Operating Instructions

SpeedMixer™ DAC 400.2 VAC-P

Machine Identification:	**SpeedMixer™**
Machine Type:	**DAC 400.2 VAC-P**
Software Version:	**V23**
Machine Number:	411506

Issue March 2014

Contents

READ BEFORE STARTING MACHINE
DAC 400.2 - 800.2 VAC – P

1. AFTER REMOVING SIDE AND LID OF CRATE (MARKED BY RED SCREWS), CAREFULLY LIFT MACHINE UP FROM THE FRONT AND ROLL FORWARD HALF WAY OUT OF THE CRATE UNTIL THE HANDLES CAN BE REACHED ON THE SIDE. HAVE TWO PEOPLE TAKE THE HANDLES AND LIFT THE MACHINE OUT WITH THE FIRST PERSON STILL SUPPORTING THE LOWER FRONT OF MACHINE. (machine has 2 small wheels at back and rubber feet at the front)

2. REMOVE TRANSPORTATION PROTECTION. SEE INSTRUCTIONS IN SECTION 2.2 OF THE MANUAL. DO NOT TURN THE POWER ON UNTIL THE TRANSPORTATION PROTECTION HAS BEEN REMOVED.

3. Read Section 4 – Operation (in Manual)

4. Read Appendix A – Mixing Weights

5. Always check that the cup or holder fits correctly before using. Push firmly down and then remove cup or holder - if the cup or holder is hard to remove and particularly if it has not reached the bottom of the metal mixing basket then do not use. (It will be impossible to remove after mixing as the mix will push down with incredible force)

6. Always make sure lids are on securely.

7. Do not leave the lab while machine is operating.

8. Should any unusual vibration or sound occur during mixing – turn off machine immediately – check total weight and if lid is still in place. If no problem is evident → contact supplier.

9. Do not leave machine on overnight or weekends when it is not being used.

10. Only authorized and trained persons should use the machine.

1. Safety instructions

1.1 Instructions for use

The SpeedMixer™ can be used for mixing paste with paste, paste with powder, powder with powder etc. Typical areas of application are the mixing of sealing compounds and coating agents (as e.g. silicone, polyurethane and acrylate), enamels, print colours and pigments, as well as the mixing of one, two or multi-compound products in liquid or paste-like form.
Important: Prior to mixing under vacuum, please be sure to drill a hole at least 2mm in diameter in the center of the lid of the cup. This will allow vapors to escape.

1.2 Precautionary measures:

The SpeedMixer™ can be operated without any risks when it is used for the intended purpose and all of the safety interlocks are functioning. The emergency unlocking mechanism may only be used if the mixer has been disabled with the emergency stop switch.

Right: unlock clockwise

Emergency
Unlocking

Figure 2

A

Left: to unlock anticlockwise

Figure 2a
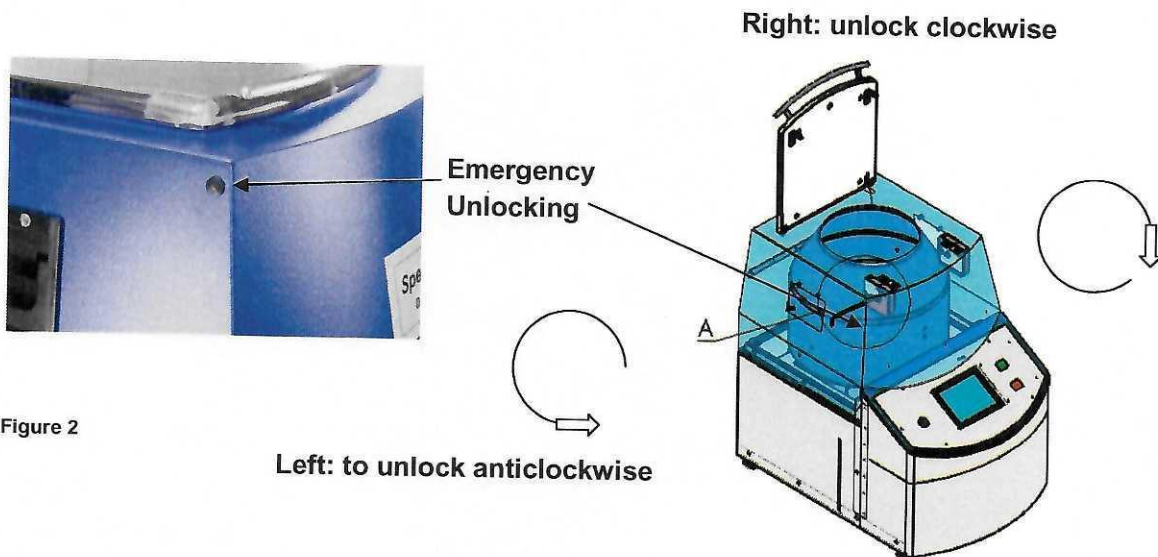
The emergency unlocking mechanism is used to open the lid manually during a power failure.
The emergency unlocking tool can be ordered from FlackTek Inc., 1708 Highway 11 Bldg. G, Landrum, SC 29356
For maintenance and repair work, the mixer must be completely unplugged.
WARNING: Make sure to wait for 3 minutes after unplugging for components to discharged.
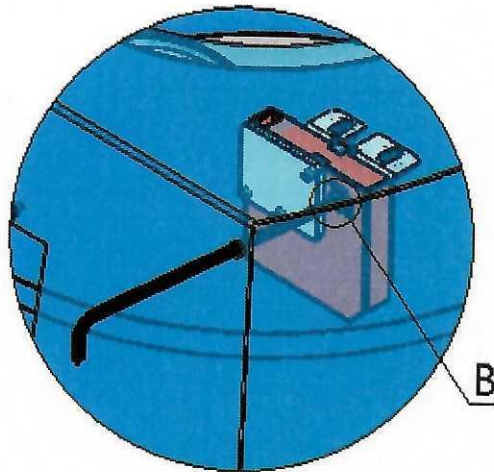**Emergency Unlocking:**
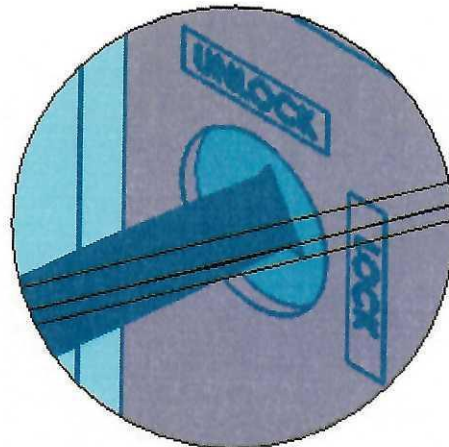
Figure 2b: Section A in Figure 2a   Figure 2c: Section B in Figure 2b

For emergency unlocking, first, remove the black covers (Figure 2). Insert the triangular end of the tool into the hole (Figure 2b) so that it can be used to turn the mechanism (Figure 2c).

When facing the front of the machine, open the left lock anticlockwise and right lock clockwise.

When operating with a vacuum pump, the following points should be noted:

- The maximum negative pressure (vacuum) for the device must not be less than 3mbar. Do not connect the machine to a vacuum system that will exceed this level of vacuum.
- The maximum pressure during the venting should not exceed 1450mbar (absolute pressure). When venting with compressed air or nitrogen be sure that this value is not exceeded.
- The vacuum lid must not be opened unless the mixing chamber has been vented to ambient pressure. Opening the lid when the chamber is under pressure or vacuum could cause damage to the machine, or in the worst case, injury to the operator.

Explosive and combustible materials must not be mixed with the SpeedMixer™.

The SpeedMixer™ should never be operated empty or with overweight (>400g). In this case, the system's balance will not be kept which may lead to vibration. This can put the entire machine into motion, leading to damages in the surrounding area, or in the worst case, personal injury!

The cups as well as the mixer basket may become hot when mixing at high speeds. Use appropriate gloves and protective equipment to remove the cup if you suspect it may be hot.

IMPORTANT: Cups are composed of polypropylene. Do not exceed the softening point (~110°C). Melting point is ~130°C.

