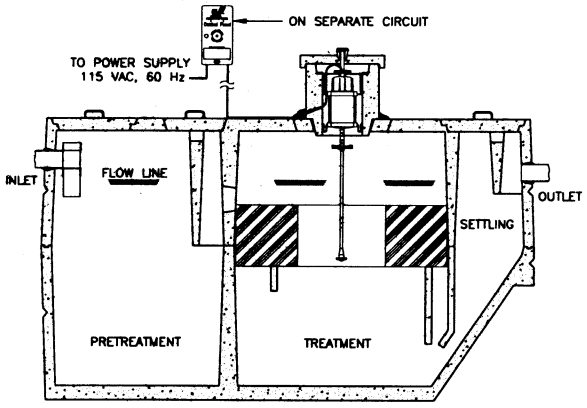
☐ This new process is totally different from & much more advanced & more efficient than the activated sludge process. Some of the advances are: very low mixed liquor Suspended Solids (MLSS); high DO; low BOD; not temperature sensitive; very quick overload recovery time; handles shock loads very well; and short start-up time.

BAT. Plant Models

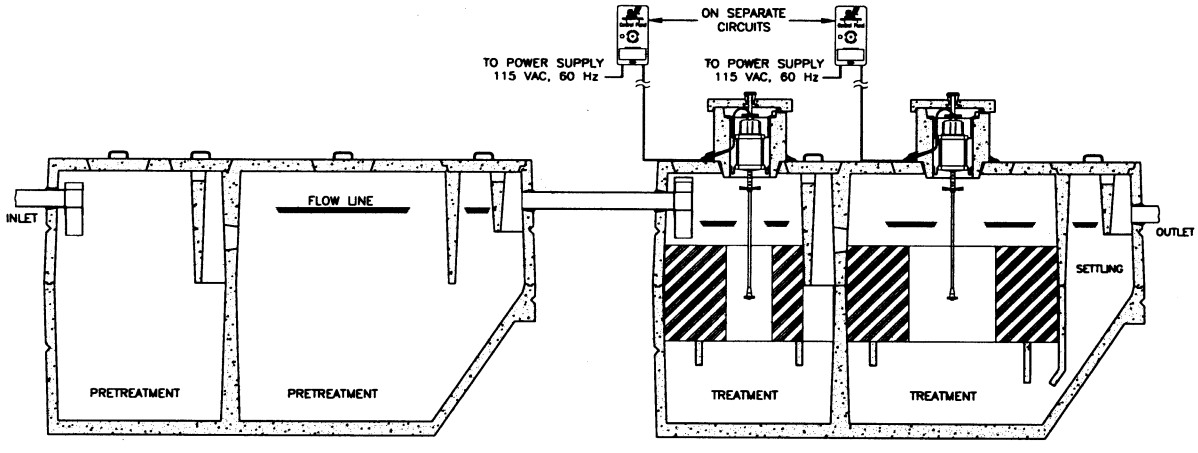
☐ The material here for troubleshooting BAT. Media Plants relates to all BAT. models. Plant model numbers and capacities are shown in the chart below. The "Non-NSF Listed" plants are identical to the "NSF Listed" plants except for riser requirements & control panel requirements. Plants in the S series (Non-NSF listed), which are completely identical to the NSF listed requirements can easily be supplied if desired.

MODELS & CAPACITIES
BAT. MEDIA PLANTS

PLANT CAPACITY	500 gpd	750 gpd	1000 gpd	1250 gpd	1500 gpd
NSF Listed Plant Model No.	J-500	J-750	J-1000	J-1250	J-1500
Non-NSF Listed Plant Model No.	500 S	750 S	1000 S	1250 S	1500 S



500 & 750 GPD Plants



1000, 1250 & 1500 GPD Plants

Regular Service — 1st Troubleshooting Step

☐ It's possible to save a great deal of time and trouble if you will make a review of the plant's service record the 1st step in any troubleshooting procedure. If the plant records show it has not had the regular, recommended service then bring the plant service up-to-date now.

☐ If the regular, recommended service does not correct the problem in a week perform the 36 month service before going thru any of the suggestions in the Plant Condition Chart below.

