

MOLECULAR SIEVE TEST

When it is suspected that the molecular sieve needs replacement, there is a simple test that can be performed. A positive test does not ensure that the molecular sieve is in good condition. If there is a large percentage of broken pellets or dust, contamination from foreign matter, or most of the pellets are discolored, the desiccant should be replaced. New desiccant is light tan in color.

To test the desiccant's effectiveness, a sample should be regenerated in an oven at 600°F/ 316°C for about two hours. At the end of that period, place the desiccant into an air tight jar and allow it to cool down to room temperature for a minimum of 12 hours. Pour 30ml of water into a small glass. Determine and record the temperature of the water using a mercury thermometer. Into a similar dry glass, pour a quantity of desiccant that is 10% greater by volume than the water (33ml). Dry the thermometer and place it into the glass containing molecular sieve. With one quick motion, pour the water into the glass of desiccant. Observe the increase in temperature of the mixture while stirring with the thermometer and record the peak temperature. This will occur in about 20 to 30 seconds. Subtract the water temperature from peak temperature observed. If the temperature difference is 40°F/ 4°C or greater, the sieve is in satisfactory condition.

FORCING A BED INDEX (STANDARD CONTROL TD DRYERS)

It becomes necessary to shift the beds for maintenance and for trouble shooting the unit. With standard controls, the simple way to shift the beds is to disconnect power from the unit. Disconnect the neutral wire from the coil of 1 TR. Reconnect power to the unit. The beds will pull down and start to rotate. As soon as the beds rotate and open the bed indexing limit switch, Disconnect the power again and re-connect the neutral to 1 TR. Re-connect the power, and the beds will finish rotating and push-up when the indexing limit switch is closed.

DESICCANT BED RECHARGING PROCEDURE (STANDARD CONTROL)

FOR TD-12 THROUGH TD-360

Read instructions completely before attempting to remove the beds.

1. Set Off/Auto/On switch to On, Set key switch to “Adjust Setpoints”.
2. Remove side panels.
3. Follow the procedure above Forcing a Bed Index (Standard Control Dryer). When the beds are clear of the manifolds, remove power from the dryer.

Note: Do not turn the dryer off with the OFF/AUTO/ON switch. The manifold will clamp up against the beds.

4. Loosen the band clamps that hold the bed tight up against the turret plates, and remove the bed from the unit. Remove the band clamps
5. Apply power and repeat items 3 and 4 until all the beds have been removed.

Note: On some units, The bed turret assembly can be manually rotated if care is taken to rotate them slowly, and always in a left to right direction.

Inspect the center cavity at the top of the bed for any quantity of beads, which may indicate a damaged inner perforate screen.

Inspect the bottom part of the bed for the presence of any loose beads, which may indicate a damaged outer screen. If when the beds are refilled and there is evidence of bead leakage, the bed must be repaired or replaced.

To replace the desiccant:

- a) Remove the bed bead plate to gain access to the desiccant.
- b) Dump the desiccant beads out and vacuum the remaining beads out.
- c) Fill the beds with new desiccant - use only 4a type 8 x 12 size (0.080" diameter) desiccant beads. Fill beds as full as possible. Rock or vibrate the beds to promote settling of the beads. Add more desiccant to fill the beds and pack tight without breaking beads.
- d) Apply high temperature sealant (G.E. silicone RTV-106n sealant is recommended) and secure bed bead plates to beds.
- e) Reverse the bed removal procedure to replace the beds. Lift the beds into the dryer with bed bead plates up and positioned outward from the shaft. Make sure that the bolts for the band clamps are not strait out from the shaft. (The bolts can catch on frame parts and stall the rotate motor)
- f) Secure the beds tight against the turret plate with the band clamps.
- g) Start the dryer and let it operate for a few bed shift cycles while inspecting for leaks at the upper and lower bed seals.
- h) Shut off dryer and install side panels.
- i) After approximately 1-2 weeks of dryer operation check the bead level and add more desiccant if needed.

FOR TD-480 THROUGH TD-2000 (STANDARD CONTROL)

Read instructions completely before attempting to remove the beds.

1. Set Off/Auto/On switch to On, Set key switch to "Adjust Setpoints".
2. Remove side panels.
3. Follow the procedure Forcing a Bed Index (Standard Control Dryer). When the manifolds have pulled away from the beds, remove the 4CR (bed shift relay) from its socket. Place a 1" block inside of the upper and lower air cylinders. (2 if a single piston air cylinder). Remove the compressed air from the unit and make sure that the bed seals are far enough away from the beds to be able to slide the beds out of the turret plate. Remove power from the dryer.
4. Loosen the rotate motor bracket and remove the rotate chain. If there is not enough adjustment to remove the chain, use the master link to break the chain.
5. Using a HI-LO, place the forks on both sides of the manifold tube over the process blower. Lift the forks till just touching the beds. (DO NOT LIFT THE BED) Remove the bolts that hold the band clamps together and remove the bed by backing the HI-LO out of the unit.
6. Rotate the beds from left to right by hand so the next bed is in the same position as the first bed removed.
7. Repeat instructions 5 and 6 for the rest of the beds.