For reasons of safety, any unauthorized opening of the enclosure, any technical modification of the SpeedMixer™ including the available software and/or the non/mixing parameters will result in the termination of the manufacturer's warranty.

SpeedMixer™ machines are equipped with a frequency converter to drive the motor.

Leakage currents from frequency converters may occur. Personal protection according to the current German VDE regulation EN 61008-2-1 (09/2007) [VDE 0664 part 100 (RCD type B)] and EN 50178 can be achieved with an all-mains sensitive ground fault circuit interrupter, with its frequency response characteristic adjusted to the typical leakage currents of frequency converters.

Technical causes:

In the case of an insulation fault in the frequency converter, a direct current error may occur, driving the core of the converter of a customary ground fault circuit interrupter to saturation. In this case, the function of such a circuit breaker is considerably impaired.

Furthermore, the line filters installed of the SpeedMixer™ create leakage current in the protective conductor.

The line filters are necessary to meet the statutory EMV safety measures (electromagnetic compatibility, radio shielding). Such leakage currents can combine with line filters during operation with other devices and thus activate the residual-current-operated protective device (RCD).

Recommendation:

We recommend back fitting of the mains, by a qualified electrician, with an all-current sensitive ground fault circuit interrupter.

Further information is provided by the vendors of all-current sensitive ground fault circuit interrupters, e.g. at http://www.doepke.co.uk/

1.3 Operator training

Prior to the using the SpeedMixer™, each operator should read the operating instructions. In order to prevent maloperation, the operator responsible for the SpeedMixer™ should make sure, that every other user has read the operating instructions and been properly trained.

2. Set-up instructions

2.1 Unpacking the SpeedMixer™

The SpeedMixer™ is carefully packed in a wooden crate and shipped to you with a transport screws installed. When you receive your SpeedMixer™, please check whether packaging or the machine has been damaged during transportation. In the event of damage, please take pictures of the damage report it to FlackTek immediately.
The machine has a weight of approx. 98 kg and should be moved at least by two persons.

1. Put the transport crate on a solid and level surface
2. Open the wooden box by removing the screws marked with orange paint.
3. Remove the cover as well as the loosened sides of the wooden box.
4. Remove the packaging material incl. bag.
5. You can remove all sides or only the front and rear side. When removing all sides, you can freely take the machine from the base and transport it to the location.
6. Slightly lift the machine at the front side (with 2 persons) and roll the machine so far out of the box until you can reach the folding handle of the machine.
7. It is recommended to operate the machine on an OEM stand provided by FlackTek. Alternatively, the machine may be placed on a stand or surface that is solid and level.
8. Make sure that the machine is as level possible and that all four feet have good contact with the stand. The machine's feet can be adjusted with a 13mm wrench.

2.2 Transport lock

It is important to remove the transport screws before commissioning the machine!
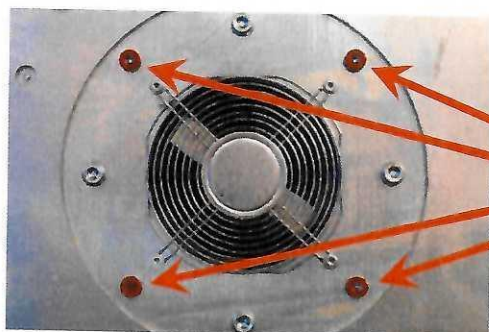
The transport lock consist of four red screws, which are attached to the bottom of the machine.

Device bottom

Figure 3

2.2.1 Removing the transport lock

Place the machine on the floor or a solid table. Leave approx. 1 m space adjacent to the machine to allow room to lay the machine on its side. Place a soft support pad (e.g. polystyrene from the packaging material) to the right of the machine. Please leave space for the power switch so that it does not bear any weight. Using the handle lay the machine on its right side. Remove the red screws (Figure 3) with the supplied tool.

2.2.2 Transport lock – storage

The transport screws should be kept with the crate for another transport. The machine should only be shipped in proper packaging with the transport screws installed.

2.3 Setup

Protect the machine from moisture. The place of installation should be selected so that no water and/or water vapour can get into the machine from the outside.
Do not insert foreign objects into the machine through the ventilation slots.

The SpeedMixer™ should be placed to an even, solid and sustainable surface that will support the weight of the machine and the slight vibration during the start and stop phase. There will be vibration during operation of the machine. Make sure that the machine is suitably stable.

2.4 Electrical connection

The connection may only be made if an approved CEE shockproof socket is available (electrical connection: 110V/60Hz/1200W). When the machine is started, increased load is temporarily drawn (up to 2500W). Please make sure that the circuit for the SpeedMixer™ is not overloaded by other electric devices. The machine is equipped with an automatic 10 A main fuse. It is located on the back of the machine. If the fuse is tripped, it will be indicated by the deactivated light by the fuse. Wait at least for 2 minutes until reactivating the fuse. If the fuse trips repeatedly, contact the customer service of Hauschild-Engineering e.g. at www.speeedmixer.de.

Hauschild-Service: Tel.: 0049238148205-0, Fax.: 0049238148205-17, Email: info@speedmixer.de

3. Machine description

The SpeedMixer™ has a robust metal enclosure, which contains the motor and the electronic switch units. A powerful motor starts rotating the basket of the mixing cup. The rotary forces allow the manufacture of homogeneous mixtures free from bubbles.

3.1. General view of SpeedMixer™ DAC 400.2 VAC-P
Figure 4

1. Cover
2. Manometer
3. Emergency stop
4. Display
5. Button "START"
6. Button "STOP/OPEN"
7. Power switch
8. Basket
9. Network access
10. Printer interface (RS232)
11. PC-connect. (RS232, Service only)
12. Fan
13. Vacuum Port
14. Air inlet
15. Nitrogen inlet
16. Automatic Main fuse

3.2 Machine description
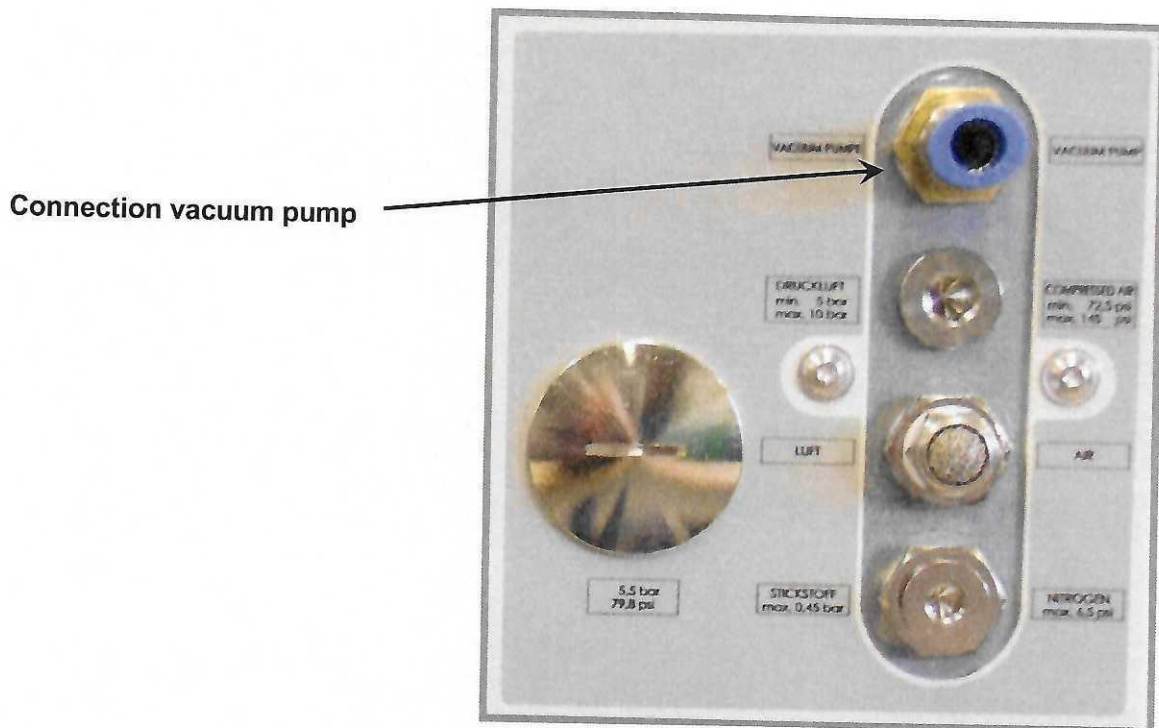

Connection vacuum pump

Figure 5

The devices' drum can be evacuated by an oil free vacuum pump or house vacuum. The standard connection is ¼" NPT.