Service Procedure		Service Month & Service Needed					
		6	12	18	24	30	36
Regular Inspection & Service	(1)	☑	☑	☑	☑	☑	☑
Media Air Cleaning	(2)		☑		☑		☑
Tank Pumping	(3)						☑
Media & Tank Water Cleaning	(2)						☑

(1) See "Plant Inspection & Service" (2) See "Media Service Instructions" (3) See "Tank Pumping"

IMPORTANT: Where an asterisk ✱ appears in the copy before this section, it indicates that the asterisked item applies to the Jet BAT. plant as well as all other plants. Before reading the following chart, read all headings with asterisks ✱ in the earlier pages. Pay particular attention to items marked with an asterisk ✱. These may well suggest a simple, quick solution to the problem that could otherwise be overlooked.

☐ Proper operation of the plant can be determined by comparing a sample of the treatment compartment liquor with the "Plant Condition Chart". Any action required is given in the Action Needed column.

PLANT CONDITION CHART

No.	Plant Condition	TREATMENT COMPARTMENT LIQUOR (A)		ACTION NEEDED
		Color	Appearance	
1	Proper Operation	Clear mixed liquor above media	• No floating solids • Normal biofilm growth on media	• None
2	Organic and/or Volumetric Overloading	Cloudy	• Fine Suspended Solids particles in mixed liquor • Suspended Solids normally settleable in 45-minute settling test **(B)**	• See "Wastewater Backing Into Home" ✱ pg 2 • See "Volumetric Overloading" ✱ pg 4 • See "Organic Overloading" ✱ pg 4 • See "Intermittent Plant Surcharging" ✱ pg 6 • If overloading is frequent or permanent & no other action can be taken, consider installing another plant(s) in series or parallel
3	Toxic Influent	Murky or Gray	• High MLSS • Suspended Solids are not settleable in 45-minute settling test **(B)**	• See "Water Softener Backwash" pg 2 • See "Toxic Influent" ✱ pg 5
4	Media Needs Cleaning	Clear to Tan	• Heavy biofilm growth on media (circulation thru media reduced)	• Air clean media. If plant condition doesn't improve in a week, see next bullet • Pump and clean tank & media according to 3-year service procedure in "Media Service Instructions"
5	Inorganic Overload (Mud, Silt & Grit, etc.)	Gray to Tan	• No biofilm growth on media • Suspended Solids in mixed liquor • Suspended Solids are settleable in 45-minute settling test **(B)**	• Pump & clean tank • Pump and clean tank & media according to 3-year service procedure in "Media Service Instructions"

(A) The 1000, 1250 & 1500 gpd plants have two treatment compartments. Both of these compartments should be inspected & action taken as needed.

(B) To perform a 45-minute settling test, take a quart container of mixed liquor from the treatment compartment. Let it stand 45 minutes & see if any settling has occurred.

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PLANT INSPECTION & SERVICE

1500 SERIES BAT® MEDIA PLANTS - 500, 750, 1000, 1250 & 1500 GPD

Jet Distributors are obligated to provide a free Inspection/Service Policy on all new installations the first two years of the 30-month limited warranty period.

Service, inspection and maintenance must be done every 6 months during the warranty period. It is strongly recommended that the owner continue this Inspection/Service Policy with his distributor after the initial or any subsequent policies have expired. It is also strongly recommended that the distributor or any of his employees who have any contact with the owner encourage him to continually keep this policy in force.

The Owner's Manual states that the entire tank be pumped, according to Jet's "Tank Pumping Instructions" sheet, every three (3) years or perhaps more frequently in certain situations. Please stress this to the owner when you talk to him.

1. Inspection/service visits every 6 months for two years shall be made of the installation at no charge.
2. All applicable jobs on the "Inspection/Service Checklist" shown below shall be performed on each inspection/service visit.
3. There shall be no charge for any special, non-scheduled service or repair calls, including removal and reinstallation of equipment which cannot be repaired at the job site.
4. If improper operation cannot be corrected at time of service, owner should be notified immediately in writing and given estimated date of correction and cost, if any.
5. If it is necessary to return any equipment to the factory for repair, the owner shall bear the cost of freight.
6. No part of the house wiring is covered under the terms of the warranty or the Inspection/Service Policy.
7. After the first two years, the distributor shall offer each owner an Inspection/Service Policy with terms identical to those of the initial two-year policy. Distributor Inspection/Service Policies are not given free of charge on newly warranted factory exchange aerators-only on new aerators. We urge you to point this out to the owner and strongly recommend to him to continually keep an Inspection/Service Policy in force with you.
8. Contact Jet for replacement parts and components. They are listed on our price list.

