IBC Controller

X4, X5, X6 - Application

Operating Manual

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Wichtig

LIST OF CONTENTS

1 Introduction

The IBC Controller (Intermediate Bulk Container Controller) is an application specific tailored instrument for batching applications in the single component area.
This controller covers a range of single component charge and discharge batching applications. The standard software package is therefore tailored to this need.
Furthermore there are only entries to the production tables necessary and entries to the charge and discharge tables possible. Entries to component and recipe tables are not relevant for the applications of the IBC Controller. A simple and easy to handle operating concept is the result. A PC is not necessary.

1.1 Structure and basic functions

1.1.1 Indicator functions

- Display of gross, net or tare weight
- Tare/reset tare
- Set gross to zero
- Print weight
- Display of weight values on remote display
- Functions via digital inputs and outputs
- Information interchange via serial I/O, Fieldbus and Network

1.1.2 Batching functions

- Charge and discharge batching in net modes
- Charge and discharge batching in gross modes
- Total discharge
- Tolerance check
- Automatic overshoot correction
- Monitoring of the material flow
- Material consumption report
- Batch report
- Weigh report

1.2 Other manuals

In this Operating Manual only the function and operation of the IBC Controller (Intermediate Bulk Container Controller) are described. This comprises the configuration, the data entry to tables, the production and the data output.

Additional manuals are:

- Installation, Configuration and Calibration are described in the **Installation Manual.**
- The connection to other devices for communication to other devices of the process.

1.3 Delivery state

1.3.1 X4 Controller

- X4 Controller PR 5510/30 with application software IBC
- Applicationslicense PR1713/20
- 1x Digital I/O card PR5510/12 with 6 inputs and 12 outputs (opto) in Slot 1
- Manual CD, with operating manual, installation manual and datasheet

1.3.2 X5 Controller

- X5 Controller PR5610/30 with application software IBC
- Applicationslicense PR1713/20
- 1x Digital I/O card PR 1713/15 with 4 opto input channels and 4 relay output channels is built in Slot 1.
- Manual CD, with operating manual, installation manual and datasheet

1.3.3 X6 Controller

- X6 Controller PR5710/30 with application software IBC
- Applicationslicense PR1713/20
- 1x Digital I/O card PR 1713/15 with 4 opto input channels and 4 relay output channels in Slot 1.
- Manual CD, with operating manual, installation manual and datasheet

1.4 Additional option cards

List of the optional upgrade moduls for the Controller. Detailed information described in the **Installation Manual**.

	For X5 and X6 Controller	Slot 1	Slot 2	Slot 3	Slot 4
PR 1713/04	Serial interface card (RS 232/485)	○	○	○	
PR 1713/06*	Analogue out 0/4-20 mA *	○ X1	○ X1		
PR 1713/07*	1 Analogue out/4 Analogue input *	○ X1	○ X1		
PR 1713/08	BCD Out	○	○		
PR 1713/12	Control I/O Card 4/4 opto	○	○		
PR 1713/13	DIOS-Master (additionaly. SW required)			○	
PR 1713/14	Ethernet Interface				○ X1
PR 1713/15	Control I/O Card 4/4 relay		○		
PR 1713/17	Control I/O Card 6/8 opto	○	○		
PR 1721/11	Profibus-DP interface				○ X1
PR 1721/12	Interbus-S interface				○ X1
PR 1721/14	DeviceNet interface				○ X1

= Fitted as standard in the delivery condition.
○ = Can be fitted additionally.
X1 = Note restrictions due to high current consumption !
* = Max. 1 analogue output card each controller.

⚠ If a card is inserted in Slot 4, only one analogue output card allowed in Slot 1 or Slot 2.

	For X4 Controller	Slot 1	Slot 2	Slot 3	Slot 4
PR 5510/04	Serial I/O RS485/422 + RS232	○	○		
PR 5510/07*	1 analogue out / 4 analogue in *	○ X1	○ X1		
PR 5510/08	BCD out / 24 out, 1 in, CC	○	○		
PR 5510/09	BCD out / 24 out, 1 in, CE	○	○		
PR 5510/12	Control I/O 6/12 opto		○		
PR 5510/14	Ethernet interface				○ X1
PR 1721/31	Profibus interface				○ X1
PR 1721/32	Interbus interface				○ X1
PR 1721/34	Devicenet interface				○ X1
PR 1721/35	CC-Link				○ X1

= Fitted as standard in the delivery condition.
○ = Can be fitted additionally.
X1 = Note restrictions due to high current consumption!
* = Max. 1 analogue output card each controller.

⚠ If a card is inserted in Slot 4, only one analogue output card allowed in Slot 1 or Slot 2.

2 Operating Interface

2.1 Display

The weight display allows the display of 7 digits of weight plus a decimal point. The unit can be selected as tons, kilograms, grams or lbs. The display is capable of handling two lines of text of 20 characters each in addition to the numeric output. The other symbols in the display are listed below:

Status indicator	Description
B **G**	Gross weight is displayed Gross weight = Net weight + Tare weight. (G only active in NTEP mode).
NET	Net weight is displayed..
T	Stored tare or initial weight is displayed. Tare in offsets the displayed weight.

Status indicator	Description
	The weight value is within center of zero (+-1/4 d).
	The weight fulfills the standstill conditions.
	Batching process is active.
	Flashing indicates an alarm.

2.2 Keypad

The symbols on the front panel keys and their signification are:

Funct. keys	Description
	Whilst pressing this key, the gross weight is displayed (*B = gross weight*).
	Whilst pressing this key, the tare weight is displayed, provided that the tare weight was set.
	Set/reset tare. This key has no purposeful function for the IBC controller.
	Set gross weight to zero, provided that: • standstill • weight within zero set range • not tared • Batching is not active.

Funct. keys	Description
	Stops the batching process.
	Programmable function key
	Programmable function key
	Key for switch-over between weighing point A and B; not relevant for this application
	Print-out of menu-dependent data, e.g. configuration data, material data or total.

Menu keys	Description
	Exit from the actual menu and continue operation at the next higher level.
	Softkey: selects displayed function.
	Scroll back through menu function.
	Scroll down through menu functions.
	Click on the double arrow for access to further menu options. For X6 Controller the More-key has this design: 

Edit keys	Description
	Move cursor left during editing. For the X4 Controller the More-key  LED has to be off. Further you can select values with  , while  is shown.
	Move cursor right during editing. Furthermore you can select values with  , while  is shown
	Enter / confirm / execute For X6 Controller use the 'Enter'-key  .
	Backspace / delete. For X4 Controller with 2nd function of  .
	Can be used also as space key; for X4 Controller this key: 

Funct. keys	Description
	Stops the batching process.

Funct. keys	Description
	Programmable function key (not used in IBC Controller).
	Programmable function key (not used in IBC Controller).

2.2.1 Exceptional feature for X4 Controller

Mode	Description
Input mode	To succeed to the input mode you have to press the More-key  until the LED from the More-key  shines. The cursor is flashing now. Numbers and characters could be entered and deleted now.
Editing mode	If the LED from the More-key shines, press shortly the More-key. Now the LED from the More-key  does not shine anymore, but the cursor still flashes. Now the cursor could be moved.

2.3 Operating concept

The operation of the different controllers are very similar. Therefore this manual will only describe the operation of the X5 controller. Differences in the operation between the different controllers will be explained.

2.3.1 Entering alphanumeric data

In the alphanumeric entry mode, a cursor is flashing in the entry field. This mode is accessible by pressing a key from the alphanumeric keypad. If the More-key LED of the X4 Controller is not flashing, press the More-key until it is flashing.

The alphanumeric keys have got more than one assignment. After pressing a key for the first time, the relevant first character, e.g. 'A' is displayed in the cursor position. After pressing for the second time, e.g. 'B' instead of 'A' is displayed; 'C' is displayed after pressing for the third time, etc. After the last signification, the first one is displayed again.
Pressing another character key (for X5 and X6 Controller also →) completes the entry of a character. To complete an entry, the key OK has to be used.

If only numeric values are required for an entry, letters are not selectable. Therefore, values such as 555 can be entered by pressing the key successively three times without using the arrow key.

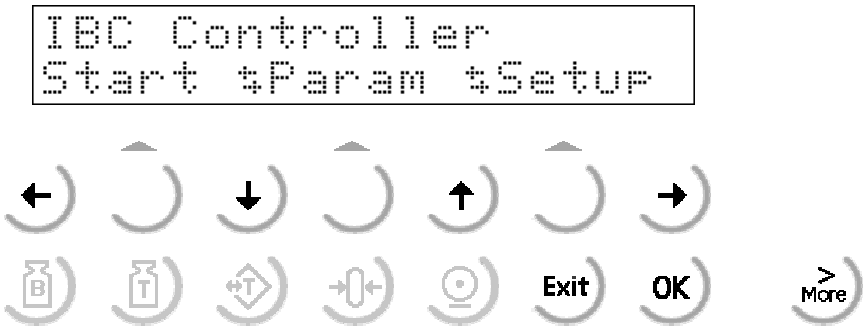
Because of the duplicate function keys the numbers and letters stand right at the buttom at the keys from the X4. Controller.

Key X5 X6	Key X4	Character	Remark
1 #"()=	1 #"()=	#"()=$?!%1	
2 ABC	2 ABC	ABCabc2	
3 DEF	3 DEF	DEFdef3	
4 GHI	4 GHI	GHIghi4	
5 JKL	5 JKL	JKLjkl5	
6 MNO	6 MNO	MNOmno6	
7 PQRS	7 PQRS	PQRSpqrs7	
8 TUV	8 TUV	TUVtuv8	If a value has a polarity sign, it can be entered by pressing the dot key or once for minus or twice for plus.
9 WXYZ	9 WXYZ	WXYZwxyz9	
.-+*/	.-+*/	-+*/:;_'&,<>	
0 ÄÖÜ	0 ÄÖÜ	ÄÖÜäöüß0	A space can be entered using the key 0 ÄÖÜ or 0 ÄÖÜ.
C	C		A character will be removed by pressing the clear key C or C for X4 Controller.

* For X4 Controller only with the **activated** More-key

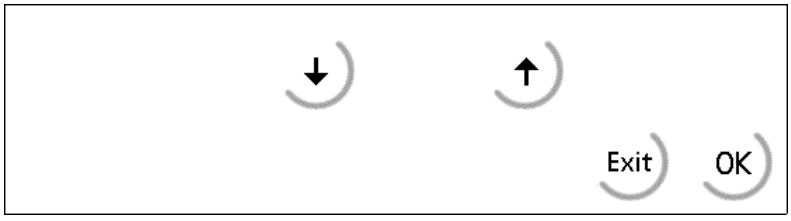
2.3.2 Operation via softkeys

The controllers operation is menu-guided. For this purpose, the controller is provided with a 'Softkey' functionality: The three softkeys with the upward arrow below the display have the function described in the lower text line. For the X6 Controller these softkeys have this design .



If more than three functions can be selected, the double arrows indicate that further functions can be displayed and called up by pressing key .
permits scrolling downwards through the menus, permits scrolling backwards through the menu.
can be used to leave the menu and to continue the operation at the next higher level.
permits selection of the value displayed between as menu item.

2.3.3 Selection via scroll buttons



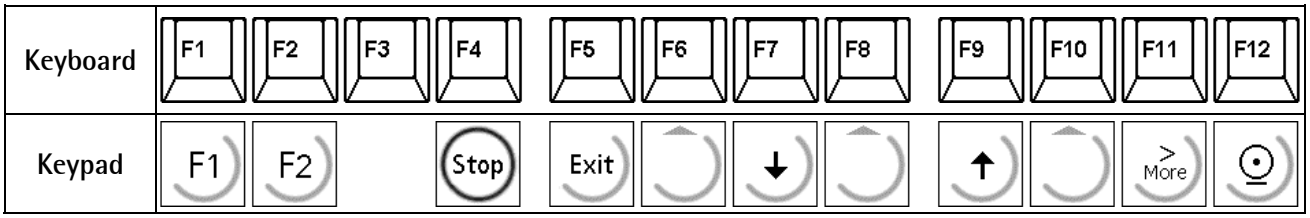
The functions in the menu can be scrolled in forward direction using or in reverse direction .
is used to leave the menu item and to continue at the next higher level.
selects the item indicated in .

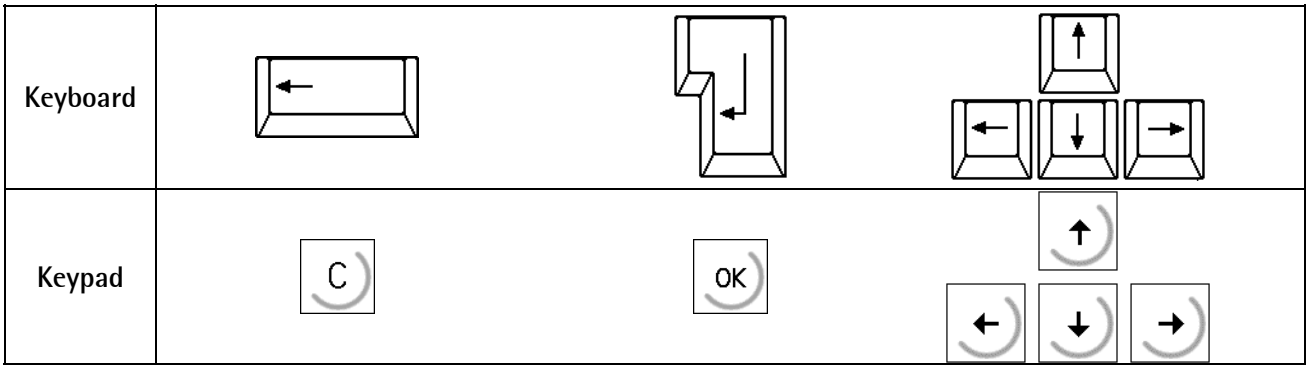
2.3.4 Remote operation

Normally, all operating functions are handled via display and keypad.
With the Controller, operation via terminal is possible only during calibration.

2.4 Input over external PC-keyboard

The Batch Controller have an alphanumeric key field and a connection for a PC keyboard with DIN-Plug (on the rear side of housing). Thus the operation of the Batch Controller can be made also by an external PC keyboard. Both functions are equivalent and are alternatively applicable.





In the delivering condition the external keyboard is adjusted as an US keyboard. If a German keyboard will be used, you have to change the character set with [Strg][F2] into German. With [Strg][F1] you can return again to the delivering condition (US).
The LEDs from the PC keyboard will be not triggered.

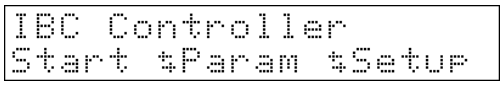
For detail informations please refer to the Installation Manual.

3 Main menue

The following chapters describe the start up of the Controller after connection to the power supply. Depending on the status before switch off or power down the instrument starts in different modes:

3.1 Power on for new instrument

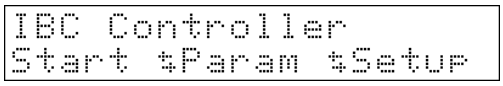
The instrument makes a warm start and starts with the default data in the main menu. On the upper display line it shows the current application, e.g. IBC Controller, which appears as flow text. On the lower line the functions of the three softkeys **[Start], [Param]** and **[Setup]** are indicated. The functions are described in chapter 3.2.



3.2 Switch on after switch off

The instrument makes a warm start and starts with all data from the last operation in the main menu.

In the main menu the following softkeys can be selected:

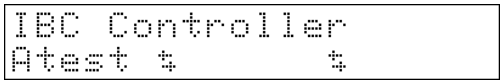


[Start] = Start of production in the selected mode

[Param] = Batching parameter entry

[Setup] = Setup with calibration, configuration and setting of other parameters.