3.2.1 General instructions for operation

- The maximum (vacuum) for the device must not be less than 3mbar. Therefore, only use a vacuum generator which permits a maximum low pressure of 3mbar.
- Before removing the vacuum lid, the vacuum chamber must be brought to ambient pressure!
- The pressure in the drum of the SpeedMixer™ is displayed by the manometer.
- **Make sure that the cup you are using has a hole in the lid, so the air can escape safely**.

    You will receive the following hardware with your machine

- **Hose**
- 2, Female ¼" NPT connectors
- 3/8" I.D. PVC braided hose
- 1, 3/8"x1/4" I.D. hose barb

- **Connection in back of machine**
- ¼" NPT

3.3 Digital Manometer

The SpeedMixer™ features a high-precision digital manometer, indicating the current absolute vacuum pressure in the drum.
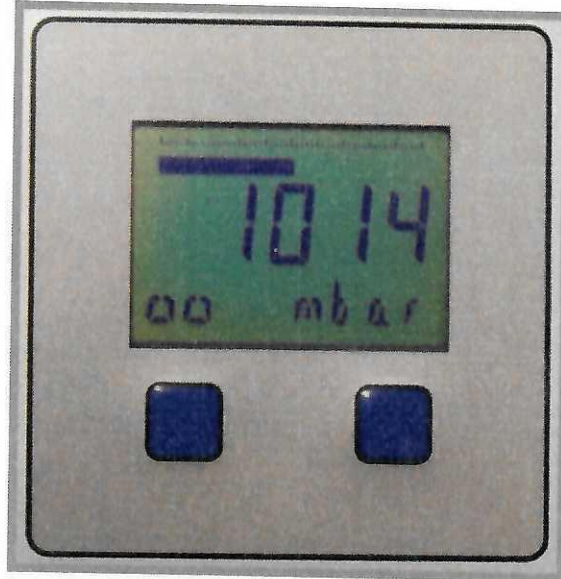The accuracy is ≤0.5% for pressures ≥6 mbar (≤1% o for pressures <6 mbar).

Figure 6

3.3.1 Operating of the Manometer

The digital pressure gauge is equipped with two buttons and a display. At the top of the display it shows a bar graph. If the bar is displayed to the middle, the measured value is about 1000 mbar, at low pressures, the bar display is reduced to the left, at higher pressures it is enlarged to the right. The display is factory set to mbar.

3.3.2 Menu options (Units)

The manometer allows indicating the pressure in various units.
Customizable units: [mbar], [bar], [Pa], [hPa], [kPa], [psi], [atm] [torr], [mmHg] or [user].
Provided units for the SpeedMixer™ are mbar and Torr (mmHg).

To change the unit of the manometer, repeatedly press the right button on the gauge until the display changes to [UNIT]. Then press the left button, the [UNIT] flashes.
Use the right button to select mbar or Torr (to match the unit on the main display). Press the left button to confirm the selection. The right button can then be used to scroll back to the home screen.

3.3.3 Menu „HI"

Using the right button to scroll to the "HI" setting on the display will allow you to read the maximum pressure reached in the mixing drum since the last time the Speedmixer™ has been turned on.
To delete the value use (CLEAR no / yes) (clears the upper and lower maximum value).

Delete the value: Press the left button, it flashes in the bottom line, the top line says "no"; between "yes" and "no" with right button to select "CLEAR?". Confirm the selection with left button.

3.3.4 Menu "LO"

If you use the right button to select "LO" on the display, the minimum pressure reached in the mixing drum since the last time the Speedmixer™ has been turned on will be displayed.
To delete the value use (CLEAR no / yes) (clears the upper and lower maximum value)

Delete the value: Press the left button , it flashes in the bottom line, the top line says "no"; between "yes" and "no" with right button to select "CLEAR?". Confirm the selection with left button.

3.3.5 Menus OUT 1 / SP1 / RP1 / OUT2 / SP2 / RP2 / Span / CAL OFS / CAL FSO / RESET / VERSION

These menu points are only needed for the service of the SpeedMixer™ and have no meaning for the user. Please do not change any settings under menu item "RESET".

4. Operating instructions

4.1 Commissioning

Please pay attention that the transport lock was removed prior to initial commissioning (see 2.2).

Before commissioning the machine, the window should will be closed and locked. Do not try to open it while the machine is powered off. Please ensure that the emergency stop switch has not been activated. Deactivate it by turning it in the direction of the arrow, if necessary. Power the machine on with the power switch at the right side. Initially the logo "Hauschild-SpeedMixer™" will appear on the display with the firmware version (e.g. V 23).

Figure 7

Then the display will show the programs. The machine is ready for operation.

Figure 8

The display has a touch-sensitive screen, all settings are made via the touchscreen.

4.2 Program descriptions

The SpeedMixer™ provides a total of 20 mixing programs. The programs are shown on the display with P1-P20 (2). The speeds and mixing times are in the various mixed phases A, B, C, D and E (10/11). The possible RPM settings range from 800 to 2500 rpm, or 0 rpm for a break between the individual phases. The possible time settings range from 0 sec to 9:59 min. The maximum total mixing time (all phases A-E) is 10 minutes.

The vacuum field (12) can be used to set the desired final pressure of each phase. The information is given in mbar (other Sec. 3.2.2.) The minimum pressure is 3 mbar, the maximum pressure is 1000 mbar. Each value can be freely selected.
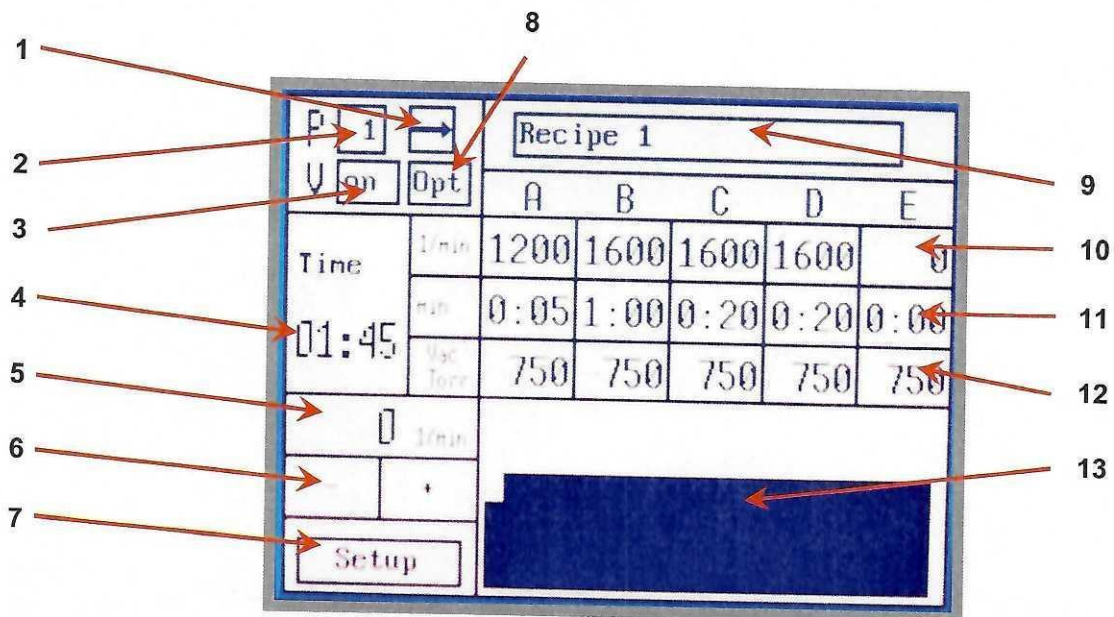