RECORDKEEPING

It is important that you keep good records on service. Your records of all Jet Plants must be maintained for the effective life of the plant.

INSPECTION/SERVICE CHECKLIST

Note: On 1000, 1250 and 1500 GPD plants, two aerators are used. Each aerator must be on a separate circuit with its own Control Panel. This checklist must be followed for each Control Panel and Aerator.

Check Control Panel

1. Turn control panel switch to "Cont" position — red warning light on control panel cover should not glow.
2. If plant appears to be normal, return control panel switch to position you found it in when testing is complete. Close and latch panel cover.
3. If these tests are not satisfactory, check wiring and system according to the separate literature piece "Control Panel Instructions".

(over)

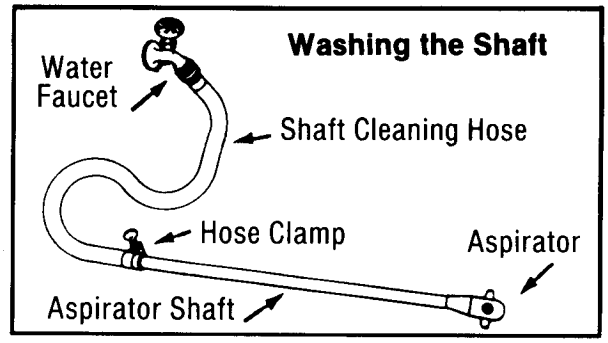
Taking & Assessing Samples

1. Collection and assessment of effluent samples is required for all NSF Listed plants. There are four sample taking means from which samples may be taken. For information on "Effluent Sample Means" see "Installation - Tank & Aerator" instructions, pg. 3. The four means and the suggestions for taking samples from each are as follows:
   A. Final Outlet Samples — Clean off the inside bottom and outside edge of the final outlet with a clean rag. Take a clean sample jar and collect a free-flowing effluent sample from the discharge pipe. Be sure the jar does not touch the pipe.
   B. Sample Cross Samples — To take a sample, remove the cover and pump out the liquid in the lower arm of the cross. Clean off the lip of the inlet arm which connects to the tank. Next, take a clean sample jar, lower it so that it touches no part of the cross and catches a free-flowing effluent sample.
   C. Distribution Box Samples — Remove distribution box cover and clean off the inside bottom and outside edge of the inlet line with a clean rag. Take a clean sample jar and collect a free-flowing effluent sample from the inlet line. Be sure the jar does not touch any other surface.
   D. Baffled Outlet Samples — Remove cover on tank top or riser. Lower a clean sample jar into the open top of the outlet tee or baffle. Slowly and gently submerge the sample jar until it is 1/32" beneath the surface — so the effluent very slowly fills the jar. Remove the jar slowly, being careful that it does not touch any other surface.
2. To evaluate a sample, smell the sample and hold it up to the light and observe for color, turbidity and any solids or floating scum. If examination shows the effluent is not up to standard quality, do the following:
   - Complete this checklist.
   - Wait 2 weeks, then take and evaluate a new effluent sample.
   - If effluent is still not up to standard quality, look for causes and corrections by following all suggestions and procedures in "Troubleshooting Plant & Equipment" instructions.
   - Wait 2 weeks, then take and evaluate a new effluent sample.
   - If effluent is still not up to standard quality, air clean media and perform all the other elements of a comprehensive service call.
   - Wait 2 weeks, then take and evaluate a new effluent sample.
   - If effluent is still not up to standard quality, schedule the 3 Year Service, including tank pumping.