Inspect the center cavity at the top of the bed for any quantity of beads, which may indicate a damaged inner perforate screen.

Inspect the bottom part of the bed for the presence of any loose beads, which may indicate a damaged outer screen. If when the beds are refilled and there is evidence of bead leakage, the bed must be repaired or replaced.

To replace the desiccant:

- a) Remove the bed bead plate to gain access to the desiccant.
- b) Dump the desiccant beads out and vacuum the remaining beads out.
- c) Fill the beds with new desiccant - use 4a type 8 x 12 size (0.080" diameter) desiccant beads only. Fill beds as full as possible. Rock the beds to promote settling of the beads. Add more desiccants to fill the beds and pack tight without breaking beads.
- d) Apply high temperature sealant (G.E. silicone RTV-106n sealant is recommended) and secure bed bead plates to beds.
- e) Lift the beds into the dryer with bed bead plates up and positioned outward from the shaft.
- f) Reverse the bed removal procedure to replace the beds. Make sure that the bolts for the band clamps are not straight out from the shaft. (The bolts can catch on frame parts and stall the rotate motor) and the lid clamp pads on the top of the bed don't touch the turret plate alignment bushings.
- g) Start the dryer and inspect for leaks at the upper and lower bed seals. Force a shift to check the seals on all beds in all positions.

FORCING A BED INDEX (TECH-2 TD DRYER)

NOTE: The following screen is shown with the key switch in the “ADJUST SET POINTS” position

Forcing the beds to shift can be a useful diagnostic tool, and also makes removing the desiccant beds much easier. Pressing the Airflow Alm Set Points key twice



Figure 3.13 Bed Index Display

Pressing the “NO” key returns to the First Screen (figure 3.1) and does not affect the machine. Pressing the “YES” key causes the dryer to assume that the correct cycle time has been reached. The dryer will now shift if the Off/Auto/On key is in the On position (or the Auto position and has been programmed to turn the dryer at that time)

NOTE: Units with dew point must have the dew point shift turned off in order to force a bed index.

NOTE: SHIFTING THE BEDS SHOULD NOT BE DONE UNLESS IT IS NECESSARY AS IT WILL CAUSE IMPROPER DRYING.

DESICCANT BED RECHARGING PROCEDURE (TECH-2 TD DRYER)

Read instructions through completely before attempting to remove the beds.

- 1: Remove power to dryer
- 2: Set Off/Auto/On switch to On, set key switch to “Access Set Points”
- 3: Remove side panels
- 4: Follow the procedure in Section 3.8” Forcing a Bed Index”. When the beds are clear of the manifolds, remove power from the dryer
- 5: Loosen band clamps and remove beds

NOTE: The bed turret assembly can be manually rotated if care is taken to rotate them slowly, so damage to the drive assembly will not occur

NOTE: Never allow the bed left motor to run unless all of the beds are in place, or damage to the lift assembly could result

Inspect the center cavity at the top of the bed for any quantity of beads which indicate a damaged inner screen

Inspect the bottom part of the bed for the presence of any loose beads, which may indicate a damaged outer screen. If when the beds are refilled and there is still evidence of bead leakage, the bed must be repaired or replaced.

To replace the desiccant

- 1: Remove the cap plate to gain access to the desiccant
- 2: Dump the desiccant beads out and vacuum the remaining beads out.
- 3: Fill the beds with new desiccant – use only 8 x 12 size (0.080” diameter) desiccant beads. Fill beds as full as possible. Rock the beds to promote settling of the beads. Add more desiccant to fill the beds.
- 4: Apply high temperature sealant (G.E. silicone RTV-106n sealant is recommended) and secure cap plates to beds
- 5: Secure beds into dryer with cap plates up and positioned outward from center of dryer.
- 6: Start the dryer and let it operate for a few bed shift cycles while inspecting for leaks at the upper and lower bed seals.
- 7: Shut off dryer and install side panels.
- 8: After approximately 1-2 weeks of dryer operation add more desiccant to make up for any further settling which may have occurred.

FORCING A BED INDEX (TECH-3 TD DRYERS)

If the Air Flow Rate indication option is installed, a second press of the Optional Setpoints key (single press if not installed) will display the following:



FIGURE 8.2 BED INDEX DISPLAY

Pressing the “NO” key returns to the First Screen (figure 3.2) and does not affect the dryer. Pressing the “YES” key causes the dryer to shift immediately.

NOTE: SHIFTING THE BEDS SHOULD NOT BE DONE UNLESS IT IS NECESSARY AS IT WILL CAUSE IMPROPER DRYING, AND MAY CAUSE A SEVERE TEMPERATURE SPIKE.

