Quick Reference Pocket Guide

FETTE COMPACTING
FETTE AMERICA
For details and a better understanding of the parameter simply select the **parameter** and press **F1**.
When activated, control loop 1 is comprised of parameters that correspond with adjustment devices in order to maintain a specified condition or value which is specified in parameter #5 - Main Compression Force. A deviation of +/- 1% from the specified value in parameter #5 will result in the press automatically adjusting the filling depth to maintain the specified value.
Tablet Press Operation

BEFORE running your Fette tablet press!
• Verify punches are lubricated.
• Rotate the turret an entire revolution by hand to listen for strange noises, etc.

Running a Fette press:
• After loading the product hopper with granulation, press the letter K (Setting Run) on the keyboard, so that all product produced will be sent to the reject bin.
• Press F10 on the keyboard to fill the fill-o-matic with granulation.
• Press F12 on the keyboard and jog the press until a tablet appears on the discharge chute and then place it on a scale. If a tablet cannot be compressed and granulation appears on the scale, decrease parameter 18 Tablet Cylinder Height Main Compression until you are able to jog the machine with tablets appearing at the discharge chute.
• After weighing the sample tablet, use the following formula in order to quickly get the batch running weight.

\[
\text{Actual Fill Depth (mm) } \times \frac{\text{Target Weight}}{\text{Actual Weight (mg)}} = \text{Target Fill Depth (Par.6)}
\]

• Adjust parameter 6 Tablet Filling Depth and parameter 18 Tablet Cylinder Height Main Compression until batch specifications for final tablet hardness are achieved.
• Adjust parameter 19 Tablet Cylinder Height Pre-Compression until your granulation is now slightly compressed and de-aerated.
• The following steps should be taken prior to starting good production.
  1. Increase the speed of the machine (parameter 1) until batch guidelines are met.
  2. Start the machine and observe the Main Compression Force SREL. If the deviation is high, check the speed of the fill-o-matic (parameter 3) and increase the set value.
  3. Press L (Standard Run) to initiate good production count (parameter 14).
  4. Insert the actual value in the set column for parameter 5 Main Compression Force and parameter 13 Pre-Compression Force.
  5. Place a 1 in the set column for parameter 32. Adjust on 1/2/3, as this will activate force control.
• Start the machine and verify tablet weight and tablet hardness are ok.
• Observe parameter 8 Main Compression Force SREL and place a value in the set column that is 2-3 points higher than the actual. If the actual value in parameter 8 exceeds the set value the green status lights will begin to flash and alert the operator that the actual SREL is increasing.
• Observe parameter 9 Main Compression Force SREL Max and place a value in the set column that is 2-3 points higher than the parameter 8 set value. If the actual value exceeds the set value the press will stop, the red status lights will be observed and the alarm condition will be shown on the touch screen controller.
Fine Tuning

Fine tuning while the machine is running with force control on:

• **Tablet weight is good but the tablets are soft and need adjustment** -
  
  1. Enter a 0 in the set column for parameter 32 to turn off force control.
  2. Decrease the set value in parameter 18 Tablet Cylinder Height Main Compression until desired hardness is achieved.
  3. The force of the tablet has been changed, so now observe parameter 5 Main Compression Force and match the set and actual values.
  4. Enter a 1 in the set column for parameter 32 to turn on force control.

• **Tablet hardness is good but the tablet weight is low and needs adjustment. There are 2 ways to adjust tablet weight while utilizing force control.**
  
  1. Increase the set value for parameter 5 Main Compression Force, which will force parameter 6 Tablet Filling Depth to increase in order to satisfy the setting for parameter 5. 
  
  NOTE: Remember - force control works to maintain the set and actual at parameter 5 Main Compression Force.
  
  NOTE: With this adjustment we added material, but the cylinder height stayed the same, so check the hardness.
  2. Increase the set value for parameter 18 Tablet Cylinder Height Main Compression, which in turn will immediately decrease the actual force at parameter 5 and this will cause parameter 6 to
Fine Tuning Continued

increase until the set and actual match at parameter 5.
NOTE: Remember - force control works to maintain the set and actual at parameter 5 Main Compression Force.
NOTE: With this adjustment we increased the cylinder height and then added granulation. With this adjustment we adjusted the thickness slightly (0.01), so check the hardness.

• Tablet hardness is good but the tablet weight is high and needs adjustment. There are 2 ways to adjust tablet weight while utilizing force control.