Figure 9

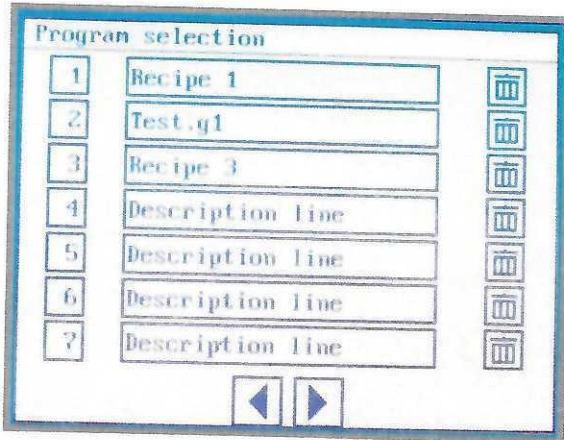| 1	Stop/Start or Continuous mode	8	Option menu (VAC-settings)
2	Program selection	9	Program name
3	Vacuum active / deactivate	10	Fields for speed (zones A-E)
4	Remaining time	11	Fields for time (zones A-E)
5	Current speed	12	Fields for vacuum level (zones A-E)
6	+ / - buttons speed change during mixing mixing operation	13	Graph of mixing progress
7	Setup menu		

4.2.1 Setting time and RPM

Figure 10

First, select the program you wish to edit. You can do this by touching the field next to the letter "P". It opens a new window (Figure 10), in which you can select the desired program by pressing the number.

Program names are displayed in the middle of the screen. The trash icon will delete the program. Use the arrows in the bottom row to go to the other program positions (8-20) or change to the previous screen.

Among the individual mixing zones (letters A-E) values for rotational speed, time, and vacuum can be adjusted.

The selected values are shown below the individual mixing zones (A-E).
To change the values of a setting, touch the value you wish to change. An input box will open (Figure 11) where you can enter the desired speed.
The setting is shown in the top right side of the input box. Confirm the selection with "Enter". The input box will now disappear.
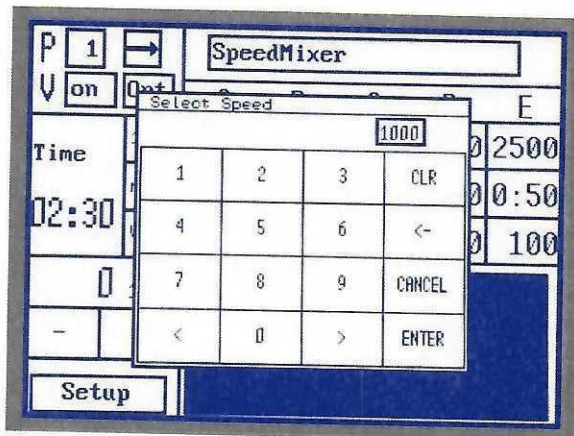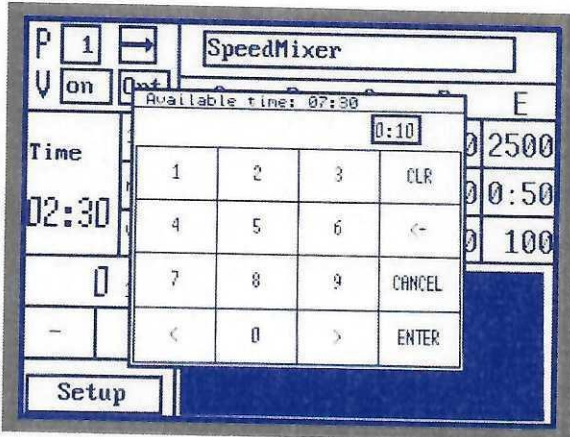

Figure 11

Select Speed

Use the button "CLR" to clear the selection, the button "<-" to clear one digit of the selection and "CANCEL" to abort the operation.

To change the **mixing time**, touch value you wish to adjust. An input box will open (Figure 12), where you can enter the desired time *(0sec to 9min59sec per zone: Up to 10min total)*. The current setting is shown at the top right side of the input box; confirm the selection with "Enter". The input box will now disappear.

The possible total mixing time (all phases A-E) is 10 min.

Mixing time

Use the button "CLR" to clear the selection, the button "<-" to clear one digit of the selection and "CANCEL" to abort the operation.

Figure 12

If you want to operate the device without a vacuum, Press V: on/off. To activate, press this field again (Figure 9 / Field 3).
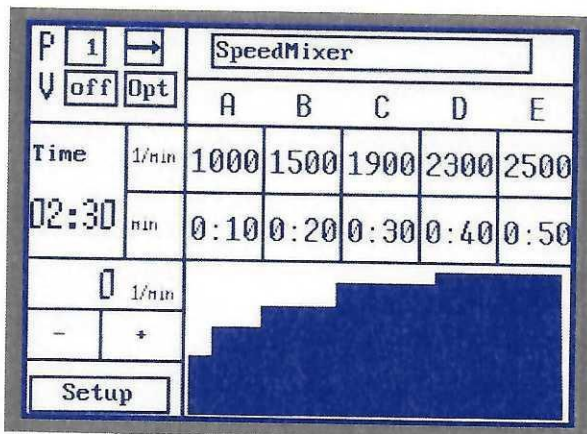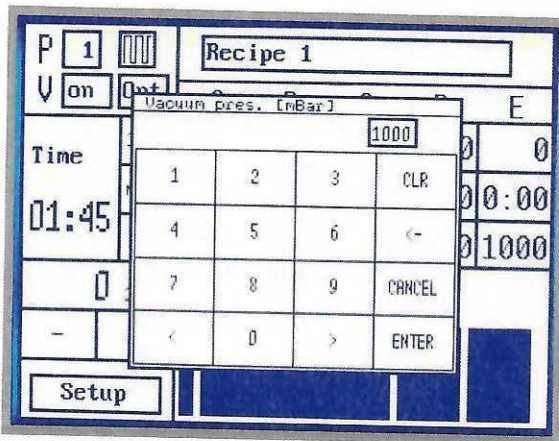

Figure 13

4.2.2 Setting vacuum level

A separate vacuum pressure can be set for each zone. The lowest setting should be 3 mbar, the largest adjustable value is 1000 mbar.
The performance of the evacuation will depend on the vacuum pump used.
To adjust the vacuum, touch the value you would like to change.

Figure 14

A menu will appear (Figure 14) in which you can enter the desired value.
The settings are shown here in mbar (choose 3 mbar to 1000 mbar).
If a mixing cycle is finished or aborted, the chamber will be automatically vented. The rate of ventillation can be set via the automatic ventilation control valve. (Figure 15)

By pressing the "CLR" the selection is cleared by pressing the "<-" is a body clears the selection, by pressing the "CANCEL" cancels the operation without the changed value to take over.

4.2.3 Option menu
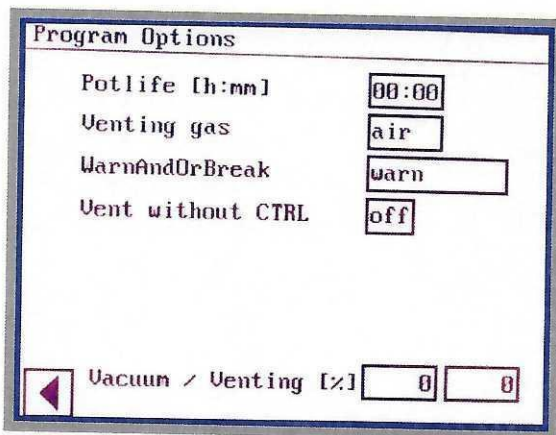
Figure 15

You can reach the "Program Options" screen by pressing the "Opt" button (Figure 9/8). Here you can set additional functions.

4.2.4 Pot life

The pot life is the time in which the product can still be used after mixing. This time is set by the user and can be printed by using the printer interface (4.3).

4.2.5 Venting gas

In the "Venting gas" field, the user can choose between two options either air or nitro.

4.2.6 Warn and / or break

The field "WarnAndOrBreak" allows the user to adjust if/when and error message is reported if the vacuum set point is not reached (tolerance + / - 5mbar). The possible settings are "off", "warn", and "warn&break". "off" will report no error if the vacuum level is not reached. "warn" will report error 40 (Figure 16) at the end of the completed program. "warn&break" will abort the mixing cycle at the end of a zone where the vacuum setting was not reached and report error 42 (Figure 16a).