Any time a shift is required, make sure two additional shifts are complete so that the dryers desiccant beds are put into their original position.

DESICCANT BED RECHARGING PROCEDURE (TECH-3 TD DRYERS)

FOR TD-12 THROUGH TD-360

Read instructions completely before attempting to remove the beds.

6. Set Off/Auto/On switch to On, Set key switch to “Adjust Setpoints”.
7. Remove side panels.
8. Follow the procedure in Section 8.2 “Forcing a Bed Index”. When the beds are clear of the manifolds, remove power from the dryer.

Note: Do not turn the dryer off with the OFF/AUTO/ON switch. The manifold will clamp up against the beds.

9. Loosen the band clamps that hold the bed tight up against the turret plates, and remove the bed from the unit. Remove the band clamps
10. Apply power and repeat items 3 and 4 until all the beds have been removed.

Note: On some units, The bed turret assembly can be manually rotated if care is taken to rotate them slowly, and always in a left to right direction.

Inspect the center cavity at the top of the bed for any quantity of beads, which may indicate a damaged inner perforate screen.

Inspect the bottom part of the bed for the presence of any loose beads, which may indicate a damaged outer screen. If when the beds are refilled and there is evidence of bead leakage, the bed must be repaired or replaced.

To replace the desiccant:

- j) Remove the bed bead plate to gain access to the desiccant.
- k) Dump the desiccant beads out and vacuum the remaining beads out.
- l) Fill the beds with new desiccant - use only 4a type 8 x 12 size (0.080" diameter) desiccant beads. Fill beds as full as possible. Rock or vibrate the beds to promote settling of the beads. Add more desiccant to fill the beds and pack tight without breaking beads.
- m) Apply high temperature sealant (G.E. silicone RTV-106n sealant is recommended) and secure bed bead plates to beds.
- n) Reverse the bed removal procedure to replace the beds. Lift the beds into the dryer with bed bead plates up and positioned outward from the shaft. Make sure that the bolts for the band clamps are not strait out from the shaft. (The bolts can catch on frame parts and stall the rotate motor)
- o) Secure the beds tight against the turret plate with the band clamps.
- p) Start the dryer and let it operate for a few bed shift cycles while inspecting for leaks at the upper and lower bed seals.
- q) Shut off dryer and install side panels.
- r) After approximately 1-2 weeks of dryer operation check the bead level and add more desiccant if needed.

FOR TD-480 THROUGH TD-2000 (TECH-3 TD DRYERS)

Read instructions completely before attempting to remove the beds.

8. Set Off/Auto/On switch to On, Set key switch to "Adjust Setpoints".
9. Remove side panels.
10. Follow the procedure in Section 8.2 "Forcing a Bed Index". When the manifolds have pulled away from the beds, remove the 4CR (bed shift relay) from its socket. Place a 1" block inside of the upper and lower air cylinders. (2 if a single piston air cylinder). Remove the compressed air from the unit and make sure that the bed seals are far enough away from the beds to be able to slide the beds out of the turret plate. Remove power from the dryer.
11. Loosen the rotate motor bracket and remove the rotate chain. If there is not enough adjustment to remove the chain, use the master link to break the chain.
12. Using a HI-LO, place the forks on both sides of the manifold tube over the process blower. Lift the forks till just touching the beds. (DO NOT LIFT THE BED) Remove the bolts that hold the band clamps together and remove the bed by backing the HI-LO out of the unit.
13. Rotate the beds from left to right by hand so the next bed is in the same position as the first bed removed.
14. Repeat instructions 5 and 6 for the rest of the beds.

Inspect the center cavity at the top of the bed for any quantity of beads, which may indicate a damaged inner perforate screen.

Inspect the bottom part of the bed for the presence of any loose beads, which may indicate a damaged outer screen. If when the beds are refilled and there is evidence of bead leakage, the bed must be repaired or replaced.

To replace the desiccant:

- h) Remove the bed bead plate to gain access to the desiccant.
- i) Dump the desiccant beads out and vacuum the remaining beads out.
- j) Fill the beds with new desiccant - use 4a type 8 x 12 size (0.080" diameter) desiccant beads only. Fill beds as full as possible. Rock the beds to promote settling of the beads. Add more desiccants to fill the beds and pack tight without breaking beads.
- k) Apply high temperature sealant (G.E. silicone RTV-106n sealant is recommended) and secure bed bead plates to beds.
- l) Lift the beds into the dryer with bed bead plates up and positioned outward from the shaft.
- m) Reverse the bed removal procedure to replace the beds. Make sure that the bolts for the band clamps are not strait out from the shaft. (The bolts can catch on frame parts and stall the rotate motor) and the lid clamp pads on the top of the bed don't touch the turret plate alignment bushings.
- n) Start the dryer and inspect for leaks at the upper and lower bed seals. Force a shift to check the seals on all beds in all positions.