1. Decrease the set value for parameter 5 Main Compression Force, which will force parameter 6 Tablet Filling Depth to decrease in order to satisfy the setting for parameter 5.
NOTE: Remember - force control works to maintain the set and actual at parameter 5 Main Compression Force.

NOTE: With this adjustment we reduced the amount of material, but the cylinder height stayed the same, so check the hardness.

2. Decrease the set value for parameter 18 Tablet Cylinder Height Main Compression, which in turn will immediately increase the actual force at parameter 5 and this will cause parameter 6 to decrease until the set and actual match at parameter 5.
NOTE: Remember - force control works to maintain the set and actual at parameter 5 Main Compression Force.
NOTE: With this adjustment we decreased the cylinder height and then removed granulation. With this adjustment we adjusted the thickness slightly (0.01), so check the hardness.
The T screen allows the user to set individual parameters on one run screen.

**Great Features For New Users**

All relevant parameters are shown when a change is necessary.

**F5 Graphics**

Nominal value:
- Pre-comp: F: min %
- Pre-comp: F: max %
- Pre-comp: T: min %
- Pre-comp: T: max %

Limits:
- Pre-comp: F: min %
- Pre-comp: F: max %
- Pre-comp: T: min %
- Pre-comp: T: max %

Settings:
- Tab. cyl. h. pre. co. mm
- Fill-o-matic speed rpm
- Permiss. punch lead kN
- Table fill depth mm
- Pre compr. force MV kN
- Tab. cyl. ht. main co. mm
- Tab. cyl. ht. pre. co. mm
- Penetr. main compr. mm
- Penetr. pre compr. mm
- Adj.: on=1/2/3
- Reject on=1/2/3/4
- Gratox speed rpm

Parameter Set Actual
---
1 Tablets/h x1000 0.0 0.0
3 Fill-o-matic speed rpm 0 0
4 Permiss. punch lead kN 0 0
6 Tabl. filling depth mm 0.00 0.00
13 Pre compr. force MV kN 0 0
18 Tabl. cyl. ht. main co. mm 0.00 0.00
19 Tabl. cyl. ht. pre. co. mm 0.00 0.00
20 Penetr. main compr. mm 0 0
21 Penetr. pre compr. mm 0 0
32 Adj.: on=1/2/3 0 0
33 Reject on=1/2/3/4 0 0
34 Gratox speed rpm 0 0
Troubleshooting

Troubleshooting: The method of ruling out possible causes for abnormal, as well as, normal operation and/or results. The process of elimination involves taking actual results and/or conditions and coupling them with known causes. This enables the operator to isolate the direct cause for undesired results.

Tablet Weight Variation
1. Poorly flowing granulation
   - Check the granulation for proper flow characteristics.
   - Check the hopper valve and adjust if necessary - you may need a stirring rod or a vibrator.
2. Tooling
   - Working length is out of specification (tooling working lengths should be routinely inspected to ensure they are within TSM specification). Please see reference drawings on page 17-18.
3. Die seating
   - If granulation is leaking under the scraper blade it may be an indication of a damaged blade.
   - Dies should be flush with the die table surface.
4. Incorrect fill cam parameter 39
   - Observe the actual filling depth and verify it is approximately 80% of the actual fill cam.
   - Quick tip for fill cam selection: Thickness of tablet x 2 + 2 = fill cam
5. Ledge cam
   - Remove the apron exposing the dosing station. Start the machine and verify the ledge cam is snug but also floats slightly.
6. Fill-o-matic parameter 3
   - Increase / Decrease the speed of the fill-o-matic and observe the impact on the SREL. May need to install round wire paddles.
7. Scraper 2 assembly
   - If the scraper blade is not flush to the die table and does not float, it can lead to burn marks.
   - The tail over die should sit flush on the die table.
8. Vacuum parameter 49
   - The amount of vacuum on the machine is regulated through parameter 49. If the vacuum regulation option was not purchased, adjust your house supply manually.
9. *Re-circulation scoop*
   • The blade of the scoop should be approximately .0001 inches from the bottom of the channel.

10. *Penetration parameters 20 & 21*
    • The actual penetration measured in mm identifies where the tablet is being compressed in the die.
    • 2 mm is a good starting point.
    • Adjustments are typically made in .5mm increments.

11. *Machine speed parameter 1*
    • As machine speed increases, you may want to increase your fill-o-matic speed (parameter 3). Also verify the 80% rule for the fill cam.