Figure16
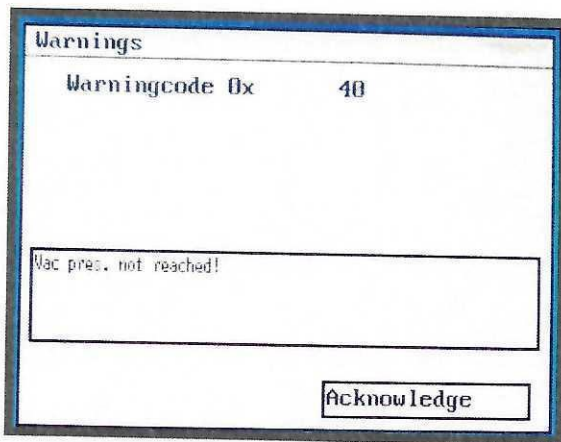
Figure 16a
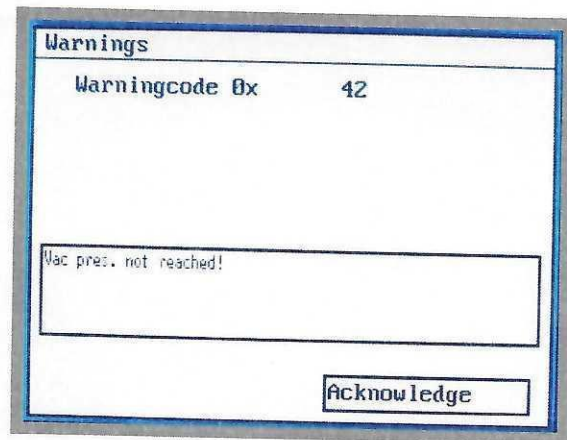
4.2.7 Vent without control

The "Vent without CTRL" setting controls the rate at which the chamber is vented. If the value is "off", the chamber is vented at a predefined curve (slow). If the value is "on", the valve is opened to its maximum and flooded as quickly as possible. (Figure 15)

4.2.8 Vacuum / floods

The "vacuum / venting" allows use of the vacuum function when the machine is not mixing. By entering a value between 0% to 100%, controlled vacuum can be achieved. 0% means the valve will be closed. 100% means the valve will be 100% open. Each value can be selected freely.

Figure 17
When you leave the setup menu, the values

in the bottom line (Vacuum / Venting)) will be deleted.

4.2.9 Start/stop & continuous mode

Two mixing modes are available:
Start/stop and Continuous mode button (Figure 9/1)

Start/stop mode:

Continuous mode:

Symbol 1

Symbol 2

The bar chart will automatically adjust to indicate the mixing mode:
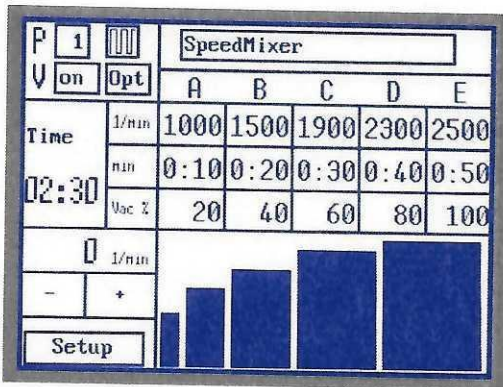
Figure 18
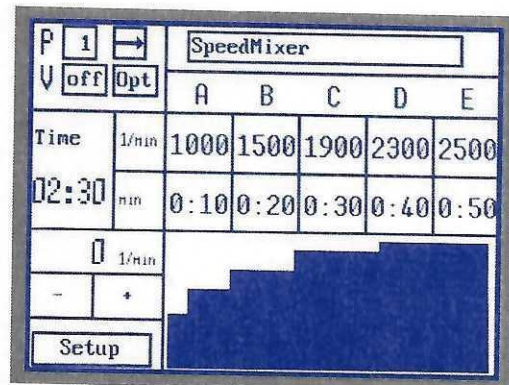
Figure 19

In continuous mode, all selected program steps (A-E) will run consecutively without stopping. If the speed in a zone is set to 0rpm, the mixer will stop for the set time.

In stop/start mode, each zone will run individually. The mixer will stop and unlock the lid after each zone. This can be useful for the preparation of formulations which require multiple addition steps. When using stop/start mode with a vacuum program, the drum is vented at the end of each zone.

4.2.10 Naming a program

The upper right panel of the display allows you to freely set the name of your program. To change the program name, press the button (Figure 9/2 or Figure 9/9).
This opens a menu (Figure 20) in which you can enter the desired program name.

Description			
SpeedMixer_<			
.,:/ 1	abc 2	def 3	CLR
ghi 4	jkl 5	мno 6	<-
pqrs 7	tuv 8	uxyz 9	->
SHIFT	_=-+ 0	CANCEL	ENTER

Figure 20

Key Functions:

CLR	Delete the input
<-	Point is deleted
->	Cursor jumps to the right
Enter	input is accepted and pop-up closes
Cancel	the pop-up closes without the name changed to take
Shift	of uppercase letters

All other letters / numbers / symbols by repeatedly pressing the appropriate button called.

The new name of the program is displayed in the upper right, you confirm with "Enter" when finished.

4.3 Printer interface

The Speed Mixer ™ provides users the opportunity to document the mixing processes with the printer interface. Values for speed, time, vacuum valve position, date, pot life and number of mixing operations are stored.

Printer port RS-232
Figure 21

For more information, please contact FlackTek Inc.:
Tel: (864)895-7441, Email: SpeedMixer@FlackTek.net

4.4 Program start

When all settings of the program (Section 4.2.2) have been entered, the machine is ready to mix.

The lid if the machine can be unlocked with the "STOP/OPEN" button. You will see the message in Figure 22 when the lid is unlocked
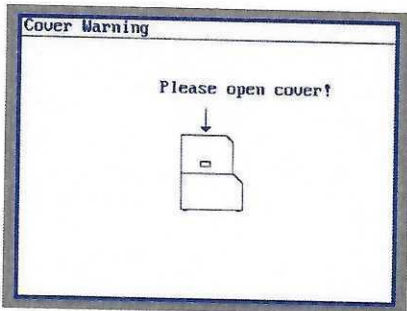
Figure 22

Please note that the window of the SpeedMixer™ cannot be opened if the machine is unplugged or is switched off.

Warning: The lid of the SpeedMixer™ is locked during the mixing process and cannot be opened. If you like to stop the mixing process, press the Stop/Open button. The lid will unlock after the machine stops completely. You will hear a short acoustic signal and a message will be displayed when it is ready to open.

Filling the machine

Check the total weight (material + cup + holder if used) to ensure it is within the recommended weight range for your machine. See Appendix A for recommended weights. When the total weight has been confirmed, place the sample + holder (if applicable) securely into the basket. Make sure there is a hole in the center of the lid if vacuum mixing.

Make sure that the O-ring and the vacuum lid are clean. For the best seal, apply a small amount of vacuum grease to the O-ring.

Vacuum lid latch

O-ring
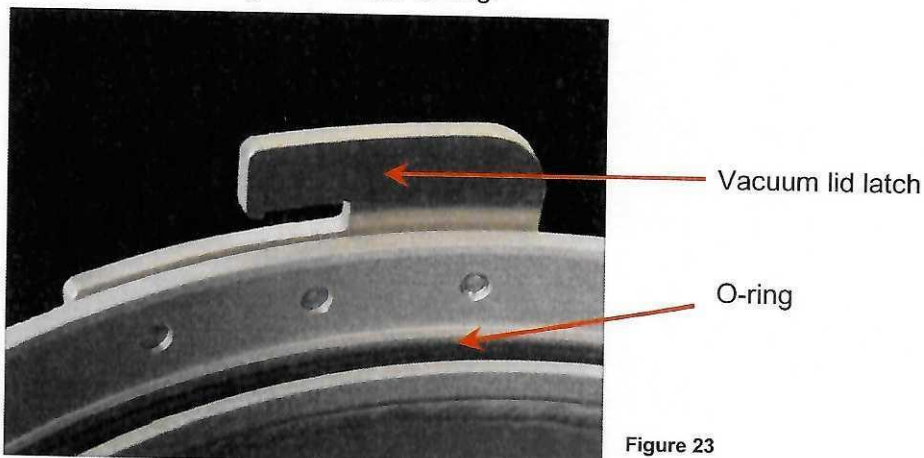
Figure 23

Close the drum with the vacuum lid (make sure that the surface of the vacuum lid is clean and undamaged, place the lid on a clean and soft base if it is not inside the machine).