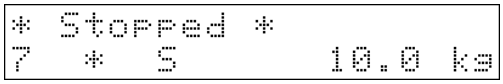
The double arrows in the lower display line show, that also the function **[Atest]** can be selected via the  key.



[Atest] = Analog test value for the weighing point.

3.3 Power on after power down during batching process

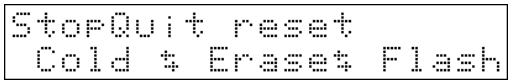
The instrument makes a warm start an goes back to the process step, in which it has been switched off. The interrupted process can be continued or aborted. For details please refer to the chapter 6.1.2.2.



3.4 Power on with stop key pressed

The instrument starts with the activated boot menu. The following functions can be selected:

[Cold] = Cold start with customized program and database erased, other parameters remain unchanged. A cold start is always necessary after SW changes or the installation of HW options.



[Warm] = All data remain unchanged.

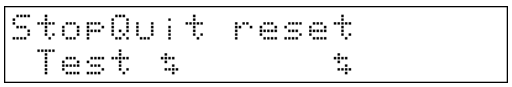
[Flash] = Loading new firmware and/or Bios and/or application programs in the instrument.

For details please refer to the **Installation Manual.**

Via 

also the function **[Test]** can be selected.

Please refer to the **Installation Manual**.



The instrument can be setup only via display and keypad (an exception is the calibration, which can also be performed via serial interface and a terminal). The operation of the instrument is in both cases menu guided on all operating levels.

4 Setup

4.1 Setup-Menu

In the setup menu all initial parameters can be set. They depend on the firmware, application packages, released licences and built-in options. The setup menu comprises the following functions, shown in the diagram below:

To prevent that unauthorized persons are entering the setup menu, it can be locked by a key-switch.

Care has to be taken that the calibration data are not altered after components and recipes have been entered. If e.g. the weight unit is changed later from e.g. kg to lb a coldstart has to be performed, that means losing all RAM data (components, recipes, reports etc.)

Message if calibration was changed later, continue with OK.

Setup

- Config	see Config Tree
- Weighingpoint	see installation manual
- Set Clock	see installation manual
- Serial Ports	see installation manual
- Software Parameter	see installation manual
- Licence Setup	see installation manual
- Show Boardnumber	see installation manual
- Print Setupdata	see installation manual
- Print last fault	see installation manual
- Refresh Display	see installation manual
- I/O Slots	see installation manual
- Show Version	see installation manual
- Enable download	see installation manual
- Reboot	see installation manual
- Show memory	see installation manual
- Show last fault	see installation manual

In the **[Setup]** menu all paramters can be configured. They depend from the firmware, application software and the optional cards.

The parameter entry is always initiated with OK. After the parameter entry or selection of choices the relevant parameter can be left by OK or Exit. With OK the new data or selection are stored, with Exit the old one remain stored. For details to all menu items except configuration please refer to the **Installation Manual.**

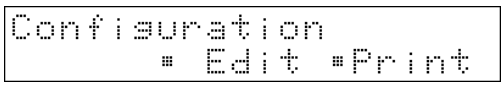
4.2 Configuration

The configuration of the instrument can be performed only via display and keypad of the instrument. The configuration comprises all non-scale relevant parameters.

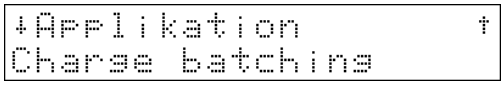
Setup	
- Config	Access with **[Edit]**, print-out with **[Print]**
- Application	Application mode selection
- Charge batchhopper	Charge batching in hopper, followed by discharge process
- Loading station	Loading station with charge batching on platforms for trucks & containers
- Big bag discharge	Big Bag discharge batching
- Filling station	Discharge batching out of hopper, filling station for containers, big bigs etc
- Input config.	Function allocation to installed inputs
- * Slot 1	Start Charge | Start process | Start discharge | Stop | Restart | Abort | Continue 1 | Continue 2 | Protection 1| Protection 2 | Tare | Reset tare | Set zero | None | *if installed
- * Slot 2	Same as mentioned above, *if installed
- Output config.	Function allocation to installed outputs
- * Slot 1.	Charge coarse | Charge fine | Discharg coarse | Discharge fine | Alarm tolerance | Flow warning | Alarm tol/flow | Interrupt 1 | Interrupt 2 | Stopped | Active | Limit 1 | Limit 2 | Standstil | 1/4 d zero | Tared | Weight valid | None | *if installed
- * Slot 2	Same as mentioned above, *if installed
- Start process now?	Start / Inquiry for direct start or additional inquiry before start
- Start	
- Inquiry	
- Limit value 1 on	0...full scale
- Limit value 1 off	0...full scale
- Limit value 2 on	0...full scale
- Limit value 2 off	0...full scale
- Print layout	Selectable sequence with line feed | Gross | Net | Tare | date| time **(see chapter 4.2.9).**
- Batchreport print	Auto = automatic printout of batchreport, off = no batch report **(see chapter 7.1.1.3).**
- Report text 1	Input of an alphanumeric report text of max. 20 characters **(see chapter 4.2.11).**
- Report text 2	Input of an alphanumeric report text of max. 20 characters **(see chapter 4.2.12).**

4.2.1 Application mode

Access to the application mode with **[Edit].** ´



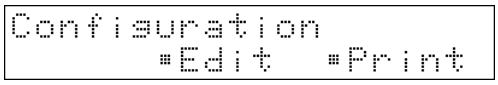
Select an application with OK. There are four different application modes:
[Charge batchhopper]
[Filling station] (for container)
[Big bag discharge]
[Loading station]
For further information please refer to chapter 5.1.



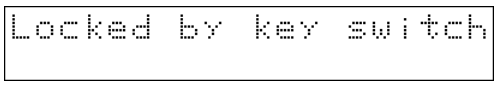
4.2.2 Change configuration

For each input and output a function can be configured:

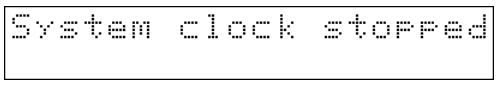
Select with [Edit]



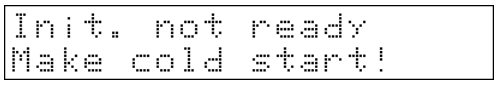
Possible messages



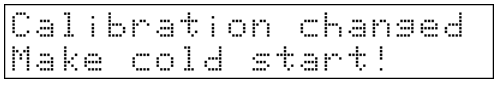
Entering the of the Setup-Data is locked by activating of SPM-Bit 1329.



The clock has to be set.



The coldstart was aborted and not all parameters are initialized. Make a coldstart.



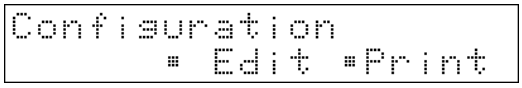
Calibration was modified. Some parameter must be new initialized. Make a coldstart.

Other option cards could be installed in the various slots.
All cards with single inputs and outputs could be configured in the same way.
After installation of a card a [Cold]-start has to be performed!

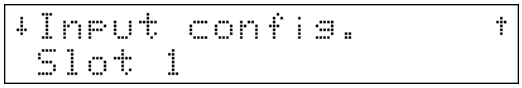
4.2.3 Input configuration

Example Slot 1:

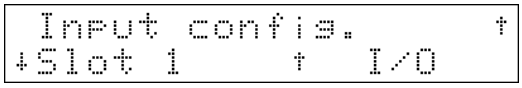
Access to the input configuration via **[Edit].**



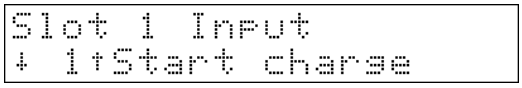
Select via ↓ the parameter **Input config.** and confirm with OK.



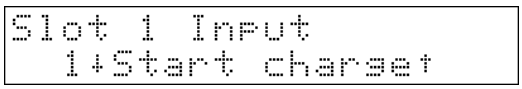
With ↓ select **[Slot 1]** and confirm with OK.



Select with ↓ an input number and confirm with OK.

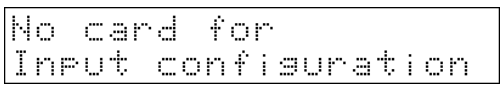


Select with ↓ a function and confirm with OK (the functions may depend from selected Batch mode):



[Start charge]	Start of charge batching process; same function as ↑ **[Charge]**.
[Start process]	Start of production; same function as ↑ **[Prod].**
[Start discharge]	Start of a discharge batching process; same function as ↑ **[Dischg].**
[Stop]	Stop batching; same function as Stop.
[Restart]	Restart of batching process after stop; same function as ↑ **[Cont]**.
[Abort]	Abort batching after stop; same function as ↑ **[Abort].**
[Continue 1]	Continue signal 1 via input (or softkey).
[Continue 2]	Continue signal 2 via input only.
[Protection 1]	Keep operation in production level.
[Protection 2]	Prohibit access to setup level.
[Tare]	Tare function according to selected batch mode. Net weight available.
[Reset tare]	Reset tare. No net weight anymore available.
[Set zero]	Set gross weight to zero, only within zero set range.
[None]	No function of input.

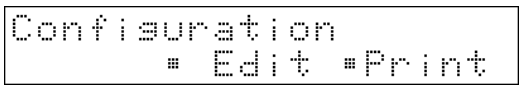
If there are no inputs installed the following prompt text is displayed:



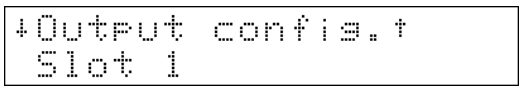
4.2.4 Output configuration

Example Slot 1:

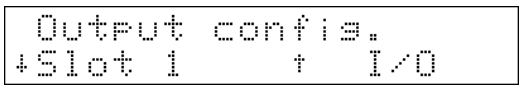
Access to the output configuration via **[Edit].**



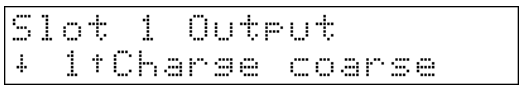
Select via ↓ the parameter **Output config.** and confirm with OK



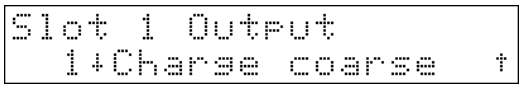
With ↓ select **[Slot 1]** and confirm with OK.



Select with ↓ an output number and confirm with OK.



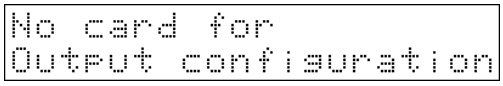
Select with ↓ a function and confirm with OK (the functions may depend from selected Batch mode):



[Charge coarse]	Coarse signal for charge batching.
[Charge fine]	Fine signal for charge batching.
[Discharge coarse]	Coarse signal for discharge batching.
[Discharge fine]	Fine signal for discharge batching.
[Alarm tolerance]	Tolerance alarm for the batched net weight.
[Flow warning]	Material flow rate below preset value.
[Alarm tol/flow]	Combined tolerance and/or flow alarm.
[Interrupt 1]	Digital output signal. 'Continue signal via softkey or input' required.
[Interrupt 2]	Digital output signal. 'Continue signal via input only' required.
[Container acknw]	Signal for change of empty container (Big bag discharge)
[Stopped]	Batching process is stopped.
[Active]	Process is active.
[Limit 1]	Limit switch 1 on.
[Limit 2]	Limit switch 2 on.
[Standstill]	Weight fulfills standstill conditions.
[1/4 d zero]	Gross weight is within +-1/4 d around zero.
[Tared]	Instrument is tared, net weight available.

[Weight valid]	No errors.
[None]	No function of output.

If there are no outputs installed the following prompt text is displayed:



4.2.5 Factory settings

Parameter settings on delivery or after **[Erase]**:

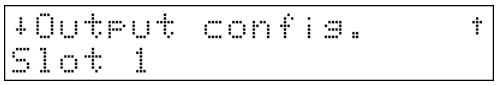
Input configuration	Slot 1	Input
[Start charge]	PR 5510/12 by X4 or PR 1713/15 by	1
[Start process]	X5 and X6 Controller	2
[Stop]		3
[Restart]		4
[None]		5
[None]		6

Output configuration	Slot 1	Output
[Charge coarse]	PR 5510/12 by X4 or PR 1713/15 by	1
[Charge fine]	X5 and X6 Controller	2
[Discharg coarse]		3
[Alarm tolerance]		4
[None]		5
[None]		6
[None]		7
[None]		8
[None]		9
[None]		10
[None]		11
[None]		12

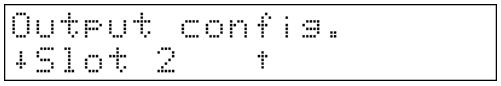
4.2.6 Analog Input/Output configuration

The analog input/output or the analog output option can be installed in slot 1 or 2, for installation please refer to the Installation Manual. After installation of the card a Cold-start has to be performed!
Example: Slot 2

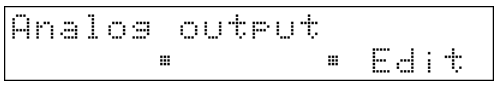
Select with ↓ or ↑ **Output config.**, confirm with OK.



Select with ↓ or ↑ **[Slot 2]**, confirm with OK



Analog output card is installed in slot 3, select with ↻ **[Edit]**



Then the following settings can be done for the analog output:

Analog value	Description
[Gross]	output of gross
[Net/Gross]	output of net, if not tared: output of gross
[Net/0mA]	output of net, if not tared: output of 0 mA
[Net/4mA]	output of net, if not tared: output of 4 mA
[Net/20mA]	output of net, if not tared: output of 20 mA

Analog range	Description
[4..20mA]	0 to FSD is output as 4 to 20 mA
[0..20mA]	0 to FSD is output as 0 to 20 mA

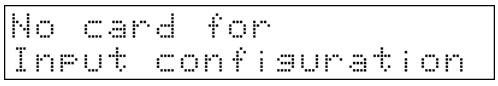
ADU error	Description
[0mA]	If ADU in error state: set output to 0 mA
[4mA]	If ADU in error state: set output to 4 mA
[20mA]	If ADU in error state: set output to 20 mA
[hold]	If ADU in error state: output keeps last value

Below zero	Description
[0mA]	If weight below zero: set output to 0 mA
[4mA]	If weight below zero: set output to 4 mA
[20mA]	If weight below zero: set output to 20 mA
[Hold]	If weight below zero: output keeps last value

Above FSD	Description

[0mA]	If weight above FSD: set output to 0 mA
[4mA]	If weight above FSD: set output to 4 mA
[20mA]	If weight above FSD: set output to 20 mA
[Hold]	If weight above FSD: output keeps last value

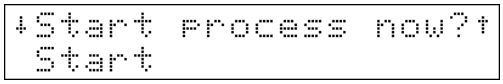
The analog cards have no input configuration. If an analog input/output card is installed in e.g. slot 2 and [Input config.] is selected for slot 2 the following message appears:



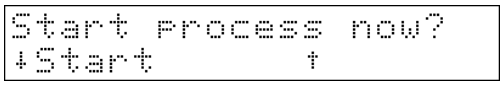
The analog input channels are configured only by DIP switches S201 and S202, see Installation Manual.

4.2.7 Batch start mode

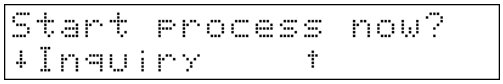
Access to the batch **start mode,** confirm with OK and chose with ↓ between two start options:



[Start] = Direct start of the batching process.