12. *Punch retention*
    • With the apron off and machine running, observe the lower punches to verify punches are not dropping. If the punches are dropping replace damaged punch seals, the retaining band can be adjusted or replaced and the metal clamp can be adjusted.

13. *Critical parameters not used correctly.*
    • Parameters 47 and 48 deal with tooling lubrication and must be set correctly. These values vary due to product characteristics, but a good starting point is 90 seconds for the lowers and 120 seconds for the uppers.
    • Parameter 57 Statistic No. of Tablets updates key parameters 5, 8 and 13, while parameter 59 Filling Depth Regulation sets the adjustment cycle for the dosing station. A good starting point for these parameters is 2X the number of die table stations.
Troubleshooting Continued

**Excess Material Loss**

1. *Product buildup between the fill-o-matic and the turret.*
   - Adjust the fill-o-matic height
   - Adjust the gap between the fill-o-matic table wear strip and the die table.
   - Replace the fill-o-matic base plate.

2. *Dirty compression chamber*
   - Check vacuum (parameter 49) or adjust house vacuum manually if option not purchased.

**Tablet Thickness Variation:**

1. *Compression rolls*
   - Ensure compression rolls are free of nicks, metal deposits and wear.

2. *Tooling*
   - Working length is out of specification (Tooling working lengths should be routinely inspected and within TSM specification).
   - Worn dies! (Dies should be visually inspected and discarded when excess wear rings inside the dies are present. Please see reference drawings on page 17-18).

**Tooling:**

1. *Punches binding in the bores*
   - Verify parameters 47 and 48 (lubrication upper / lower) are being utilized. Additionally, verify safety parameters 45 and 46 (punch stiffness upper / lower) are being utilized.
   - If the punch seals are damaged, product can build up in the bores and cause friction.
   - Incorrect handling of tooling can leave rough spots, edges or burrs.
   - Loose keys.
   - Damaged or insufficient pre compression can prevent a compression roll from turning.
Troubleshooting Continued

Tablet Capping:

1. *Trapped air*
   - Increase / Decrease penetration (parameters 20 & 21).
2. *Excessive compression force*
   - Increase tablet thickness or decrease tablet weight (lower the compression force).
3. *Incorrect ejection height*
   - Increase ejection height and check tablet take-off.
4. *Punch hooking tablet*
   - Inspect punch tips for damage.

Picking and Sticking:

1. *Insufficient compression force*
   - Increase tablet weight or decrease tablet thickness.
   - Decrease / Increase pre-compression force.
   - Decrease / Increase penetration.

If you need any assistance, please call Fette America at 973-586-8722. After hours, please call 1-877-606-5015 for our 24-hour emergency technical service.
# Controls Description

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PILZ SAFETY PLC</td>
<td>Triple redundant CPU processors for safety.</td>
</tr>
<tr>
<td>PTCAN CARD</td>
<td>Interface card between CAN bus and entire system.</td>
</tr>
<tr>
<td>VME BUS</td>
<td>Fast and accurate communication between the boards and the VME rack.</td>
</tr>
<tr>
<td>Motorola CPU</td>
<td>Main processor of VME system.</td>
</tr>
<tr>
<td>PTIDAC Card</td>
<td>Analog to digital converter.</td>
</tr>
<tr>
<td>B&amp;R Computer</td>
<td>Compact industrial computer.</td>
</tr>
<tr>
<td>Encoder</td>
<td>Provides feedback from necessary motors to the controller card. Example: main motor and station motors.</td>
</tr>
<tr>
<td>Lenze VFD</td>
<td>Speed controller for the FOM.</td>
</tr>
<tr>
<td>Direct drive main motor</td>
<td>Reduction in heat and noise, with the elimination of belts/pulleys.</td>
</tr>
<tr>
<td>IPOS Card (X98 only)</td>
<td>Intelligent positioning controller card controls the servo drives.</td>
</tr>
<tr>
<td>Printers</td>
<td>Some machines will have inkjets, some have receptacle for network printers.</td>
</tr>
<tr>
<td>Main Power Connection</td>
<td>Should comply with Local and National Electrical Codes.</td>
</tr>
<tr>
<td>Access to Power Cabinet</td>
<td>Should be locked at all times and only qualified personnel should have access.</td>
</tr>
<tr>
<td>Cables to/from press</td>
<td>Position cables so that they cannot be damaged and do not pose a tripping hazard.</td>
</tr>
</tbody>
</table>
Torque Specifications