Rubber skirt

Vacuum lid arms
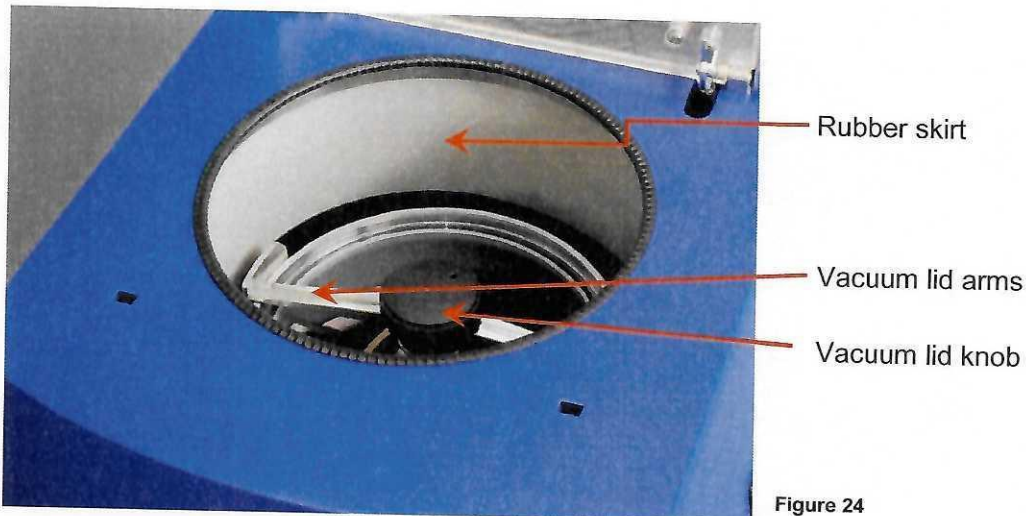
Vacuum lid knob

Figure 24

Make sure that the vacuum lid arms are fully engaged with the latches (Figure 23) on the mixer drum. Then turn the knob clockwise until resistance increases and the knob cannot be turned any more. Now close the lid of the machine. Begin the mix cycle by pressing "Start" button.

It is recommended to operate the SpeedMixer™ with a **utilization ratio of max. 50%** (e.g. 10 minutes of mixing, 10 minutes of standstill) to avoid overheating.

4.4.1 Settings during the mixing process

The bottom left side of the display above the "Set-up" button shows the buttons + and - :
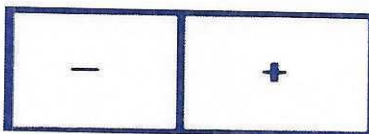
Figure 25

The "+" and "-" buttons can be used to change the RPM, while the machine is running, in increments of 50 rpm. Operation in a key lock mode is excluded (see section 4.10)

4.5 Imbalance errors

The SpeedMixer™ is designed for a total weight of 250-400g (cup + holder + material) in the basket. If the weight limit is not obeyed, the counter weight inside the machine can no longer balance the occurring forces which may result in damage. The DAC 400.2 VAC-P is equipped with an imbalance sensor. If a mixing cycle should cause strong vibrations, the mixing cycle is immediately stopped. This may sometimes occur with small mixing weights (250 to 300g) or with low-viscosity materials. The message "Vibration Error" will appear if the sensor stops the cycle to protect the machine. If you see this error please check the total weight, as mentioned above, and acknowledge the error.
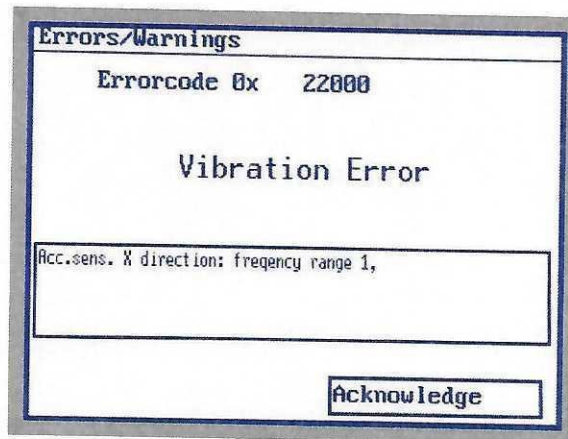
```
┌──────────────────────────────────────────┐
│ Errors/Warnings                            │
│                                            │
│       Errorcode 0x    22000                │
│                                            │
│                                            │
│           Vibration Error                  │
│                                            │
│  ┌──────────────────────────────────────┐ │
│  │ Acc.sens. X direction: freqency range 1, │ │
│  │                                       │ │
│  │                                       │ │
│  └──────────────────────────────────────┘ │
│                                            │
│                          ┌─────────────┐   │
│                          │ Acknowledge │   │
│                          └─────────────┘   │
└──────────────────────────────────────────┘
```

Figure 26

The total weight is composed of three components:
CUP (with lid) + HOLDER + MATERIAL

Please make sure that 400 g are not exceeded and a minimum of 250 g is used!
Ideally, a total weight between 275 and 375 g should be used. Such weights cause little vibration only and the load on the machine is reduced to a minimum.
When developing a formulation where only a few components are mixed in the beginning and other ingredients are added bit by bit, please make sure that you use the appropriate cup and holder to keep the total weight inside the 250 - 400g limit. Lighter or heavier holders may be available if needed. Please contact FlackTek if you would like more information about holder options.

4.6 Setup menu

The **Setup** button is located at the bottom left corner of the display. Pressing it will take you to the setup menu (Figure 27).
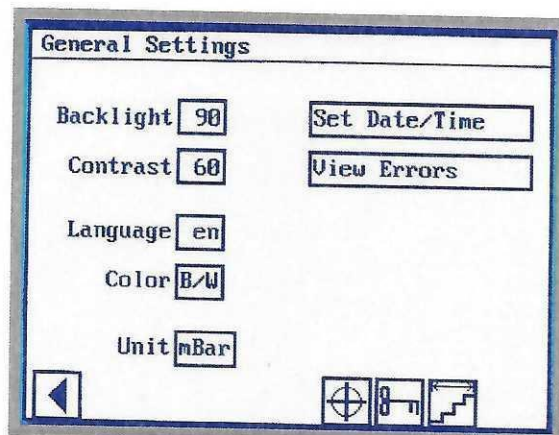
Figure 27

The setup area offers the following setting options:

Value:	Section:
Backlight /contrast	4.6.1
Language settings	4.6.2
Color settings	4.6.3
Time settings	4.6.4
Unit mbar/ Torr	4.6.5
Error messages	4.7
Display calibration	4.8
Ramp settings	4.9
Key lock	4.10
Service interval	4.11
User data service	4.12

4.6.1 Setting of backlight and contrast

Pressing value beside "Backlight" or "Contrast" will cause an input box to open.
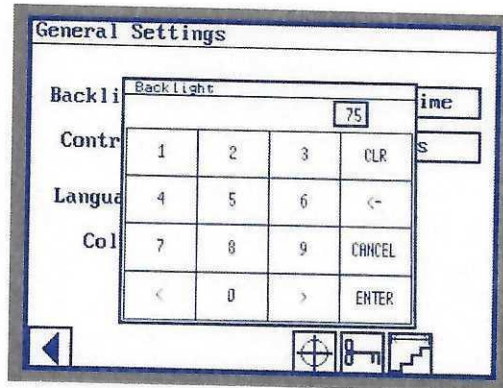
Use the button "CLR" to clear the selection,

the button "<-" to clear one digit of the selection and

"CANCEL" to abort the operation.

Figure 28

You can enter the values for the desired **brightness** here. The selection is shown in the top right input box; confirm the selection via "Enter". The input box will now disappear.
To set the **contrast**, proceed in the same way..

4.6.2 Language settings

The SpeedMixer™ offers menu navigation in English and German. To select a language, touch the value beside the "Language" button. The language will now change to/from German "de" or English "en".

