Vacuum Test Gauge Instructions

TO DETERMINE SYSTEM VACUUM LEAK RATE AND TIME BETWEEN PUMP CYCLING

1. Turn off water to toilet.
2. Open the toilet's flush ball and insert the rubber plug into the 1" orifice in the bottom of the base. The vacuum pump will be running.
3. After the vacuum pump shuts off, allow the gauge to stabilize for a minute.
4. Record the vacuum reading to the nearest two-tenths of an inch. (.2")
5. Keeping the rubber plug in the 1" orifice, wait 30 minutes, and then record a second reading.
6. Subtract the two readings and record the drop in vacuum.

Drop in Vacuum (30 min.)	Time Between Pump Cycles
.4" Hg (not acceptable)	2.5 hours
.3" Hg* (acceptable)	3.3 hours
.2" Hg (good)	5.0 hours

* Maximum acceptable leak rate.

TO IDENTIFY VACUUM LEAK LOCATION IN VACUUM GENERATOR SYSTEM

1. Turn off water to toilet.
2. Open the toilet flush ball and insert rubber plug into 1" orifice in the bottom of the base (fig. A). If there is no vacuum leak at this point, the leak is above the 1" orifice in the base:
   - Check for a crack in the base, funnel, or flush ball.

   If there is a vacuum leak, go to next step.
3. Remove inlet hose to vacuum generator and insert rubber plug in the inlet fitting (fig. B).
   If there is no vacuum leak at this point, the leak is between the toilet and the vacuum generator:
   - Check the hose and clamps between the toilet and the vacuum generator.

   If there is a vacuum leak:
   - Check duckbill valves for foreign objects or cuts.
   - Check spin nut and fitting between pump and vacuum tank.

TO IDENTIFY VACUUM LEAK LOCATION IN VACUUM TANK/VACUUM PUMP SYSTEM

Before starting vacuum tests, determine the amount of time between pump cycles or the amount of vacuum drop within a specific time span.

PART 1

1. Remove vacuum hose from inlet on vacuum tank (fig. D).
2. Insert rubber plug in tank inlet.
3. Note vacuum reading, then determine time between pump cycles.
   - If time between pump cycles increases or no vacuum drop is recorded on test gauge, the leak is before the vacuum tank. Go to Part 2.
   - If time between pump cycles remains the same or a vacuum drop is recorded on test gauge, go to Part 4.

PART 2

1. Reinstall vacuum hose on vacuum tank inlet.
2. Remove hose from toilet outlet (fig. C).
3. Insert rubber plug into open end of hose.
   - If time between pump cycles increases or no vacuum drop is recorded on test gauge, go to Part 3.
   - If time between pump cycles remains the same or a vacuum drop is recorded on test gauge, the leak is in the hose between the toilet and vacuum tank. Retighten connections or replace hose as necessary.
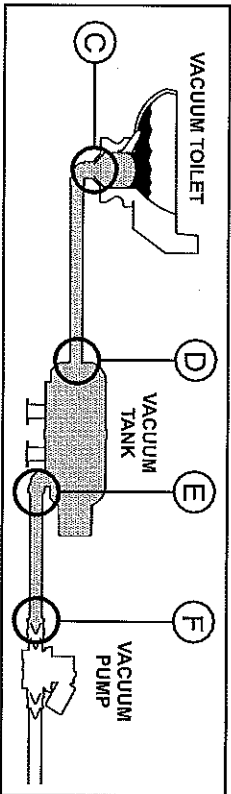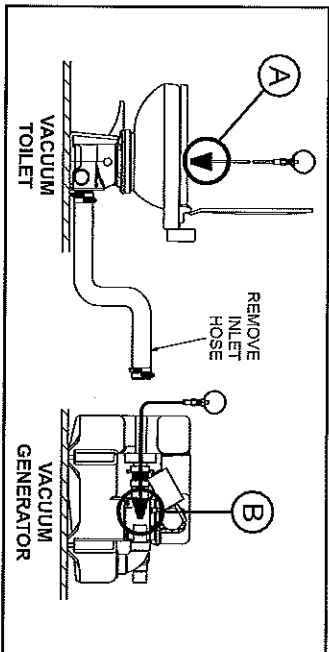
PART 3

1. Reinstall vacuum hose on toilet outlet.
2. Turn off incoming water and prop open flush valve in toilet.
3. Insert rubber plug into 1" orifice in the bottom of the base (fig. A).
   - If time between pump cycles increases or no vacuum drop is recorded on test gauge, the vacuum leak is in the toilet seals or rotor shaft.
   - If time between pump cycles remains the same or a vacuum drop is recorded on test gauge, the leak is in the toilet outlet fittings or funnel. Replace funnel, or repair/replace fittings as necessary.

PART 4

1. Reinstall vacuum hose to vacuum tank inlet.
2. Shut off power to vacuum pump.
3. Remove hose from vacuum tank outlet (fig. E).
4. Insert rubber plug into vacuum hose.
5. Turn on power to vacuum pump.
6. Shut off vacuum pump at about 10 in. Hg on test gauge.
   - If no vacuum drop is recorded, the leak is in the vacuum tank. Tighten or reinstall fittings as necessary.
   - If a vacuum drop is recorded, go to Part 5.

PART 5

1. Reinstall vacuum hose to vacuum tank outlet.
2. Remove hose from inlet on vacuum pump (fig. F).
3. Insert rubber plug into inlet of pump.
4. Turn on power to vacuum pump.
5. Shut off vacuum pump at about 10 in. Hg on test gauge.
   - If a vacuum drop is recorded, inspect the valves and fittings in the pump. Tighten or replace as necessary.
   - If no vacuum drop is recorded, inspect hose between vacuum tank and pump. Tighten or replace as necessary.

VACUUM TOILET

REMOVE INLET HOSE

VACUUM TOILET

VACUUM GENERATOR

VACUUM TANK

VACUUM PUMP