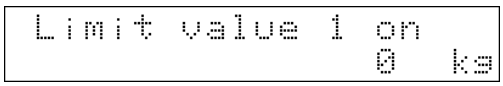
[Inquiry] = Start only after confirmation as shown.



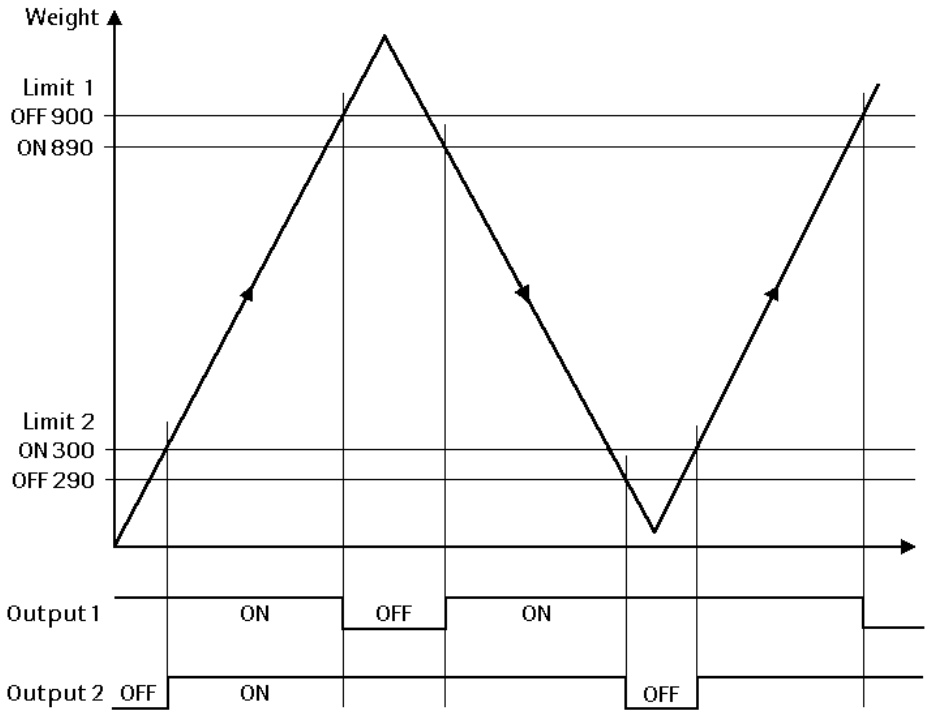
After entry of all start parameters the batch start can be executed immediately or after additional enquiry. The enquiry asks for a confirmation **[Yes]** or **[No].** In the case of **[Yes]** the batch process starts, in the case of **[No]** the batch parameters are stored, but the process is not executed.

4.2.8 Limit switches

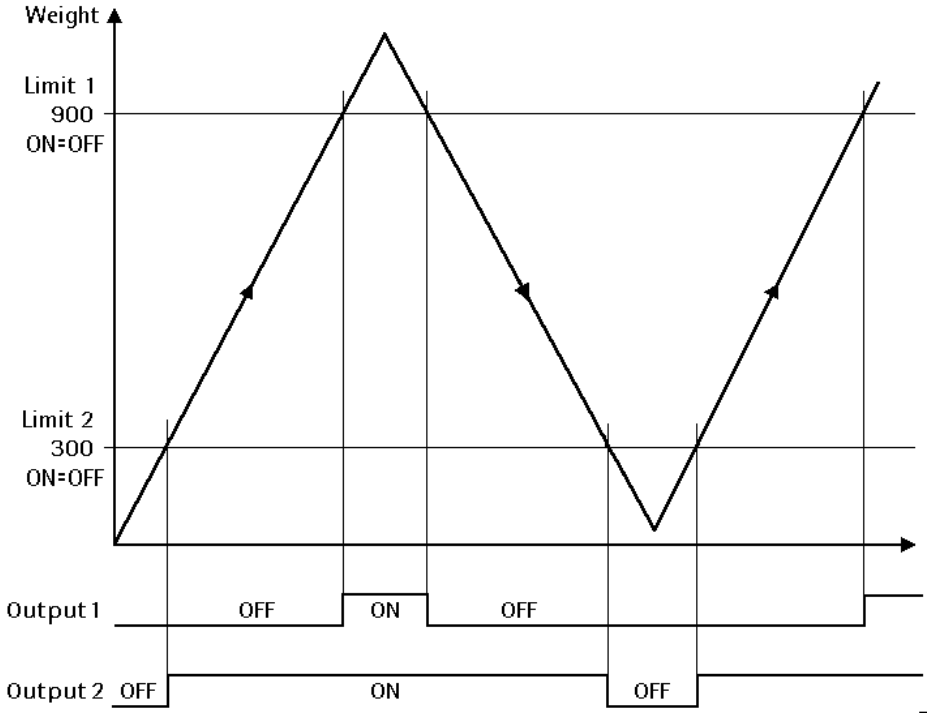
Access to the **limit switches** 1 and 2.
Both limit switches can be individually configured with independent ON and OFF levels via display and keypad .



Example:
The output signal of limit switch 1 shall switch OFF above 900 kg, limit switch 2 shall switch OFF below 300 kg, both limit switches have a hysteresis of 10 kg. In the case of power down (both limit switches OFF) the switches indicate underfilling and overfilling at the same time.

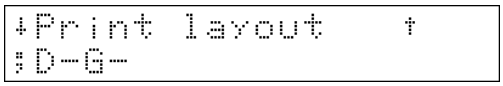


If the limit values for ON and OFF are equal the limit switch switches on, if the weight increases over the ON value and they switch off, if the weight decreases under the OFF value.



4.2.9 Print layout

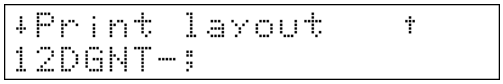
Access with **[Setup]-[Edit]-[Print layout]**-[OK] to the report parameter print layout.



The print layout can be configured by a sequence of the following characters and signs:

G =	Gross weight	N =	Net weight
T =	Tare weight	D =	Date and time
1 =	Report text 1	2 =	Report text 2
- =	Line with '-'	; =	Line feed

Enter the requested configuration.



The example configures a print out with:

{Report text1}{Report text2}{Date & time} {Gross weight}{Net weight}{Tare weight}{Line}{Line feed}

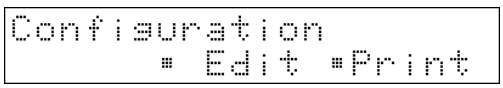
The line is dotted and 40 signs long.

Print out of the configured example by [⊙] (otherwise in the menu report, weight).

```
SARTORIUS HAMBURG
PROCESS WEIGHING+CON
Date:   03.09.2001 16:20:02
Gross:          A  <01,100 kg>
Net:            A  <00,200 kg>
Tare:           A  <00,900 kg>
------------------------------------
```

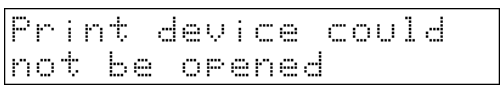
4.2.10 Print out of configuration data

Access with **[Setup]-[Config]**-[OK] to the print configuration data mode.



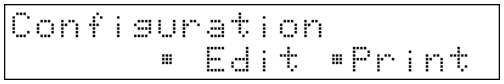
Via **[Print]** all configuration datas will be printed.

Please pay attention for the correct setup of the serial port. If this message displayed e.g. **[Setup]-[Serial Ports]-[Printer device at]** has the value **[none]**.



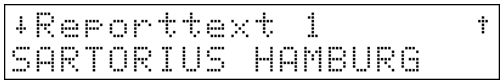
4.2.11 Report text 1

Access with **[Setup]-[Config]-[Edit]**.



Access via  to the report parameter **[Report text 1]**.

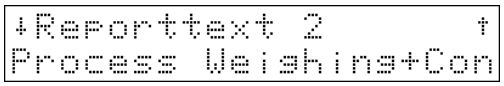
Key in your alphanumeric text of maximum 20 characters. This text can be used for the weight print out, but it is always printed on the batch report.



4.2.12 Report text 2

Access to the report parameter 'Report text 2'.

Key in your alphanumeric text of maximum 20 characters. This text can be used for the weight print out, but it is always printed on the batch print out.



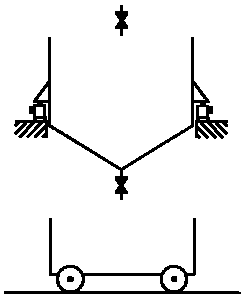
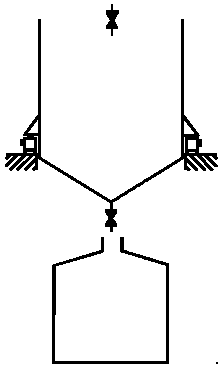
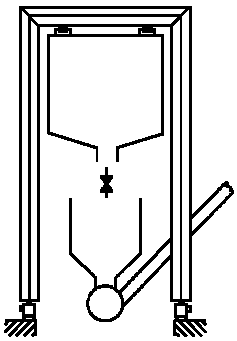
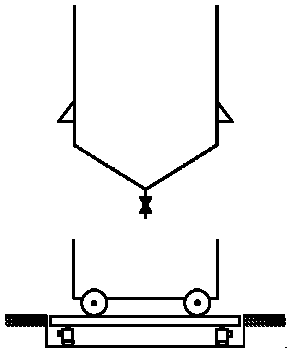
Examples for print outs refer to chapter 7.1.

5 Parameter entry

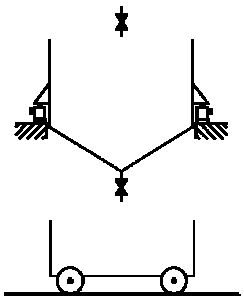
The chapter **Parameter entry** is structered in the four applications **Charge batchhopper**, **Loading station**, **Filling station** and **Big bag discharge** as well as **General definitions**.
Prior to the start of a batching process all relevant and necessary parameters have to be defined and entered. These parameters differ from application to application. Therefore it is separately explained per application, which parameters are relevant and necessary and how they are entered.).
The batch modes and the restart modes are explained in detail in chapter 5.6.1 and 5.6.2.

5.1 Application selection

The following table shows the four applications of the Controller with function description. Caution! The batch modes belong always to the weighing point (the part of the application which is mounted on load cells). The batch modes and the restart modes are explained in detail in chapter 5.6.1 and 5.6.2.

	**Charge batchhopper**. Charge batching in a hopper on load cells with total discharge. Function principle A: The charge and discharge process are started separately. The hopper is filled in a charge batching process in mode B1 or B3 . Afterwards the hopper is totally discharged in mode B8 . Function principle B: The process charges a defined amount of material in the hopper and discharges the hopper afterwards. Optionally this process can be automatically repeated. (Further information see chapter 5.2)
	**Filling station**. Discharge batching process from a hopper on load cells in a container, e.g. big bag, container or barrel. Even trucks are sometimes loaded this way. The hopper is filled manually or via a charge batching process in B1 or B3 mode. Afterwards one or more discharge batches are performed in B4 mode. Via total discharge in B8 mode the hopper can be emptied. (Further information see chapter 5.3)
	**Big bag discharge**. Discharge batching in B4 mode from a big bag or container on load cells in a conveyor or another container or vessel, which will be exchanged after this process. The setpoint for the discharge batching process can be greater than the contents of the container. In this case the container runs dry and the operator is informed by a prompt and an output signal. After replacement of the empty container by a full one the process will be continued and finished. Via total discharge in B8 mode the container can be emptied. (Further information see chapter 5.4)
	**Loading station**. A vessel, container or barrel on a platform or a truck on a truck scale are filled in a charge batching process in B1, B2 or B3 mode. The entry of fixed tare values for the barrels, containers or cylinders is possible. The silo can be only manually filled. Total discharge is also possible via the IBC Controller. (Further information see chapter 5.5)

5.2 Charge batchhopper



In this application is the batching hopper the weighing point..
Function principle A: The charge and discharge process are started separately. The hopper is filled in a charge batching process in mode B1 or B3 . Afterwards the hopper is totally discharged in mode B8 .
Function principle B: The process charges a defined amount of material in the hopper and discharges the hopper afterwards. Optionally this process can be automatically repeated.

Process sequence

Separate processes for charge and discharge processes

Start check, if defined.

Setpoint entry, if defined.

Start of the charge batching process.

Filling of the hopper with a predefined amount of material.

Start check, if defined.

Separate start of the discharge process with total discharge.

Common sequence for charge and discharge processes

Start check, if defined.

Setpoint entry, if defined.

Start of the charge batching process.

Filling of the hopper with a predefined amount of material.

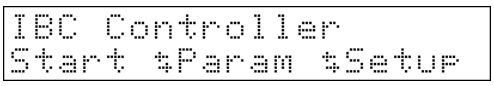
Start check, if defined.

Subsequent automatic discharge process with total discharge.

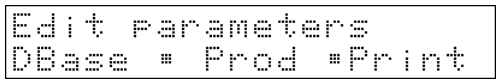
Repetition of the process , if defined.

5.2.1 Parameter entry mode

Access to the parameter entry mode **[Param]:**



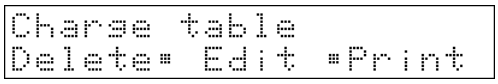
The parameter entry mode consists of a database **[DBase]**, .the production parameters **[Prod]** and the parameter print out **[Print]**



5.2.2 Container database

5.2.2.1 DELETE CONTAINER TABLES

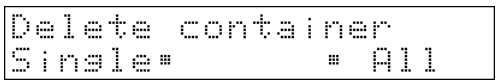
Access via **[Delete]** to the delete menu.



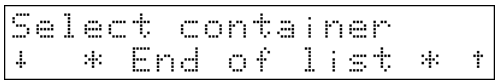
Select with  the container which shall be deleted and confirm with  .

Choose Via  the delete menu with the options **[Single]** and **[All]** is displayed.

After **[Single]** the displayed containers is deleted, after **[All]** all containers are deleted.

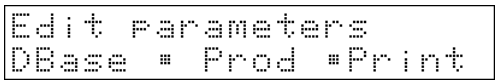


After the deleting process the display shows this message. With  or  other container can be deleted.

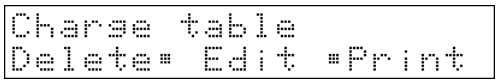


5.2.2.2 EDIT CONTAINER TABLES

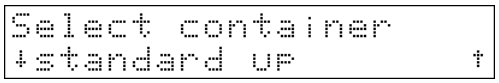
Access to the container table with **[DBase] .**



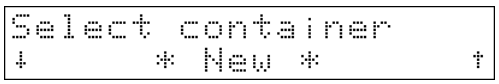
Press **[Edit]** to edit the container table..



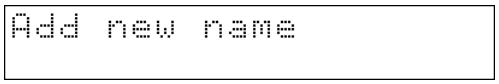
Select with ↓ a container and confirm with OK. Now you can change different parameters.



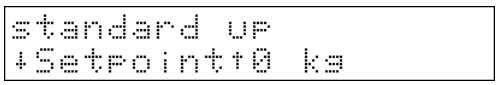
Via ↓ or ↑ a new container can be created.



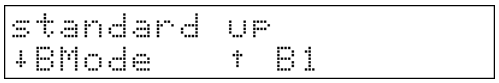
After OK enter a name and confirm with OK.



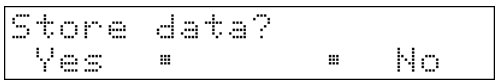
Enter the **[Setpoint]** with OK and confirm with OK.