Check Aerator

1. Remove the aerator mounting casting cover and check for unpleasant odors. If there is an unpleasant odor, you should finish all items on this checklist in the order they are numbered and, in addition, make sure there is power to the aerator and that it is running properly.
2. Observe aerator noise level and vibration. Worn bumpers are a sign of excessive vibration. If bumpers are worn, replace shaft with one that is straight.
3. **CAUTION**: BEFORE REMOVING AERATOR, DISCONNECT POWER BY UNPLUGGING CONNECTOR OR TURNING POWER "OFF" AT CONTROL PANEL OR AT MAIN ELECTRICAL PANEL.
4. Remove aerator from mounting casting. Do not bend aspirator shaft! Block up aerator so it doesn't rest on foam restrictor.
5. Remove aspirator shaft and use a knife to clean off any foreign material from shaft.

6. Attach "shaft cleaning hose" and wash shaft out with water. Be sure aspirator holes are clean.
7. Clean inside of hollow motor shaft with shaft cleaning brush.
8. Apply light coating of Vaseline or anti-seize compound to aspirator shaft and re-install it.
9. Turn power "On" or reconnect power to aerator.



10. Install a drip loop in cable by pushing cable 1 to 2 inches below connector.
11. If "outside air" is used, be sure hose is properly installed in vent and that it is not bent when cover is replaced. It should be in vent body but not close enough to vent lid top to bend or restrict air flow.
12. After cover is in place, remove vent cap and check for proper outside-air-hose position. Be sure all air holes in vent body are clear.

See Owner

1. Explain control panel
2. Tell owner to always reset circuit-breaker if warning light glows before calling for service.
3. Ask owner to read "Owner's Manual". If necessary, provide manual.
4. If further service is required that is not covered under the "Inspection/Service Policy", inform owner in writing that this work is not covered under his policy and give him the estimated cost and completion date and arrange for service.
5. If there is unusual buildup of material on the shaft, such as mop string, hair, plastic or rubber items, etc., please discuss this with the owner.

NSF Listed & 1500 S Series Plants

- These instructions apply to J-1500 Series and 1500 S Series plants. Each series has a 500, 750, 1000, 1250 and 1500 GPD plant.
- J-1500 Series plants have been tested and meet NSF Standard 40 criteria for a Class I NSF Listing.
- 1500 S Series plants are normally identical to the J-1500 Series plants but changes, approved by health officials, may be made.

JET INC.®

PLANT INSPECTION/SERVICE POLICY

After a Jet Plant's initial free two-year inspection/service policy has expired, the distributor must offer a continuing policy to the plant owner. Inspections and service made under this policy are the same as those made under the initial policy.

You'll find inspection/service policies profitable. They add a steady income to your business – an income that grows each year as the number of your Jet installations grows.

Each distributor sets his own prices for inspection/service policies based on labor, materials, estimated traveling time, and desired profit. If the plant has a chlorinator, it should be included in the policy at an additional charge. In setting the chlorinator service charge, see the chart on page 3 of the JET-CHLOR Tablet Chlorinator Model 100 Installation and Operation Manual to calculate how often the chlorinator will need restocking.

To get in on this profitable service policy business, set up a regular sales program for obtaining policies. Set up a card file on all installations and mail your first or renewal policy letter two months before the current policy's expiration date. Enclose your policy form, and ask to have it signed and returned with a check. If you haven't heard from the customer three weeks after your first mailing, send a copy of the first letter clearly marked "copy." If you don't hear from him within another three weeks, follow up with a phone call on the day his policy expires. Keep plugging. Many customers won't take out a policy after the first letter – you must keep after them, and two more contacts generally sell everyone who is capable of being sold.

Go after those service policies! Besides your profit motive, you have another good reason for selling inspection/service policies ... the desire to have all Jet Plants in your area operating properly in order to maintain your reputation, to encourage more sales, and to satisfy health officials.

The following tips will aid you in implementing a successful and profitable service program:

- Completely fill out "Installation and Service Record Card" at time of installation.
- Set up "Policy Follow-Up" card file.
- Set up mailing programs for selling new and renewal policies.
- Personally sell your service policy during last free inspection call under initial two-year policy.
- Supply servicemen with service policies to sell customers when servicing installations not covered by a policy.
- Train all employees to service Jet Plants.
- Provide servicemen with all necessary tools for field service.
- Provide servicemen with inspection call checklist.
- Consolidate service calls ... do by area, tie in with other trips.
- If necessary, phone before going on service call to see if access will be available.
- Carry exchange aerators and parts on service calls.
- Carry service call tags, which notify customer that serviceman was there. It is very important to let the owner know that you were there and service was performed.