4.6.3 Color settings

The SpeedMixer™ offers two color settings, blue background with white letters or white background with blue letters. Press the value beside "Color" to toggle between the two.
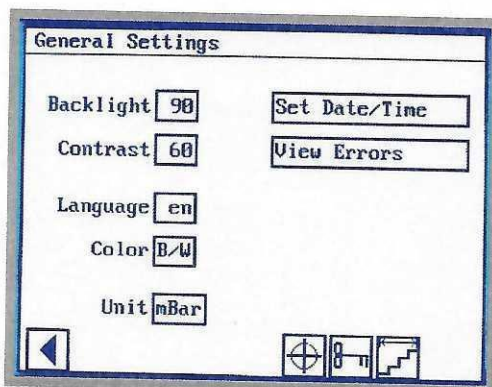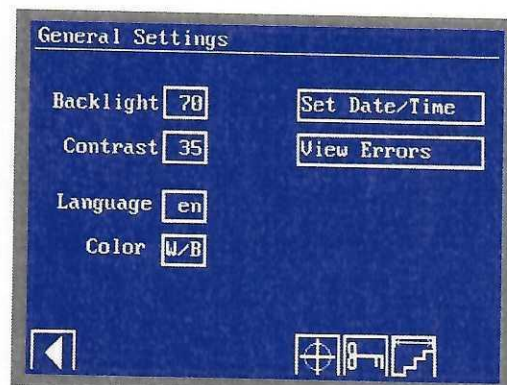

Figure 29

Figure 30

4.6.4 Time settings

The SpeedMixer™ offers the option to document the mixing cycles via interface with a printer or a computer. Date and time are be collected as part of this documentation.
To set date and time, press "Set date/time". An input box will appear.
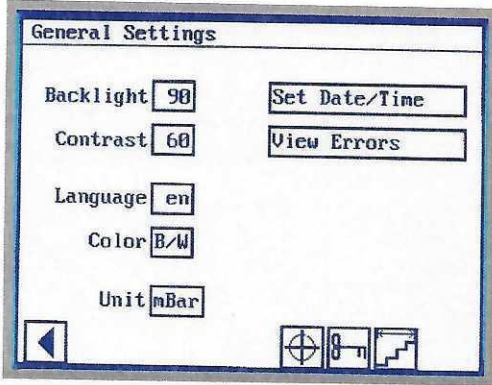
Figure 31
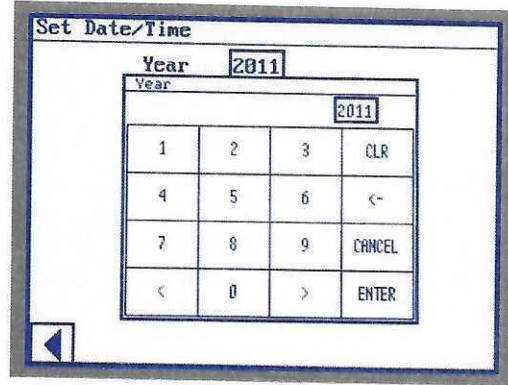
Figure 32

Here you can enter the values for date and time in the individual fields. The selection is shown in the top right input box; confirm the selection with "Enter". The input box will now disappear.
Use the button "CLR" to clear the selection, the button "<-" to clear one digit of the selection and "CANCEL" to abort the operation.

4.6.5 Unit mbar/ Torr

Here you can switch the unit in the display between mbar and Torr

4.7 Error messages / faults

The SpeedMixer™ collects internal faults in an error list.

The following error messages are displayed as text message with error code:
(If several errors occur simultaneously, the error code of the individual errors will be combined). If any errors occur please contact FlackTek's maintenance department.

FlackTek Maintenance: Phone: (864)895-7441
E-mail: SpeedMixer@FlackTek.net
1708 Highway 11, Bldg G, Landrum, SC 29356

Error list with error codes

| Text message	Error No.	Error code	Description
Status error	0	0x000001	Acknowledge error, inform FlackTek in case of repeated error
Parameters deleted, change battery	1	0x000002	Inform FlackTek
Change battery	2	0x000004	Inform FlackTek
Motor temp. too high	3	0x000008	Acknowledge error, inform FlackTek in case of repeated error
Lid monitoring error	4	0x000010	Acknowledge error, inform FlackTek in case of repeated error
Error stop position	5	0x000020	Acknowledge error, inform FlackTek in case of repeated error
Service interval expired ->	6	0x000040	Inform FlackTek Make service appointment
-	7	0x000080	Not defined
Error rot. control	8	0x000100	Acknowledge error, inform FlackTek in case of repeated error
Commun. error CAN1	9	0x000200	Acknowledge error, inform FlackTek in case of repeated error
Ext. error code FU	10	0x000400	Acknowledge error, inform FlackTek in case of repeated error
-	11	0x000800	Not defined
Commun. error CAN2	12	0x001000	Acknowledge error, inform FlackTek in case of repeated error
Vibrat. sens. X-direction	13	0x002000	Acknowledge error, check mixing weight, see Appendix A, inform FlackTek in case of repeated error
Vibrat. sens. Y-direction	14	0x004000	See error 13
-	15	0x008000	See error 13
Mean value exceeded	16	0x010000	See error 13
Exceedance in the 1st frequency range	17	0x020000	See error 13
Exceed. in 2nd freq. range	18	0x040000	See error 13
Exceed. in 3rd freq. range	19	0x080000	See error 13
Exceed. in 4th freq. range	20	0x100000	See error 13
Exceed. in 5th freq. range	21	0x200000	See error 13
Exceed. in 6th freq. range	22	0x400000	See error 13
Exceed. in 7th freq. range	23	0x800000	See error 13

FlackTek Inc.

Telephone: (864)895-7441   Email: SpeedMixer@FlackTek.net

4.8 Display calibration

The touchscreen display can be calibrated by pressing the button shown below (Symbol 3).
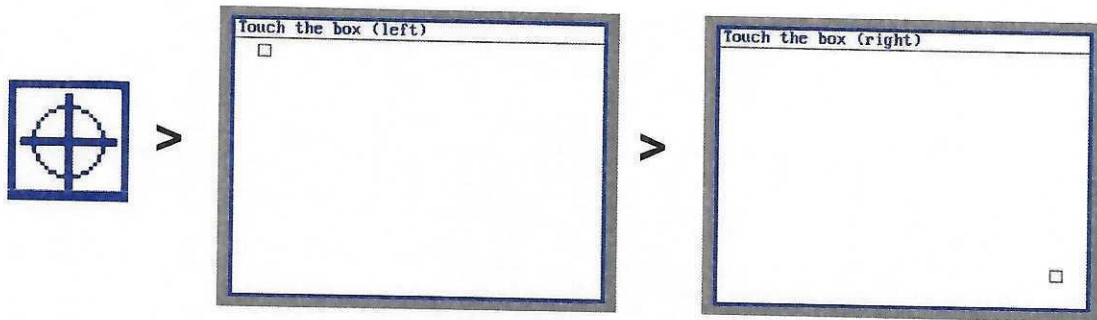
Symbol 3   Figure 33   Figure 34

For the calibration of the display, touch the button with the symbol shown above. A menu will open where you will touch the displayed squares. Then the calibration is completed.

4.9 Ramp settings

The option of the ramp setting can be used to adjust the acceleration and deceleration of the SpeedMixer:

Touch the adjacent symbol in the set-up menu to set the ramp values. In the ramp settings menu you can adjust the "acceleration ramp" and the "deceleration ramp". This may be helpful for liquids with extremely different viscosities, as well as for mixing some pastes or powders.