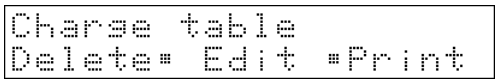
If the setpoint = 0 the operator has to enter the setpoint at the begin of the production process.
Select with ↓ or ↑ **[BMode]** and confirm with OK.



Exit the menu with Exit and store with **[Yes]** the entered datas.

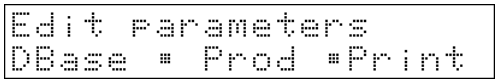


Exit the container database with Exit.

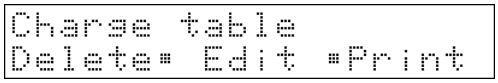


5.2.2.3 PRINT OUT OF CONTAINER TABLES

Access with **[DBase]** to the container table**.**

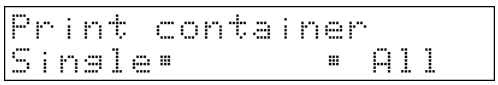


Access via **[Print]** to the print menu..



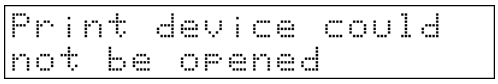
Select with ↓ a container and print out the datas of this container with OK.

Print out the datas of the choosen container with **[Single]** or print out all container datas with **[All]**.

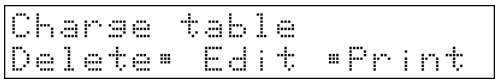


After the print process this message is displayed. Exit with Exit.

The choosen datas are printed. If there is no printer connected or configured an error message will be displayed.



Exit with Exit.

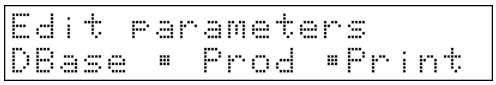


5.2.3 Production parameters

5.2.3.1 CHARGE PARAMETERS

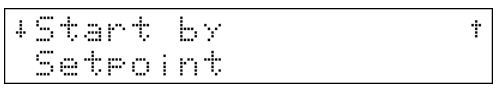
Access to the **parameter entry** mode from the main menu via **[Param]:**

Access to the charge table via **[DBase]. Caution!** The entry of containers and vessels for this application is normally not relevant.

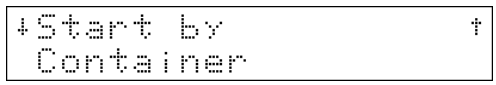


Entry of **production parameters** via **[Prod] .**

Access to the filling parameters via **[Charge]**. For the selected option. **Start by [Setpoint]** the corresponding message is displayed.



Via OK and ↓ or ↑ this option can be changed to **Start by [Container]** and entered with OK. This option is normally not relevant for this application!



Via ↓ the last entered **Start value** is displayed. It can be changed after OK and entered with OK. If a setpoint ≠

0 is entered for **Start by setpoint**, the process will start with this setpoint. If a setpoint = 0 is entered, the set-point entry is required prior to the process start.

Via ↓ the last entered **Batch mode** is displayed. It can be changed after OK and entered with OK (please refer to chapter 5.6.1).

Via ↓ the last entered **Interrupt/Continue** condition before start of the charge and/or discharge process is dis-played. It can be changed after OK and entered with OK (please refer to 5.6.3).

Via ↓ the last entered **Preset value** is displayed. It can be changed after OK and entered with OK.

Via ↓ the last entered **Overshoot value** is displayed. It can be changed after OK and entered with OK.

Via ↓ the last entered **+Tolerance value** is displayed. It can be changed after OK and entered with OK. If 0 is entered no tolerance check is performed.

Via ↓ the last entered **-Tolerance value** is displayed

It can be changed after OK and entered with OK.

If 0 is entered no tolerance check is performed. .

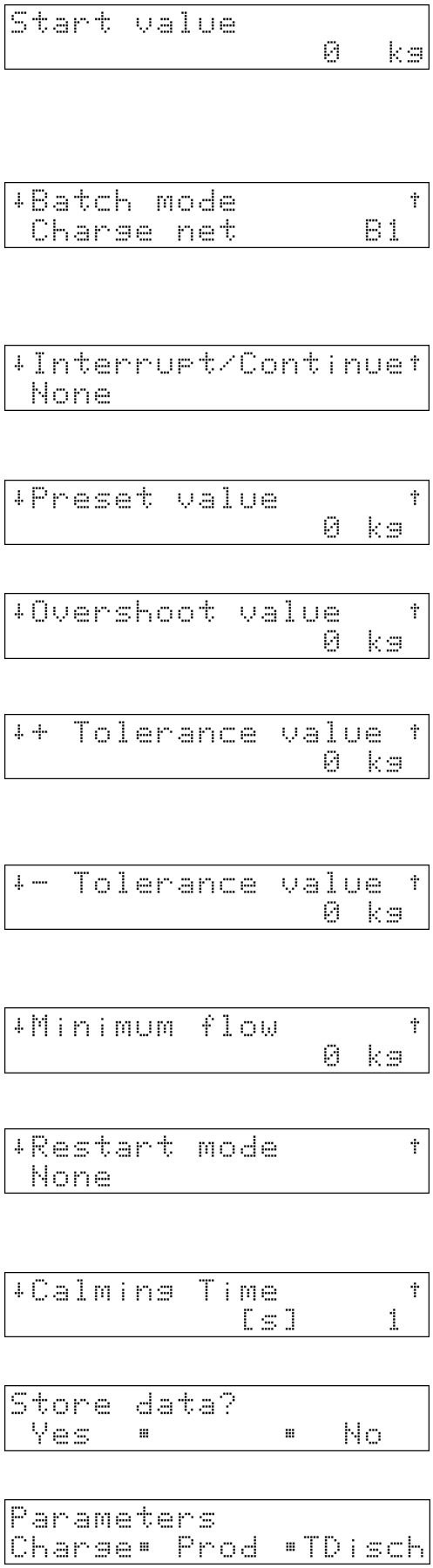
Via ↓ the last entered **Minimum flow** value is displayed. It can be changed after OK and entered with OK.

Via ↓ the last entered **Restart mode** is displayed. It can be changed after OK and entered with OK (please refer to chapter 5.6.2).

Via ↓ the last entered **Calming Time** is displayed. It can be changed after OK and entered with OK.

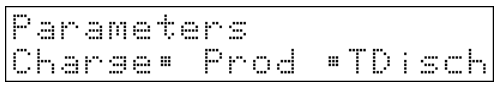
After this all necessary parameters for the charge batch-ing process are entered. Exit from this menu via Ext with store data check, if data have been changed.

Automatic return to the parameter entry mode.

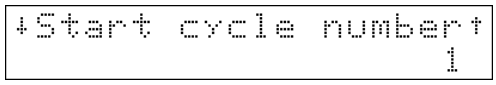


5.2.3.2 PRODUCTION PARAMETER

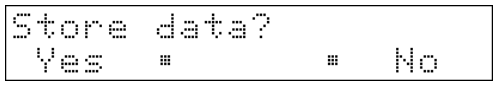
Access to the **production parameter entry** via **[Prod]**.



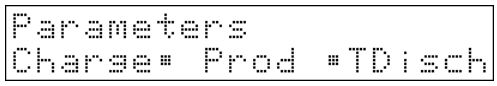
Via ↓ the last entered **Start cycle number** is displayed. It can be changed after OK and entered with OK. **Caution!** This entry is not relevant for this application.



There are no further parameters for the production process to be entered. Exit from this menu via Exit (with store data check, if data have been changed.)

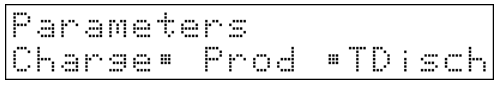


Automatic return to the parameter entry mode.

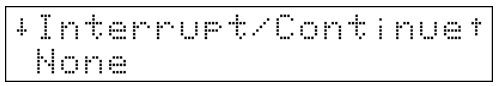


5.2.3.3 DISCHARGE PARAMETER

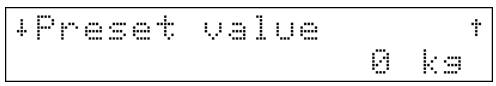
Access to **discharge parameter entry** via **[TDisch]**. The batch mode is fixed to B8.



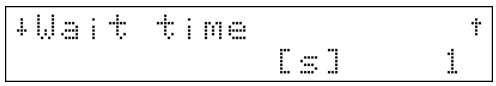
Via ↓ the last entered **Interrupt/Continue** condition before start of the charge and/or discharge process is displayed. It can be changed after OK and entered with OK (please refer to 5.6.3).



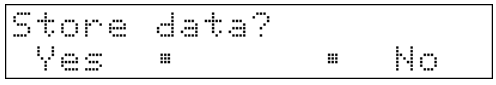
Via ↓ the last entered **Preset value** (maximum residue in the hopper) is displayed. It can be changed after OK and entered with OK.



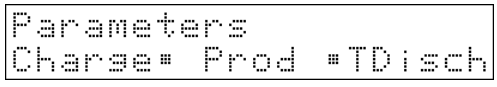
Via ↓ the last entered **Wait time** (additional valve opening time) is displayed. It can be changed after OK and entered with OK.



After this all necessary parameters for the discharge process are entered. Exit from this menu via Exit with store data check, if data have been changed.

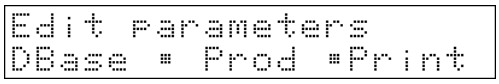


Automatic return to the parameter entry mode.

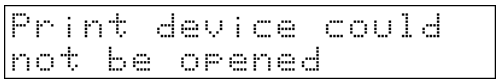


5.2.4 Printout parameter settings

Access to the print menu with **[Param]**-**[Print].**

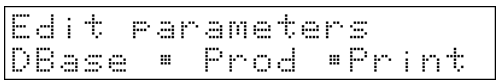


If there is no printer connected or configured an error message will be displayed.



Exit with 

.



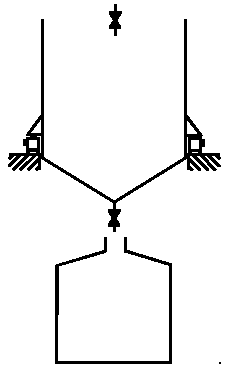
5.2.5 Charge parameter table for application Charge batchhopper.

Param	Select **[Param]** from the main menu
- DBase	Sequence -Edit parameters-in charge table
- Edit	Sequence -Edit container
- standard up	Select container (in alphabetic order)
- Setpoint	Enter setpoint
- BMode	Enter batch mode B1....B3
- Fixtare	Only for batch mode B2: Enter fixtare value
- * New *	Enter new container name
- Add new name	"BARREL1"
- Setpoint	Enter setpoint
- BMode	Enter batch mode B1....B3
- Fixtare	Only for batch mode B2
- * New *	Enter new container name
- Add new name	"BARREL2"
- Setpoint	Enter setpoint
- BMode	Enter batch mode B1....B3
- Fixtare	Only for batch mode B2
- Delete	Sequence -Delete container (in alphabetic order)
- BARREL1	Select container "BARREL1 "
- Single	Delete container "BARREL1"
- All	Delete all container
- BARREL2	Select container "BARREL2"
- Single	Delete container "BARREL2"
- All	Delete all containers
- Standard up	Select container "Standard up"
- Single	Delete container "Standard up"
- All	Delete all containers
- Print	Sequence -Print container data-(in alphabetic order)
- BARREL1	Select container "BARREL1"
- Single	Print container data "BARREL1"
- All	Print all container data
- BARREL2	Selectcontainer "BARREL2"
- Single	Print container data "BARREL2"
- All	Print all container data
- Standard up	Select container "Standard up"
- Single	Print container data "Standard up"
- All	Print all container data

5.2.6 Production parameter table for application Charge batchhopper.

Param	Select **[Param]** from the main menu
- Prod	Sequence -Edit parameters-
- Charge	Start recipe by
- Start by	Selection start by setpoint | container
- Start value	Only for start by setpoint: Enter value from 0....full scale
- Batch mode	Only for start by setpoint: Select mode net B1or gross B3
- Interrupt/Continue	Select Interrupt 1 | Interrupt 2 | Interrupt 1& 2 | None
- Interrupt 1 text	Interrupt 1 prompt or edited text (only of interrupt 1 selected)
- Interrupt 2 text	Interrupt 2 prompt or edited text (only of interrupt 2 selected)
- Preset value	Enter preset value in weight units
- Overshoot value	Enter overshoot value in weight units
- +Tolerance value	Enter +Tolerance value in weight units
- -Tolerance value	Enter -Tolerance value in weight units
- Minimum flow	Enter minimum flow rate in weight units
- Restart mode	Select none, restart, optimization, restrt./optim., opim./restrt.
- Calming time	Enter calming time in s
- Prod	
- Start cycle number	Enter number of cycles 1....999
- TDisch	Selection of hopper discharge
- Interrupt/Continue	Select Interrupt 1 | Interrupt 2 | Interrupt 1& 2 | None
- Interrupt 1 text	interrupt 1 prompt or edited text (only of interrupt 1 selected)
- Interrupt 2 text	interrupt 2 prompt or edited text (only of interrupt 2 selected)
- Presert value	Enter preset value for residue in weight units
- Wait time	Enter wait time until valve is closed in s
- Print	Print out of table data.

5.3 Filling station



The batching hopper is the weighing point, which is controlled by the IBC Controller. The hopper can be filled manually or by the IBC Controller. The material is batched according to predefined values from the hopper into containers in a discharge batch mode.
For the discharge batching process a sequence of process steps is necessary, which need to be defined.
The IBC Controller controls the charge valve and the discharge valves.
The start of the process can be interlocked via input signals.

Process sequence

Discharge batching from the batchig hopper on load cells

Start check, if defined.

Setpoint entry, if defined.

Recall of a container, if defined.

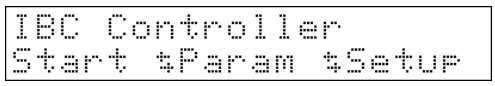
Start of the discharge batching process.

Discharge batching of a predefined amount of material.

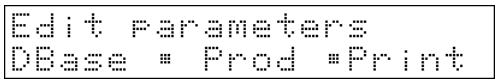
Repetition of the process, if required.

5.3.1 Parametereingabemodus

Access to the parameter entry mode **[Param]:**



The parameter entry mode consists of a database **[DBase]**, .the production parameters **[Prod]** and the parameter print out **[Print]**

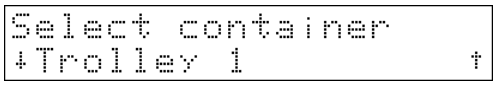


5.3.2 Container database

5.3.2.1 DELETE CONTAINERS

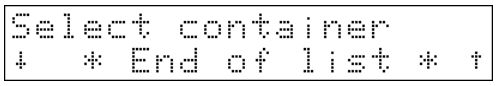
Access to the **delete menu** for existing containers via **[Delete].**

The last called up container is displayed. With ↓ or ↑ other existing containers can be called up.

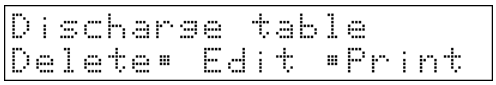


Via OK the delete menu with the options **[Single]** and **[All]** is displayed.

After **[Single]** the displayed containers is deleted, after **[All]** all containers are deleted. The end of list message is displayed.

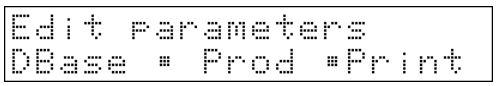


Return to the discharge table menu via Exit.