<table>
<thead>
<tr>
<th>Part</th>
<th>Unit of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Die lock screws</td>
<td>10 - 12 NM</td>
</tr>
<tr>
<td>Die segments</td>
<td>40 NM</td>
</tr>
<tr>
<td>Dosing station</td>
<td>10 NM</td>
</tr>
<tr>
<td>Delrin upper cams</td>
<td>10 NM</td>
</tr>
<tr>
<td>Upper stiffness bracket</td>
<td>46 NM</td>
</tr>
<tr>
<td>Main drive shaft</td>
<td>50 NM</td>
</tr>
<tr>
<td>Upper compression station</td>
<td>195 NM</td>
</tr>
<tr>
<td>Manual penetration adjustment</td>
<td>600 NM</td>
</tr>
<tr>
<td>Center shaft P1200</td>
<td>400 NM</td>
</tr>
</tbody>
</table>
# Quick Tips

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Fix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine will not start</td>
<td>Observe the actual diagnosis list.</td>
</tr>
<tr>
<td>Diagnosis / Parameter descriptions</td>
<td>Highlight the diagnosis or parameter and press the F1 key.</td>
</tr>
<tr>
<td>You press the green button to start</td>
<td>Check the main contactor.</td>
</tr>
<tr>
<td>the machine, the lights go on but</td>
<td></td>
</tr>
<tr>
<td>the machine does not start</td>
<td></td>
</tr>
<tr>
<td>Communication failure</td>
<td>Check the RJ45 connection on the terminal, press and power cabinet. If all looks good but there is still no communication, bypass the machine by connecting the RJ45 crossover cable from the computer to the back of the VME.</td>
</tr>
<tr>
<td>When viewing an alarm on the TSC</td>
<td>This # identifies the amount of actual alarms at the present time.</td>
</tr>
<tr>
<td>there is a # next to it.</td>
<td></td>
</tr>
<tr>
<td>Abbreviations that appear on a</td>
<td>“P” stands for production sample, “D” stands for checkmaster sample, “E” stands for batch sample and “M” stands for manual sample.</td>
</tr>
<tr>
<td>Checkmaster production report</td>
<td></td>
</tr>
<tr>
<td>Poor yields</td>
<td>Indicates improper set up or worn out parts. A poor yield also affects tablet performance and quality.</td>
</tr>
<tr>
<td>High SREL</td>
<td>Check your FOM speed, FOM paddles, FOM table height, punch seals, punch lengths, retaining band and dosing ledge cam.</td>
</tr>
<tr>
<td>Worn or damaged parts not replaced</td>
<td>Limited or no “preventative maintenance”, the key word here is preventative.</td>
</tr>
<tr>
<td>Machine dirty</td>
<td>Inadequate dust control. Check parameter 49 or adjust house vacuum manually.</td>
</tr>
</tbody>
</table>
TSM Reference Drawings Continued

**Upper Punch**
- **Head Flat**
- **Outside Head Angle**
- **Barrel-to-Neck Radius**
- **Secondary Key Slot (Optional)**

**Upper Punch Face**
- **Key Orientation Angle**
- **Key Position**

**Lower Punch**
- **Barrel-to-Stem Chamfer (Optional)**
- **Barrel-to-Neck Radius**
- **Neck-to-Head Radius**
- **Head O.D.**

**Dimensions**
- **Overall Length**
- **Barrel Length**
- **Working Length**
- **Tip Length**

**Tolerances**
- **Blended Land**
- **Die Groove**
- **Chamfer**
- **Bore**
- **Protection Radius or Shoulder (Optional)**

**Technical Details**
- **Head Flat**
- **Outside Head Angle**
- **Barrel-to-Neck Radius**
- **Secondary Key Slot (Optional)**

**Key Features**
- **Key Orientation Angle**
- **Key Position**
- **Land**
- **Tip Face**
- **Cup Depth**

**Notes**
- Upper punch face details
- Lower punch dimensions and tolerances
- Keying and orientation guidance
Fette America offers 24-hour emergency technical service via telephone, 7 days a week, at no cost to the end user. One of our 14 service engineers is always on call to help guarantee the minimization of machine down-time.

To take advantage of this invaluable service, simply dial 1-877-606-5015 after normal business hours. The operator will contact our on-call service technician, who will then phone the client in need. Response times are generally in the neighborhood of thirty minutes or less.