Symbol 4

The following window will appear when the ramp button is pressed:

```
Ramp settings

    Accel. Ramp [s]    5
    Break. Ramp [s]    5
```
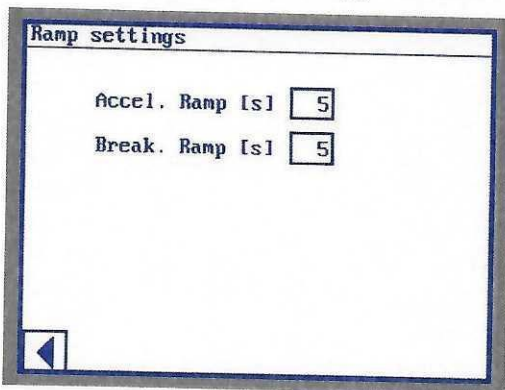
Figure 36

If you touch the corresponding button, a pop-up window will appear (Figure 43).

```
Ramp settings

  Ac    Accel. Ramp [s]
                         5
  Br
        1    2    3    CLR
        4    5    6    <-
        7    8    9    CANCEL
        <    0    >    ENTER
```
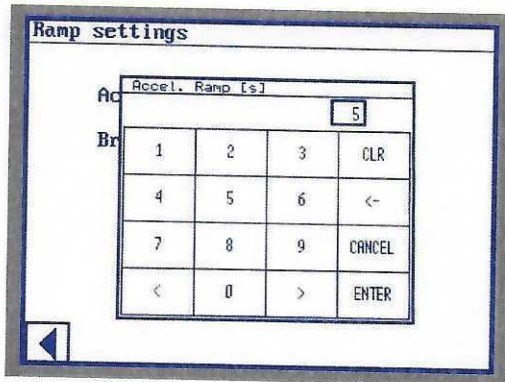
Figure 37

The value is expressed in units of "seconds". The acceleration rate is adjustable from 3s to 30s. The braking ramp can also be adjusted in the range from 3s to 30s.
3s means extremely fast acceleration. 30s would be extremely slow acceleration.

4.10 Key lock

The SpeedMixer™ offers the operator the option to limit the scope of operation. The **key lock** is used to block different setting options on the display.

Lock mode 0:   No key lock
Lock mode 1:   time and speed are locked. all programs are accesable.
Lock mode 2:   time, speed and program selection are locked
Total Lockdown: Lock mode 2, all of current program set to 0

The key lock password cannot be changed, so only the main user(s) should have the password.

For more information about Key lock mode please contact FlackTek Inc. (864)895-7441.

4.11 Service interval

The collection of the operational data offers the option for maintenance of the SpeedMixer™ in regular intervals on the basis of the operating hours. For this purpose, a number of operating hours between services can be set in the system parameters. If activated, when the operating hours counter reaches the specified time, the display will prompt the user to have the machine serviced.

Alternatively, machine can be maintained annually. More information can be found in Chapter 6, maintenance and care.

4.12 User data service
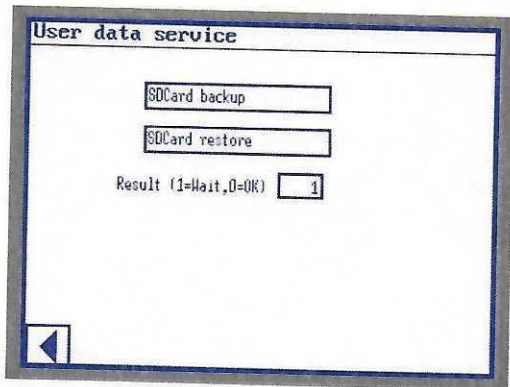
41   Figure 42 >

The user data service of the SpeedMixer™ offers the option to save all accruing data, to an SD memory card.

Figure

The collection includes the records of the mixing programs, usage data, and system parameters.

5. Basic mixing rules

Please observe the following basic SpeedMixer™ rules:
- Always observe the allowable mixing weights (see Appendix A)
- Wait approx. 2 sec. after closing the lid before starting the mixing process.
- Always make sure that the cup has been securely closed.
- Do not leave the machine unattended during operation.
- Between the mixes, always leave the lid open and the machine on.
- The SpeedMixer™ has a maximum duty cycle of 80%
  (e.g. 10 minutes of mixing, 2 minutes of standstill). 50% duty cycle is recommended.
- Stop the mix cycle immediately if you notice unusual vibration or noise. Check the mixing weights and the cover of the mixing cup. If no error can be identified and symptoms persist, contact FlackTek.
- Do not leave the SpeedMixer™ switched on overnight or over the weekend when the machine is not in use. Turn off the machine using the green power switch.
  If the machine is not used for a longer period of time, remove the mains plug or switch off the machine at the orange device fuse on the rear side.
- The SpeedMixer should be connected to a surge protector.
- If using a vacuum pump, an oil-free pump is recommended to prevent oil from being drawn into the vacuum line.

6. Maintenance and care

As with any electro-mechanical device, the SpeedMixer™ contains moving parts which become worn through repetitive use. It is recommended that Preventive Maintenance be performed on an annual basis to minimize stress on these moving parts and related load bearing components. Utilizing an annual Preventive Maintenance schedule will minimize unplanned repairs, extend the life of your SpeedMixer, and sustain repeatable processes. Contact FlackTek for further information regarding Preventive Maintenance.

The SpeedMixer™ does not require special care. Contamination should be removed immediately with a paper towel or possibly with a moist cloth. Do not use aggressive cleaning agents (such as, for example, acetone or nitro-cellulose combination thinner)!
Liquids or solid matter should be prevented in any case from getting below the rotary plate of the rotation arm.

7. Troubleshooting

The machine won't turn on....
- Is it plugged in?
- Is the emergency stop switch pressed?
- Is the power switch on?
- Is the automatic main fuse on?

When an unusual noise can be heard during mixing...
- Immediately stop the mix
- Is there any foreign matter in the mixer tank?
- Check the weight of the mixture

If the lids of the cup comes off....
- Call FlackTek
- Immediately switch off the machine (on/off switch or emergency stop)
- Are appropriate mixing cups used?
- Reduce the amount of mixture!

If the cover cannot be opened...
- Press "Stop/Open"
- Is the main power switch activated?

For the explanations of the **error codes** please refer to section 4.7.

8. Technical data

Manufacturer:	Hauschild & Co. KG Waterkamp 1 59075 Hamm Germany
Type identification:	DAC 400.2 VAC-P
Machine designation:	SpeedMixer™
Dimensions:	Width: 440mm Depth: 660mm Height (1): 730mm Height (2): 1004mm
Height with open lid:	
Electrical connection:	110V/60Hz
Surge category:	II
Power input:	1200 watt
Electric fuse protection:	automatic main fuse 10A
Weight:	approx. 98kg
Permitted speed:	2500 min/-1
Permitted fill quantity:	Max. 400 g total
Rotor diameter:	270mm
Rotor material:	EW AW – 7075 AL Zn Mg Gu 1,5 DIN 3.4365
Kinetic energy of runner with max. speed in Nm:	for max. permitted load 1200
Type of brake:	Spring force brake
Locking of lid:	Safety switch with separate actuator and locking device
Sound pressure level:	61 dB (A) + / - 3 dB, while 2500min, 400g test weight device 80 cm above ground, a distance of 1m, 1,6 m measuring height, 0 ° to the front; meter Testo 815
Environmental Conditions:	Site: indoors only Height: up to 2000m above sea-zero Ambient temperature: 5 ° C to 35 ° C Humidity: Maximum relative humidity 80% For temperatures up to 31 ° C, decreasing linearly to 60% relative humidity at 35 ° C

9. Warranty terms

This machine has been manufactured with great care and complies with today's safety regulations. It was comprehensively examined before leaving FlackTek.

We grant 6 months of warranty and commit to carry out, free of charge, all repairs required due to material defect or defect in manufacture. The warranty shall be void if repairs are not carried out by us or by authorised personnel. The warranty period starts with the day of delivery.

The original warranty period shall not be extended by the supply of spare parts for reasons of warranty.

Normal wear and tear or damages due to improper operation are not covered by the warranty.

The warranty does not cover consumables and wearing parts as included in the SpeedMixer™ and listed below:

- Roller bearings
- Seal rings
- Brake
- Drive belt of the rotatable arm
- Window
- Mixing Cup Basket
- Rotatable arm
- Inspection glass for drum

Any possibly detected fault shall be notified to us immediately after occurrence, specifying the machine number.

If warranty work is requested, the purchaser is responsible for shipping the machine that has been complained about to FlackTek at his own expense and risk.

Any warranty obligation on our part shall exclude all further claims of the buyer, particularly the right of redhibitory action, modification or equalisation of all kinds of claims for damages.