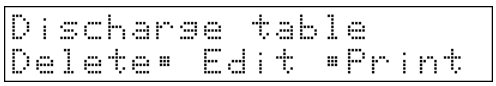
5.3.2.2 EDIT CONTAINER TABLES

Access to the **discharge table** via **[DBase].** In this table containers with their setpoints can be entered. The usual application is shown in the sketch.

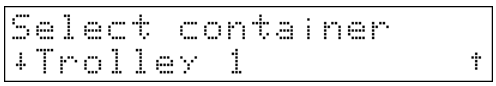


The menu offers the access to the **[Charge container]** or the **[Dischar. container]** table.

Select with ↓ and OK **[Dischar. container]** or **[Charge container]** are not relevant for this application.

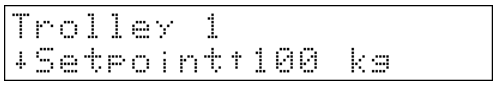


Via **[Edit]** the last called up container is displayed, default is **[standard down]**. With ↓ or ↑ and OK other existing containers can be called up.

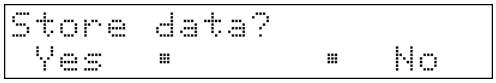


Also **new containers** can be entered. After [OK] the name can be edited and entered with [OK].

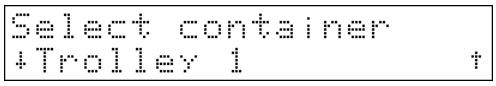
Via [OK] the last entered **[Setpoint]** is displayed (default is 0). It can be changed after [OK] and entered with [OK].



Return to the select container menu with [Exit]. If data in the table have been changed the 'store' inquiry is displayed.



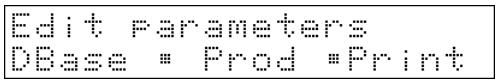
In both cases the select container menu is displayed.



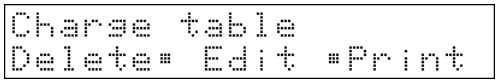
Return to the discharge table menu via [Exit].

5.3.2.3 PRINT OUT CONTAINER TABLES

Access with **[DBase]** to the container table**.**

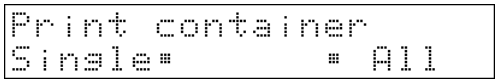


Access via **[Print]** to the print menu..



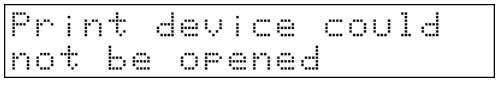
Select with [↓] a container and print out the datas of this container with [OK].

Print out the datas of the choosen container with **[Single]** or print out all container datas with **[All]**.

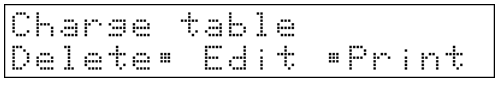


After the print process this message is displayed. Exit with [Exit].

The choosen datas are printed. If there is no printer connected or configured an error message will be displayed.



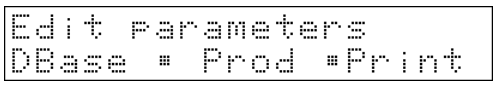
Exit with [Exit].



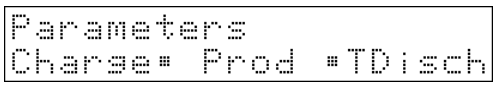
5.3.3 Produktionsparametereingabe

5.3.3.1 CHARGE PARAMETERS

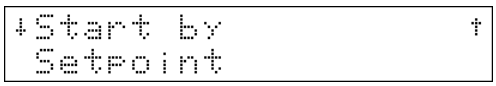
Access to the **production parameter entry** via **[Prod]**.



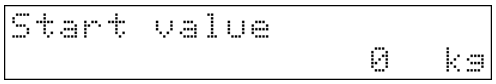
Access to the **filling parameters** via **[Charge]**. For the selected option **Start by [Setpoint]** the corresponding message is displayed.



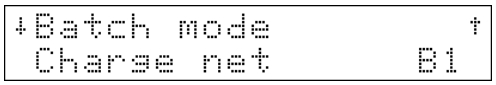
Via [OK] and [↓] or [↑] this option can be changed to **Start by [Container]** and entered with [OK]. This option is normally not relevant for this application!



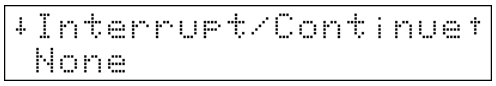
Via [↓] the last entered **Start value** is displayed. It can be changed after [OK] and entered with [OK]. If a setpoint ≠ 0 is entered for **Start by [Setpoint]**, the process will start with this setpoint. If a setpoint = 0 is entered, the setpoint entry is required prior to the process start.



Via [↓] the last entered **Batch mode** is displayed. It can be changed after [OK] and entered with [OK] (please refer to chapter 5.6.1).

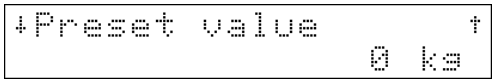


Via [↓] the last entered **Interrupt/Continue** condition before start of the charge and/or discharge process is displayed. It can be changed after [OK] and entered with [OK] (please refer to 5.6.3).

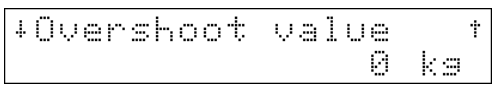


Via [↓] the last entered **Preset value** is displayed. It can be changed after [OK] and entered with [OK].

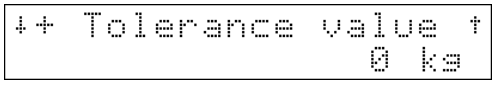
Via [↓] the last entered **Overshoot value** is displayed. It can be changed after [OK] and entered with [OK].

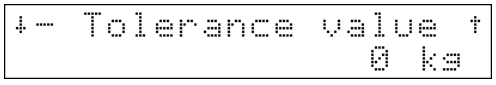


Via [↓] the last entered **+Tolerance** value is displayed. It can be changed after [OK] and entered with [OK]. If 0 is entered no tolerance check is performed.

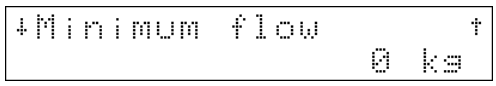


Via [↓] the last entered **-Tolerance** value is displayed. It can be changed after [OK] and entered with [OK]. If 0 is entered no tolerance check is performed.

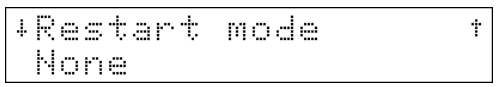




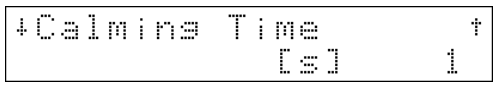
Via ↓ the last entered **Minimum flow** value is displayed. It can be changed after OK and entered with OK



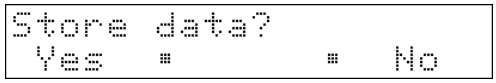
Via ↓ the last entered **Restart mode** is displayed. It can be changed after OK and entered with OK (please refer to chapter 5.6.2).



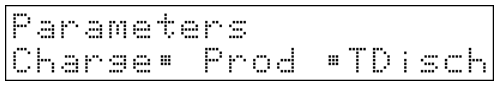
Via ↓ the last entered **Calming Time** is displayed. It can be changed after OK and entered with OK.



After this all necessary parameters for the charge batching process are entered. Exit from this menu via Exit with store data check, if data have been changed.

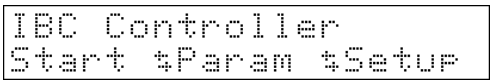


Automatic return to the parameter entry mode.

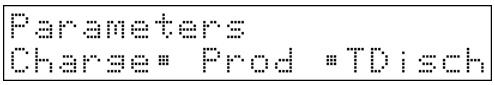


5.3.3.2 PRODUCTION PARAMETERS

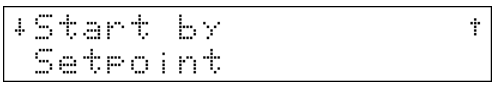
Access to the **parameter entry** from the main menu via **[Param].**



Access to the **production parameters** via **[Prod].** In this table containers with their setpoints can be entered, but the usual application is shown in the sketch.

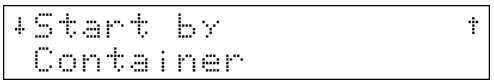


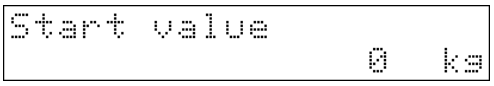
Access to the production parameters via **[Prod]**. For the selected option **Start by [Setpoint]** the corresponding message is displayed.



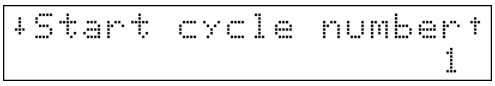
Via OK and ↓ or ↑ this option can be changed to **Start by [Container]** and entered with OK.

Via ↓ the last entered **Start value** is displayed. It can be changed after OK and entered with OK. If a setpoint ≠ 0 is entered for **Start by [Setpoint]**, the process will start with this setpoint. If a setpoint = 0 is entered, the setpoint entry is required prior to the process start.

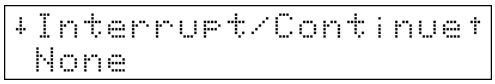




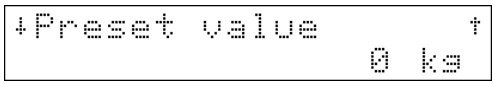
Via ↓ the last entered **Start cycle number** is displayed. It can be changed after OK and entered with OK.



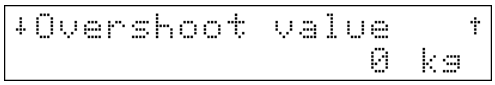
Via ↓ the last entered **Interrupt/Continue** condition before start of the charge and/or discharge process is displayed. It can be changed after OK and entered with OK (please refer to 5.6.3).



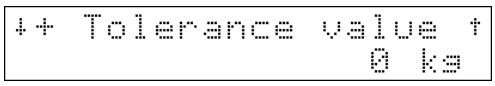
Via ↓ the last entered **Preset value** is displayed. It can be changed after OK and entered with OK.



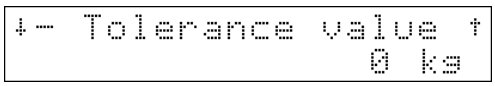
Via ↓ the last entered **Overshoot value** is displayed. It can be changed after OK and entered with OK.



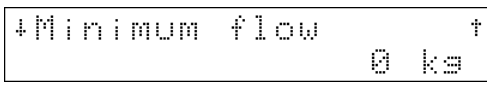
Via ↓ the last entered **+Tolerance** value is displayed. It can be changed after OK and entered with OK. If 0 is entered no tolerance check is performed.



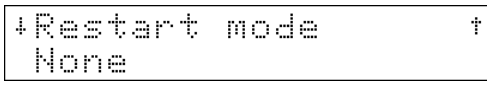
Via ↓ the last entered **-Tolerance** value is displayed. It can be changed after OK and entered with OK. If 0 is entered no tolerance check is performed.



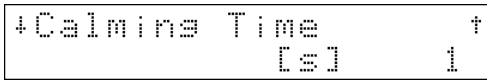
Via ↓ the last entered **Minimum flow** value is displayed. It can be changed after OK and entered with OK



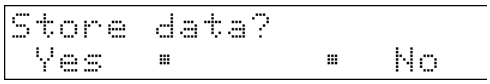
Via ↓ the last entered **Restart mode** is displayed. It can be changed after OK and entered with OK (please refer to chapter 5.6.2).



Via ↓ the last entered **Calming time** is displayed. It can be changed after OK and entered with OK.



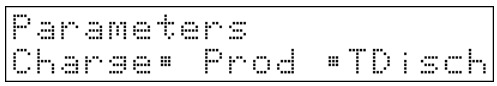
After this all necessary parameters for the charge batching process are entered. Exit from this menu via Exit with store data check, if data have been changed.



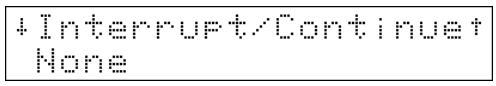
Automatic return to the parameter entry mode.

5.3.3.3 DISCHARGE PARAMETER ENTRY

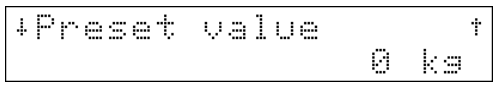
Access to **discharge parameter entry** via **[TDisch]**. The batch mode is fixed to B8.



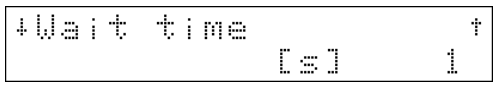
Via ↓ the last entered **Interrupt/Continue** condition before start of the charge and/or discharge process is displayed. It can be changed after OK and entered with OK (please refer to 5.6.3 'Interrupt/Continue signals').



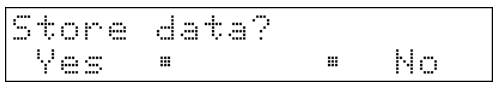
Via ↓ the last entered **Preset value** (maximum residue in the hopper) is displayed. It can be changed after OK and entered with OK.



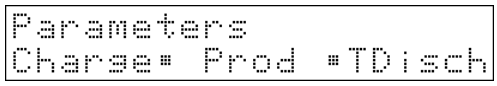
Via ↓ the last entered **Wait time** (additional valve opening time) is displayed. It can be changed after OK and entered with OK.



After this all necessary parameters for the discharge process are entered. Exit from this menu via Exit with store data check, if data have been changed.

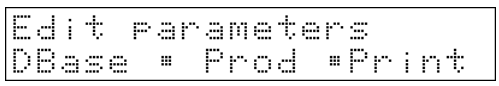


Automatic return to the parameter entry mode.