Sample — First Policy Letter

COLE PRECAST INC.
Shelby, Pa.

Dear Customer

You have now owned a Jet wastewater treatment plant for almost two years. It has provided you with the finest wastewater treatment available.

We are sure you understand the importance to your family and your community of keeping your plant in top operating condition.

A free two-year inspection/service policy along with a 30-month limited warranty was included with the purchase of your Jet plant. Your plant has been inspected and serviced by us twice each year during this initial period.

Your present service policy expires on _____

To provide you with continued trouble-free, worry-free Jet plant operation, we offer you an inspection/service policy that will continue the same service protection you have had during the last two years.

Two copies of our inspection/service policy are enclosed. Please read them for an exact description of the service you will be securing for your plant. Then sign and return both copies to us with your check. One copy will be signed by us and returned to you. Act now to insure continuous service for your Jet plant.

If you have any questions about this policy or about our various services, we will be only too happy to discuss them with you.

Sincerely,

George Cole
President

Sample — Renewal of Policy Letter

COLE PRECAST INC.
Shelby, Pa.

Dear Customer

Our inspection/service policy on your Jet wastewater treatment plant will expire on _____.

Your Jet plant has provided you with the finest wastewater treatment available. We know you are aware of the importance to your family and your community of keeping it in top operating condition.

During the policy period we have inspected and serviced your plant twice a year for two years.

We are sure you will want to renew this protection for your Jet plant, assuring your family of trouble-free, worry-free wastweater treatment while we supervise your plant's operation.

We enclose two copies of our renewal inspection/service policy. Please read them for a complete description of the service you will be receiving. Then sign and return both copies to us with your check. One copy will be signed by us and returned to you. Act now to insure continuous service for your Jet plant.

As always, if you have any questions about this policy, your plant, or our various services, we will be only too happy to discuss them with you.

Sincerely,

George Cole
President

(over)

NOTE: Give this sample Inspection/Service Policy to your offset printer. He can shoot right from it, putting your company name in place of Cole Precast Inc. and enlarging to any size you want.

COLE PRECAST INC.
Shelby, Pa.
Jet Plant Service Policy

This agreement entitles: OWNER _____

STREET _____

CITY _____ STATE _____ ZIP _____

PHONE _____

to the following service for _____ year(s) from the date of acceptance.

Upon receipt of this signed agreement and $_____, COLE PRECAST INC. agrees to perform the following services during the term of this agreement:

Inspect the Jet plant at the above address twice a year. These inspections will include:

PLANT SERVICE

$_____
- Removal of aerator, inspection, adjustment, cleaning of aspirator shaft, field service of aerator, if needed, and re-installation.
- Examination of final effluent for color and odor, if there is access at time of inspection.
- Check of discharge point and wet weather overflow for blockage (if applicable).
- Inspection and adjustment of control panel setting and overload protection, if there is access at time of inspection.

CHLORINATOR SERVICE

$_____
- Inspection, cleaning, servicing, and restocking of Chlorinator. Charge for chlorine tablets is additional.

TOTAL $_____

COLE PRECAST INC. further agrees to the following:

EMERGENCY SERVICE

- There will be no charge for emergency service calls.
- There will be no service or labor charges for removal or re-installation of the aerator, if required.
- If improper operation cannot be corrected at time of service, homeowner will be notified immediately and given estimated date of correction.
- If necessary the entire aerator or any parts will be replaced according to the manufacturer's warranty program.

Freight charges to the factory or to an authorized repair station and aerator repair charges are not covered under this agreement.

_____ Owner's Signature Date

_____ Accepted for COLE PRECAST INC. Date

JET INC.® • 750 Alpha Drive • Cleveland, Ohio 44143 • U.S.A. • 440/461-2000 • FAX 440/442-9008

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