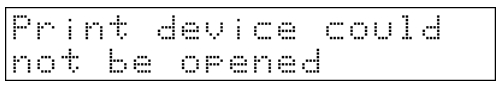


5.3.4 Printout parameter settings

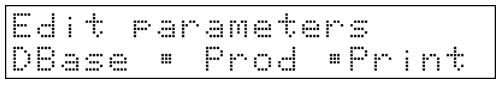
Access to the print menu with **[Param]-[Print].**



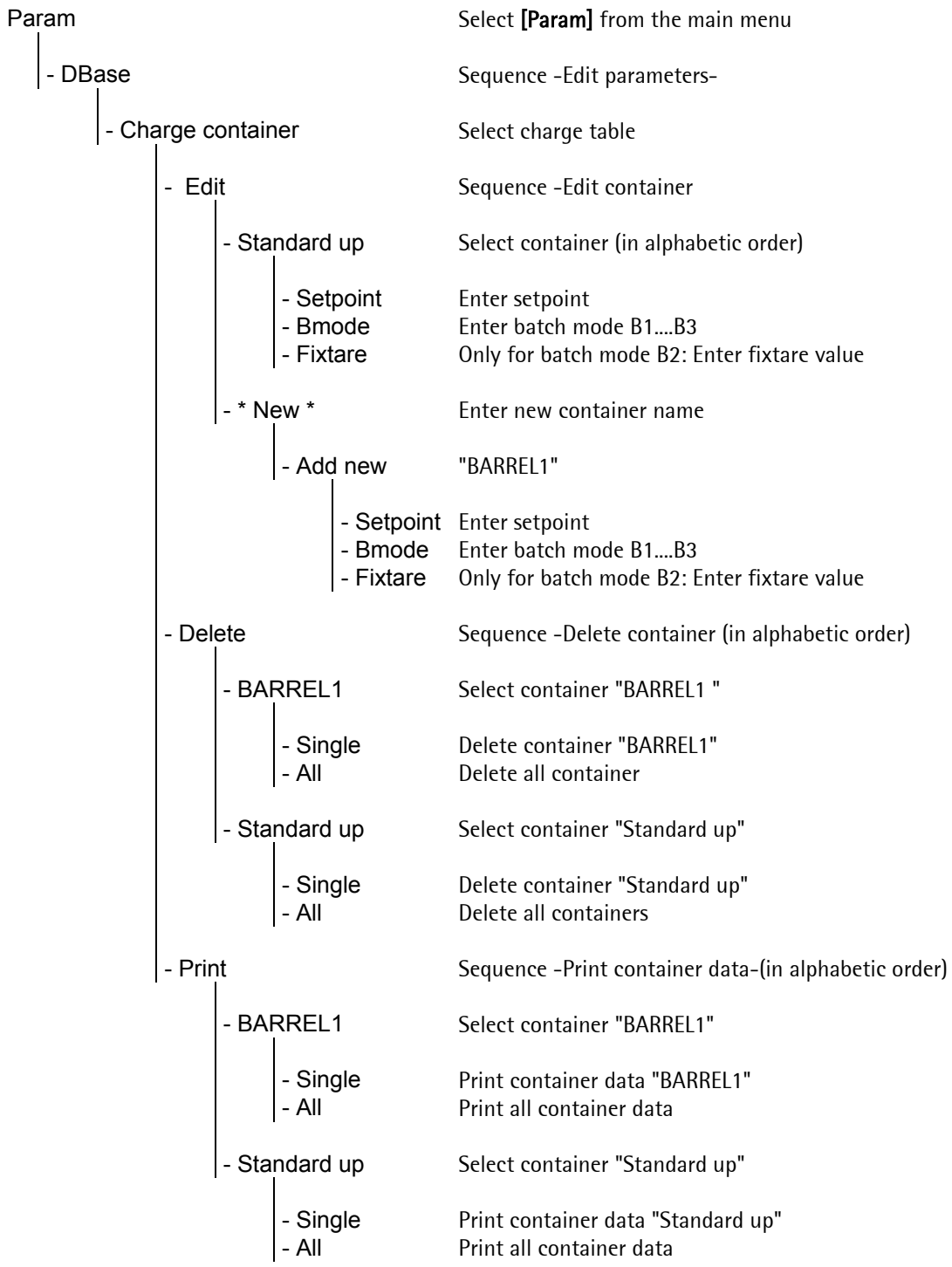
If there is no printer connected or configured an error message will be displayed.



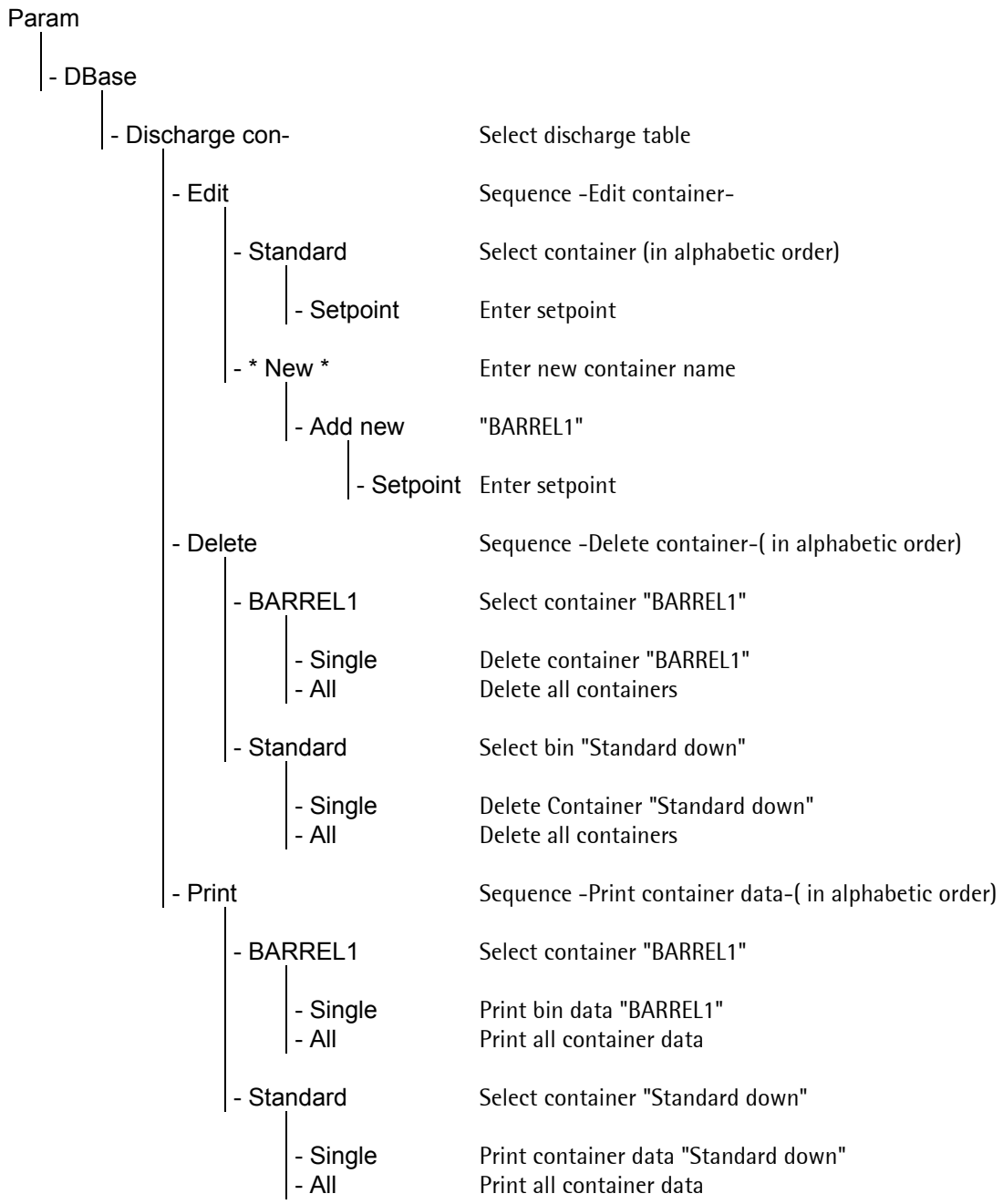
Exit with Exit.



5.3.5 Charge parameter table for application Filling station.



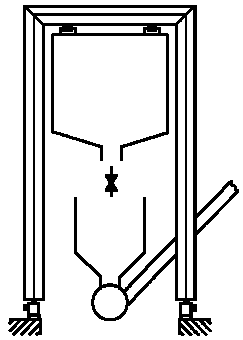
5.3.6 Discharge parameter table for application Filling station.



5.3.7 Production parameter table for application Filling station.

Param	Select **[Param]** from the main menu
- Prod	Sequence -Edit parameters-
- Charge container	Start recipe by
- Start by	Selection start by setpoint or container
- Start value	Only for start by setpoint: Enter value from 0....full scale
- Batch mode	Only for start by setpoint: Select mode net B1 or gross B3
- Interrupt/Continue	Select Interrupt 1 | Interrupt 2 | Interrupt 1& 2 | None
- Interrupt 1 text	interrupt 1 prompt or edited text (only of interrupt 1 selected)
- Interrupt 2 text	interrupt 2 prompt or edited text (only of interrupt 2 selected)
- Preset value	Enter preset value in weight units
- Overshoot value	Enter overshoot value in weight units
- +Tolerance value	Enter +tolerance value in weight units
- -Tolerance value	Enter -tolerance value in weight units
- Minimum flow	Enter minimum flow rate in weight units
- Restart mode	Select none, restart, optimization, restrt./optim., opim./restrt.
- Calming time	Enter calming time in s
- Prod	Enter number of cycles 1...999
- Start by	Selection start by setpoint or container
- Start value	Only for start by setpoint: Enter value from 0....full scale
- Start cycle number	
- Interrupt/Continue	Select Interrupt 1 | Interrupt 2 | Interrupt 1& 2 | None
- Interrupt 1 text	interrupt 1 prompt or edited text (only of interrupt 1 selected)
- Interrupt 2 text	interrupt 2 prompt or edited text (only of interrupt 2 selected)
- Preset value	Enter preset value in weight units
- Overshoot value	Enter overshoot value in weight units
- +Tolerance value	Enter +tolerance value in weight units
- -Tolerance value	Enter -tolerance value in weight units
- Minimum flow	Enter minimum flow rate in weight units
- Restart mode	Select none, restart, optimization, restrt./optim., opim./restrt.
- Calming time	Enter calming time in s
- TDisch	Selection of hopper discharge
- Interrupt/Continue	Select Interrupt 1 | Interrupt 2 | Interrupt 1& 2 | None
- Interrupt 1 text	interrupt 1 prompt or edited text (only of interrupt 1 selected)
- Interrupt 2 text	interrupt 2 prompt or edited text (only of interrupt 2 selected)
- Preset value	Enter preset value for residue in weight units
- Wait time	Enter wait time until valve is closed in s
- Print	Print out of table data

5.4 Big bag discharge



The big bag frame is the weighing point.

A predefined amount of material will be batched one or more times from the big bag or container, usually always the same amount. Only for the discharge process parameters need to be entered. The relevant ones are described in detail.

Only the valves under the big bag or container are controlled by the IBC Controller. The start of the batching process can be interlocked via input signals.

Process sequence

Discharge batching from a big bag or a container on load cells

Start check, if defined.

Setpoint entry, if defined.

Recall of a container, if defined.

Start of the discharge batching process.

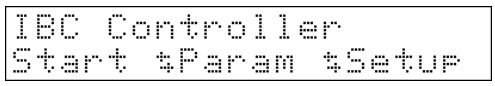
Discharge batching of a predefined amount of material.

If the big bag or container runs dry, a message is displayed.

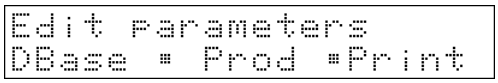
After replacement of the empty big bag or container the batching process will be continued and finished.

5.4.1 Paramter entry mode

Access to the parameter entry mode **[Param]:**



The parameter entry mode consists of a database **[DBase]**, .the production parameters **[Prod]** and the parameter print out **[Print]**

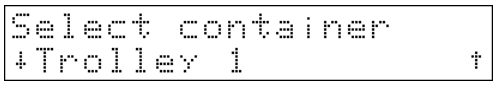


5.4.2 Container database

5.4.2.1 DELETE CONTAINER TABLES

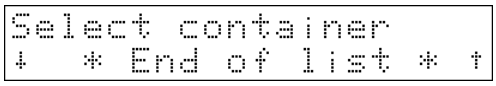
Access to the **delete menu** for existing containers via **[Delete].**

The last called up container is displayed. With  or  other existing containers can be called up.

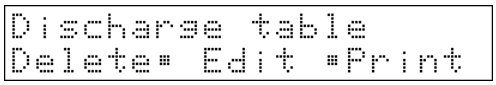


Via  the delete menu with the options **[Single]** and **[All]** is displayed.

After **[Single]** the displayed containers is deleted, after **[All]** all containers are deleted. The end of list message is displayed.

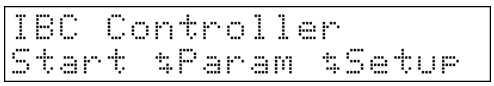


Return to the discharge table menu via  .

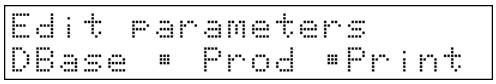


5.4.2.2 EDIT CONTAINER TABLES

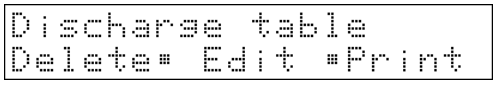
Access to the **parameter entry** from the main menu via **[Param].**



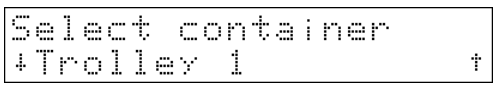
Access to the discharge table via **[DBase].** In this table containers with their setpoints can be entered, but the usual application is shown in the sketch.



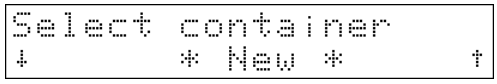
Entry of container data in the discharge table via **[Edit].**



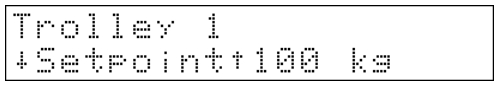
The last called up container is displayed, default is **[standard down]**. With  or  other existing containers can be called up.



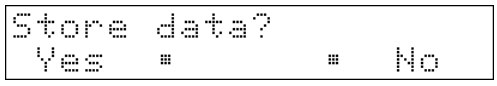
Also **new containers** can be entered. After [OK] the name can be edited and entered with [OK].



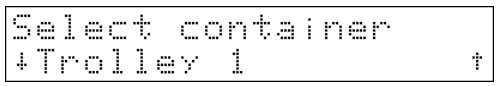
Via [OK] the last entered **[Setpoint]** is displayed (default is 0). It can be changed after [OK] and entered with [OK].



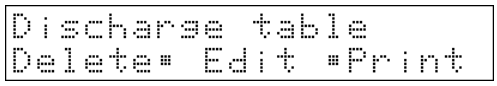
Return to the select container menu with [Exit]. If data in the table have been changed the **Store** inquiry is displayed.



In both cases the the select containermenu is displayed.

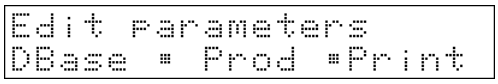


Return to the discharge table menu via [Exit].

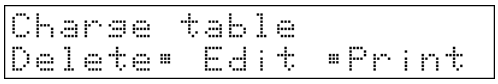


5.4.2.3 PRINT OUT OF CONTAINER TABLES

Access with **[DBase]** to the container table**.**

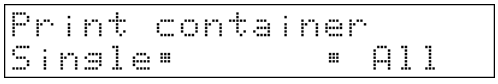


Access via **[Print]** to the print menu..



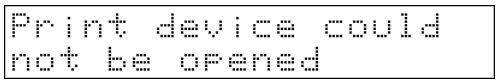
Select with [↓] a container and print out the datas of this container with [OK].

Print out the datas of the choosen container with **[Single]** or print out all container datas with **[All]**.

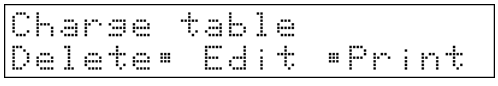


After the print process this message is displayed. Exit with [Exit].

The choosen datas are printed. If there is no printer connected or configured an error message will be displayed.



Exit with [Exit].

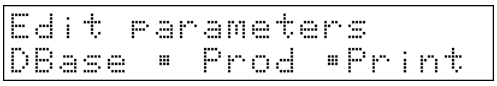


5.4.3 Production parameters

5.4.3.1 ENTRY PRODUCTION PARAMETERS

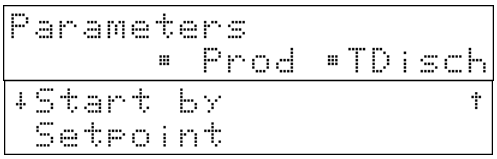
Access to the **parameter entry** from the main menu via **[Param].**

Access to the **production parameters** via **[Prod].** In this table containers with their setpoints can be entered, but the usual application is shown in the sketch.

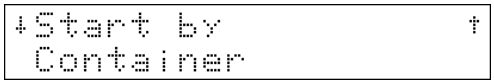


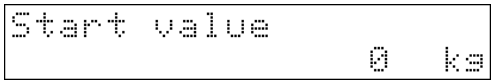
Via **[Prod]** the selected option **Start by [Setpoint]** is displayed.

Via [OK] and [↓] or [↑] this option can be changed to **Start by [Container]** and entered with [OK].

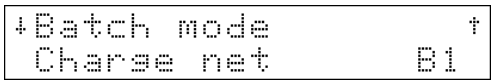


Via [↓] the last entered **Start value** is displayed. It can be changed after [OK] and entered with [OK]. If a setpoint ≠ 0 is entered for **Start by [Setpoint]**, the process will start with this setpoint. If a setpoint = 0 is entered, the setpoint entry is required prior to the process start.

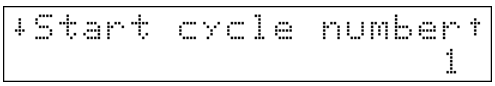




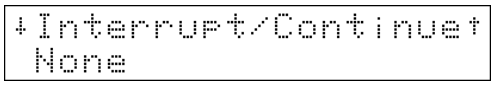
Via [↓] the last entered **Batch mode** is displayed. It can be changed after [OK] and entered with [OK] (please refer to chapter 5.6.1).



Via [↓] the last entered **Start cycle number** is displayed. It can be changed after [OK] and entered with [OK].

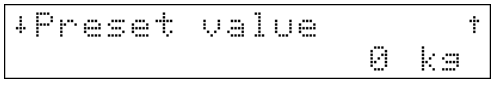


Via [↓] the last entered **Interrupt/Continue** condition before start of the charge and/or discharge process is displayed. It can be changed after [OK] and entered with [OK] (please refer to chapter 5.6.3).

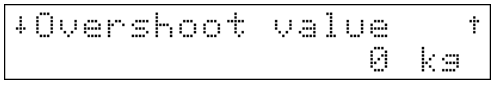


Via [↓] the last entered **Preset value** is displayed. It can be changed after [OK] and entered with [OK].

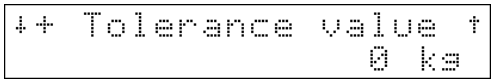
Via [↓] the last entered **Overshoot value** is displayed. It can be changed after [OK] and entered with [OK].



Via [↓] the last entered **+Tolerance** value is displayed. It can be changed after [OK] and entered with [OK]. If 0 is entered no tolerance check is performed.

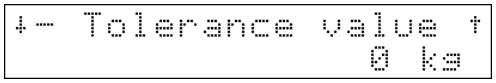


Via [↓] the last entered **-Tolerance** value is displayed. It can be changed after [OK] and entered with [OK]. If 0 is entered no tolerance check is performed.

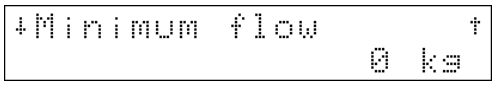


Via [↓] the last entered **Minimum flow** value is displayed. It can be changed after [OK] and entered with [OK].

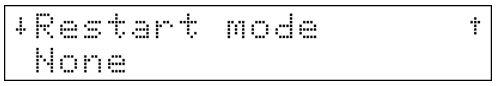
Via ↓ the last entered **Restart mode** is displayed. It can be changed after OK and entered with OK (please refer to chapter 5.6.2).



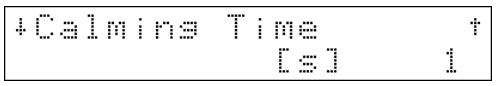
Via ↓ the last entered **Calming time** is displayed. It can be changed after OK and entered with OK.

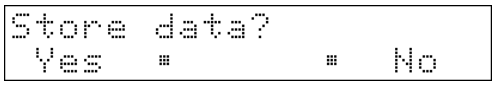


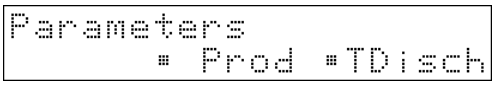
After this all necessary parameters for the discharge batching process are entered. Exit from this menu via Exit with store data check, if data have been changed.



Automatic return to the parameter entry mode.

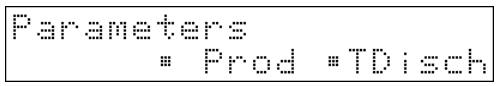




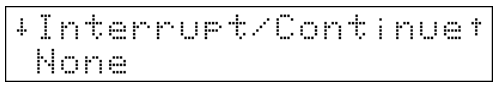


5.4.3.2 DISCHARGE PARAMETER

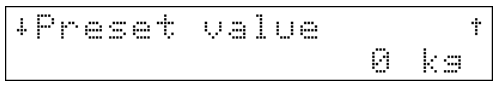
Access to **discharge parameter entry** via **[TDisch]**. The batch mode is fixed to B8.



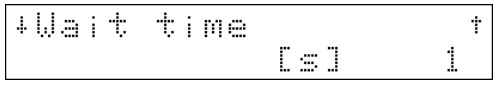
Via ↓ the last entered **Interrupt/Continue** condition before start of the charge and/or discharge process is displayed. It can be changed after OK and entered with OK (please refer to 5.6.3).



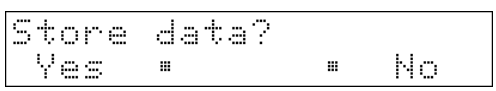
Via ↓ the last entered **Preset value** (maximum residue in the hopper) is displayed. It can be changed after OK and entered with OK.



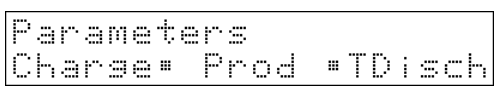
Via ↓ the last entered **Wait time** (additional valve opening time) is displayed. It can be changed after OK and entered with OK.



After this all necessary parameters for the discharge process are entered. Exit from this menu via Exit with store data check, if data have been changed.

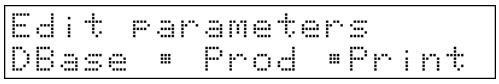


Automatic return to the parameter entry mode.

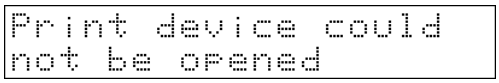


5.4.4 Printout parameter settings

Access to the print menu with **[Param]**-**[Print].**

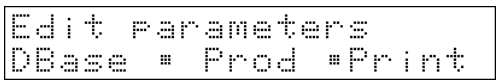


If there is no printer connected or configured an error message will be displayed.

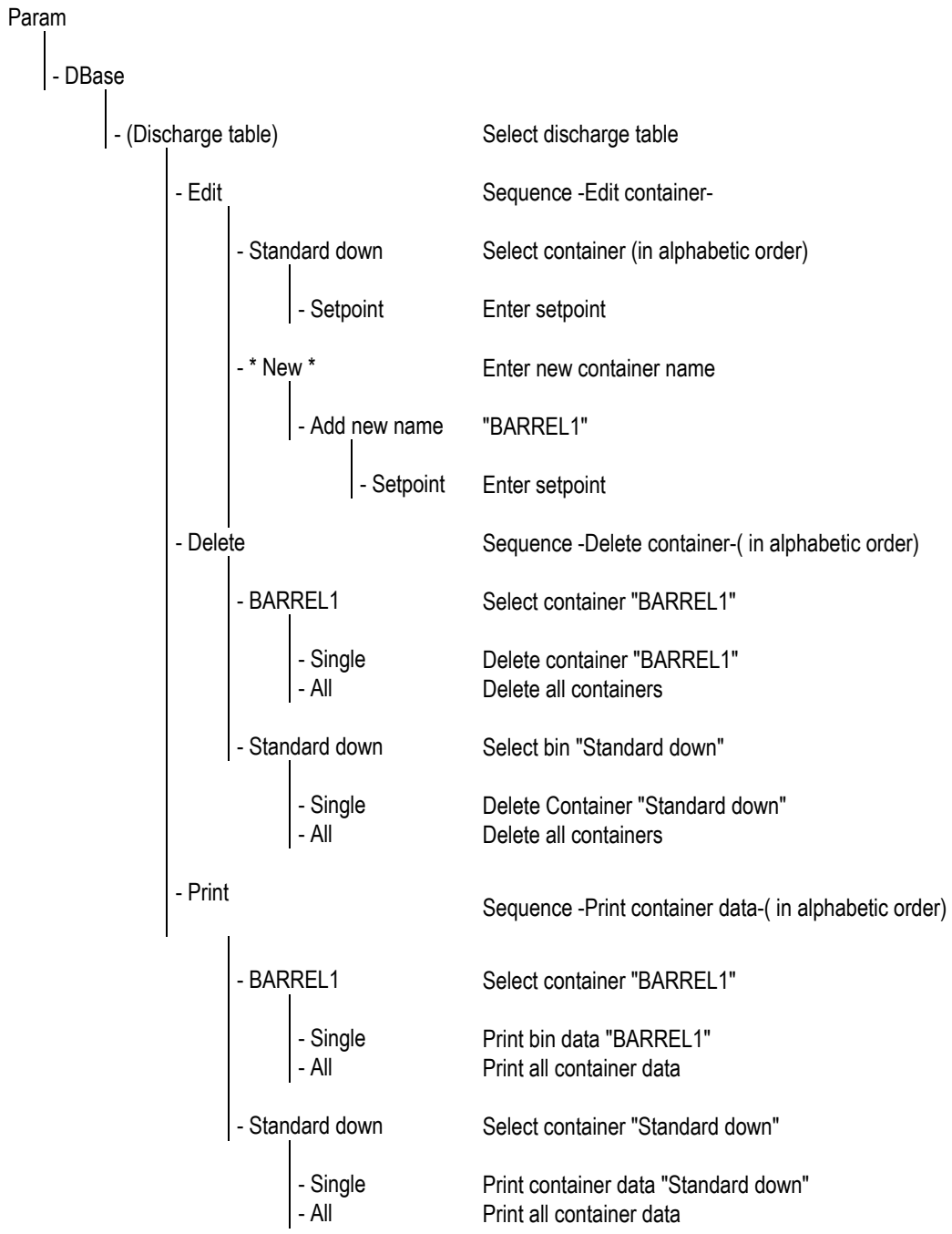


Exit with 

.



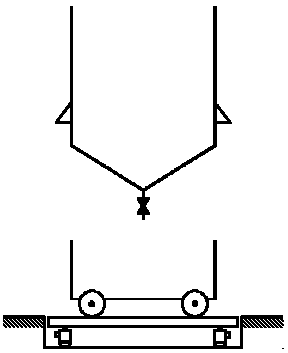
5.4.5 Discharge parameter table for application Big bag discharge.



5.4.6 Production parameter table for application Big bag discharge.

Param	Select **[Param]** from the main menu
- Prod	Sequence -Edit parameters-
- Prod	Start recipe by
- Start by	Selection start by setpoint | container
- Start value	Only for start by setpoint: Enter value from 0....full scale
- Batch mode	Only for start by setpoint: Select mode net B1or gross B3
- Interrupt/Continue	Select Interrupt 1 | Interrupt 2 | Interrupt 1& 2 | None
- Interrupt 1 text	interrupt 1 prompt or edited text (only of interrupt 1 selected)
- Interrupt 2 text	interrupt 2 prompt or edited text (only of interrupt 2 selected)
- Preset value	Enter preset value in weight units
- Overshoot value	Enter overshoot value in weight units
- +Tolerance value	Enter +tolerance value in weight units
- -Tolerance value	Enter -tolerance value in weight units
- Minimum flow	Enter minimum flow rate in weight units
- Restart mode	Select none, restart, optimization, restrt./optim., opim./restrt.
- Calming time	Enter calming time in s
- TDisch	Selection of hopper discharge
- Interrupt/Continue	Select Interrupt 1 | Interrupt 2 | Interrupt 1& 2 | None
- Interrupt 1 text	interrupt 1 prompt or edited text (only of interrupt 1 selected)
- Interrupt 2 text	interrupt 2 prompt or edited text (only of interrupt 2 selected)
- Presert value	Enter preset value for residue in weight units
- Wait time	Enter wait time until valve is closed in s
- Print	Print out of table data.

5.5 Loading station



The silo is not a weighing point. It is only used for material storage. The platform or truck scale is the weighing point..

For the loading station is a sequence of process steps required, for which the necessary parameters have to be entered. Even fixtare values can be entered and used in the production process. This is explained in detail.

Only the discharge valves under the silo are controlled by the IBC Controller. The start of the process can be interlocked via input signals.

Process sequence

Charge batching of a wagon or truck

Start check, if defined.

Setpoint entry, if defined.

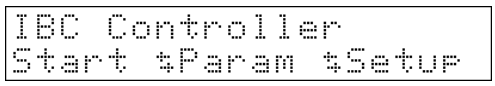
Recall of a container , if defined.

Start of the charge batching process.

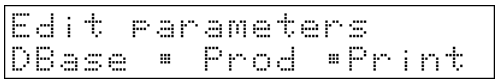
Charge batching of a predefined amount of material.

5.5.1 Paramter entry mode

Access to the parameter entry mode **[Param]:**



The parameter entry mode consists of a database **[DBase]**, .the production parameters **[Prod]** and the parameter print out **[Print]**

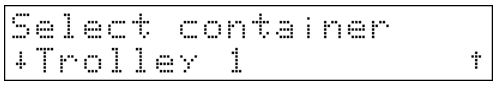


5.5.2 Container tables

5.5.2.1 DELETE CONTAINER TABLES

Access to the **delete menu** for existing containers via **[Delete].**

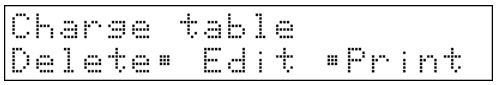
The last called up container is displayed. With  or  other existing containers can be called up.



Via  the delete menu with the options **[Single]** and **[All]** is displayed.

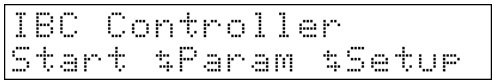
After **[Single]** the displayed containers is deleted, after **[All]** all containers are deleted. The end of list message is displayed.

Return to the charge table menu via  .

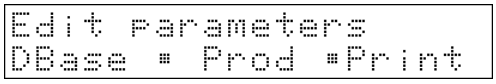


5.5.2.2 EDIT CONTAINER TABLES

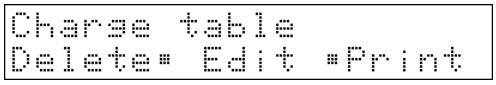
Access to the **parameter entry** from the main menu via **[Param].**



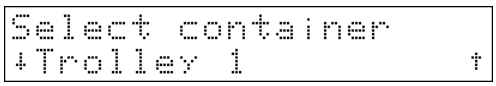
Access to the **charge table** via **[DBase].** In this table containers with their setpoints can be entered. The usual application is shown in the sketch.



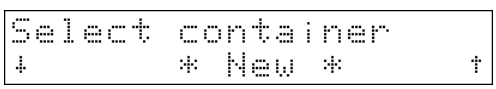
Parameter entry to the charge container table via **[Edit]** .



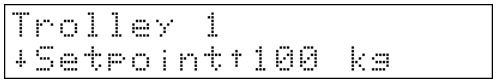
The last called up container is displayed, default is **[standard up].** With  or  other existing containers can be called up.



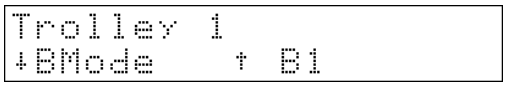
Also **new containers** can be entered. After  the name can be edited and entered with  .



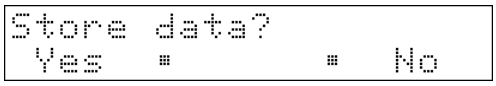
Via [OK] the last entered **[Setpoint]** is displayed (default is 0). It can be changed after [OK] and entered with [OK].



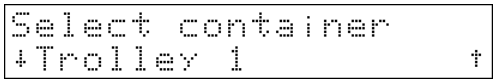
Via [↓] the last entered **[Batch mode]** is displayed. It can be changed after [OK] and entered with [OK] (please refer to chapter 5.6.1).



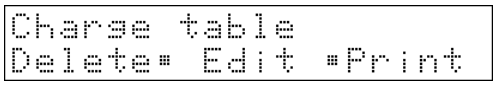
Return to the select container menu with [Exit]. If data in the table have been changed the 'store' inquiry is displayed.



In both cases the select container menu is displayed.

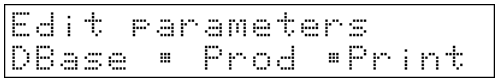


Return to the charge table menu via [Exit].

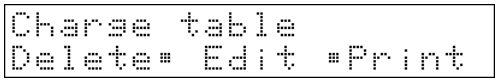


5.5.2.3 PRINT OUT OF CONTAINER TABLES

Access with **[DBase]** to the container table**.**

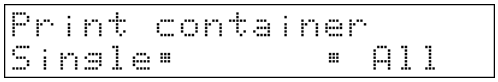


Access via **[Print]** to the print menu..

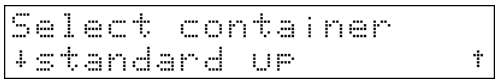


Select with [↓] a container and print out the datas of this container with [OK].

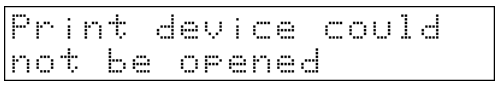
Print out the datas of the choosen container with **[Single]** or print out all container datas with **[All]**.



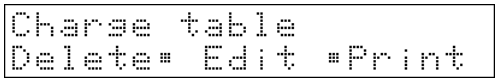
After the print process this message is displayed. Exit with [Exit].



The choosen datas are printed. If there is no printer connected or configured an error message will be displayed.



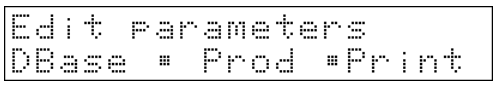
Exit with [Exit].



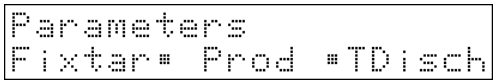
5.5.3 Production parameter

5.5.3.1 FIXTARE

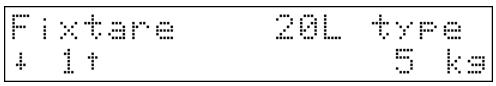
Access to **production parameter entry** menu via **[Prod].**



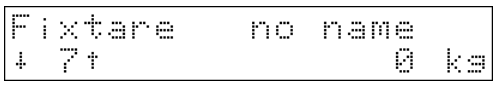
The menu shows the selections **[Fixtar]**, **[Prod]** and **[Tdisch].**



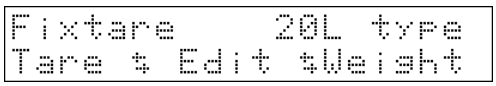
Via **[Fixtar]** the **Fixtare value** number 1 is displayed with name and weight (if data entered). Up to 9 fixtare values can be edited.



Via [↓] and [↑] also other fixtare values can be displayed.

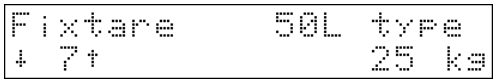


After [OK] the selection menu for **[Tare]**, **[Edit]** and **[Weight]** is displayed. Via [→] **[Print]** is displayed.



Access to the editing mode with **[Edit].**

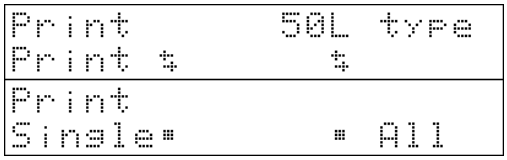
Editing of a name to a selected fixtare value after [OK], entry with [OK]. Editing of a tare weight, entry with [OK].



Via **[Tare]** the weighing point can be tared with the dispßlayed tare weight. The display shows NET.

Via **[Weight]** the weighing point can be tared with the current weight.

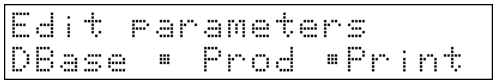
Via **[Print]** the fixtare value can be printed. With **[Single]** the displayed fixtare value will be printed and with **[All]** all fixtare values will be printed.



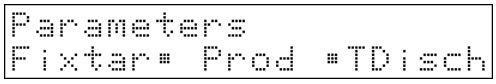
Return to the edit parameter menu via [Exit]

5.5.3.2 PRODUCTION PARAMETER

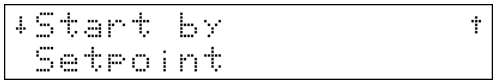
Access to the **production parameter entry** via **[Prod]**.



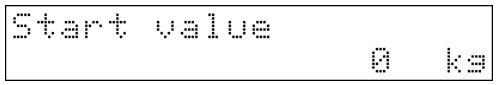
For the selected option **Start by [Setpoint]** the corresponding message is displayed.



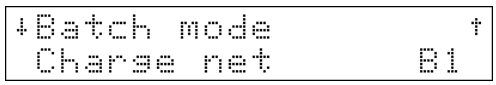
Via [OK] and [↓] or [↑] this option can be changed to **Start by [Container]** and entered with [OK]. This option is normally not relevant for this application!



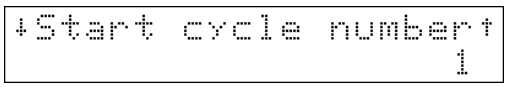
Via [↓] the last entered **Start value** is displayed. It can be changed after [OK] and entered with [OK]. If a setpoint ≠ 0 is entered for **Start by [Setpoint]**, the process will start with this setpoint. If a setpoint = 0 is entered, the setpoint entry is required prior to the process start.



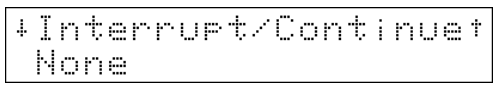
Via [↓] the last entered **Batch mode** is displayed. It can be changed after [OK] and entered with [OK] (please refer to chapter 5.6.1).



Via [↓] the **Start cycle number** is displayed and can be changed with [OK] and entered with [OK].

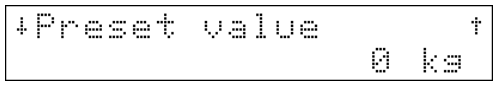


Via [↓] the last entered **Interrupt/Continue** condition before start of the charge and/or discharge process is displayed. It can be changed after [OK] and entered with [OK] (please refer to chapter 5.6.3).

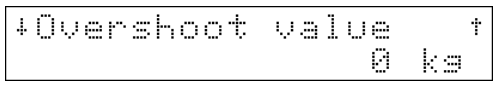


Via [↓] the last entered **Preset value** is displayed. It can be changed after [OK] and entered with [OK].

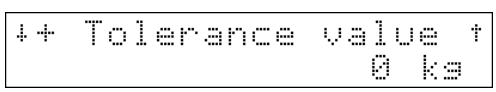
Via [↓] the last entered **Overshoot value** is displayed. It can be changed after [OK] and entered with [OK].

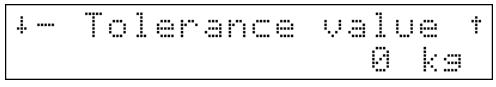


Via [↓] the last entered **+Tolerance** value is displayed. It can be changed after [OK] and entered with [OK]. If 0 is entered no tolerance check is performed.

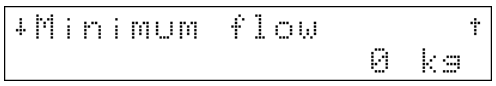


Via [↓] the last entered **-Tolerance** value is displayed. It can be changed after [OK] and entered with [OK]. If 0 is entered no tolerance check is performed.

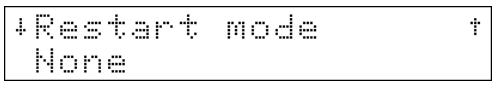




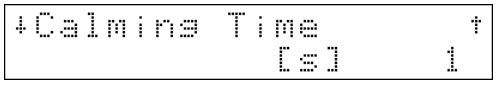
Via ↓ the last entered **Minimum flow** value is displayed. It can be changed after OK and entered with OK.



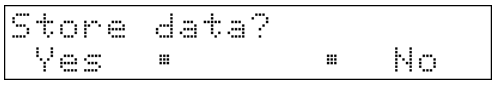
Via ↓ the last entered **Restart mode** is displayed. It can be changed after OK and entered with OK (please re fer to chapter 5.6.2).



Via ↓ the last entered **Calming time** is displayed. It can be changed after OK and entered with OK.



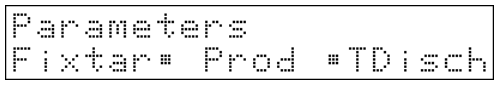
After this all necessary parameters for the charge process are entered. Exit from this menu via Exit with store data check, if data have been changed.



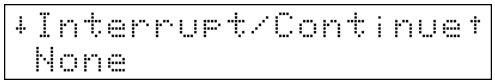
Automatic return to the parameter entry mode.

5.5.3.3 DISCHARGE PARAMETER

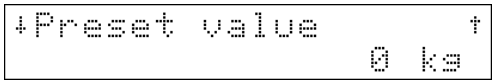
Access to **discharge parameter entry** via **[TDisch]**. The batch mode is fixed to B8. The total discharge of the truck or trolley is not relevant, as the valves can not be controlled by the Controller.



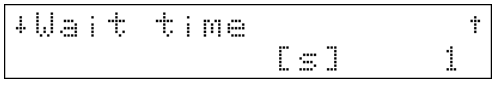
Via ↓ the last entered **Interrupt/Continue** condition before start of the charge and/or discharge process is displayed. It can be changed after OK and entered with OK (please refer to chapter 5.6.3).



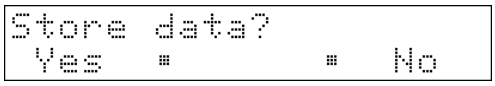
Via ↓ the last entered **Preset value** (maximum residue in the hopper) is displayed. It can be changed after OK and entered with OK.



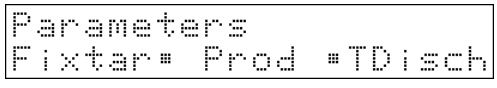
Via ↓ the last entered **Wait time** (additional valve opening time) is displayed. It can be changed after OK and entered with OK.



After this all necessary parameters for the discharge process are entered. Exit from this menu via Exit with store data check, if data have been changed.

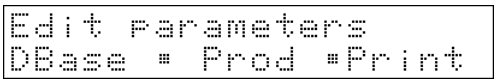


Automatic return to the parameter entry mode.

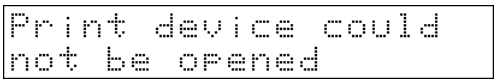


5.5.4 Printout parameter settings

Access to the print menu with **[Param]-[Print].**

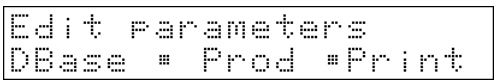


If there is no printer connected or configured an error message will be displayed.



Exit with 

.



5.5.5 Charge parameter table for application Loading station.

Param	Select **[Param]** from the main menu
- DBase	Sequence -Edit parameters in charge table-
- Edit	Sequence -Edit container
- Standard up	Select container (in alphabetic order)
- Setpoint	Enter setpoint
- Bmode	Enter batch mode B1....B3
- Fixtare	Only for batch mode B2: Enter fixtare value
- * New *	Enter new container name
- Add new	"BARREL1"
- Setpoint	Enter setpoint
- Bmode	Enter batch mode B1....B3
- Fixtare	Only for batch mode B2: Enter fixtare value
- Delete	Sequence -Delete container (in alphabetic order)
- BARREL1	Select container "BARREL1 "
- Single	Delete container "BARREL1"
- All	Delete all container
- Standard up	Select container "Standard up"
- Single	Delete container "Standard up"
- All	Delete all containers
- Print	Sequence -Print container data-(in alphabetic order)
- BARREL1	Select container "BARREL1"
- Single	Print container data "BARREL1"
- All	Print all container data
- Standard up	Select container "Standard up"
- Single	Print container data "Standard up"
- All	Print all container data

5.5.6 Production parameter table for application Loading station.

Param	Select **[Param]** from the main menu
- Prod.	Sequence -Edit parameters-
- Fixtar	Access to fixtare table
- Fix-tare1-9	Selection of fixtare value
- Edit	Enter fixtare data
- Name	Enter name for fixtare value
- Value	Enter weight value to allocated name
- Weight	Take over current gross weight as fixtare value
- Tare	Tare with selected fixtare value
- Print	Select Single | All
- Prod	
- Start by	Selection start by setpoint or container
- Start value	Only for start by setpoint: Enter value from 0....full scale
- Batch mode	Only for start by setpoint: Select net or gross mode
- Start cycle number	Enter number of cycles 1...999
- Interrupt/Continue	Select Interrupt 1 | Interrupt 2 | Interrupt 1& 2 | None
- Interrupt 1 text	interrupt 1 prompt or edited text (only of interrupt 1 selected)
- Interrupt 2 text	interrupt 2 prompt or edited text (only of interrupt 2 selected)
- Preset value	Enter preset value in weight units
- Overshoot value	Enter overshoot value in weight units
- +Tolerance value	Enter +tolerance value in weight units
- -Tolerance value	Enter -tolerance value in weight units
- Minimum flow	Enter minimum flow rate in weight units
- Restart mode	Select none, restart, optimization, restrt./optim., opim./restrt.
- Calming time	Enter calming time in s
- TDisch	Selection of hopper discharge
- Interrupt/Continue	Select Interrupt 1 | Interrupt 2 | Interrupt 1& 2 | None
- Interrupt 1 text	interrupt 1 prompt or edited text (only of interrupt 1 selected)
- Interrupt 2 text	interrupt 2 prompt or edited text (only of interrupt 2 selected)
- Preset value	Enter preset value for residue in weight units
- Wait time	Enter wait time until valve is closed in s
- Print	Print out of production table.

For this application fixtare values can be entered by numeric keys or by true weight and used in the batching processes via the tare key. Please refer to chapter 6.

5.6 General definitions

Before a batching process can be executed several important parameters have to be defined. Therefore they are described in detail and the most complex ones like the batch modes and the restart modes are explained in detail in the following sections.

The following definitions are usual in batching processes:

Coarse feed rate

The batching of a material component starts in the coarse feed rate and commences until the switch off level for coarse feed is reached.

Fine feed rate

After passing the switch off level for coarse the batching of a material component continues in the fine feed rate until the switch off level for fine feed is reached.

Preset point

The preset point defines in conjunction with the setpoint and the overshoot the switch off level for the coarse feed.

Switch off level for coarse = Setpoint - Overshoot - Preset point

Overshoot

The overshoot defines in conjunction with the setpoint the switch off level for the fine feed.

Switch off level for fine = Setpoint - Overshoot

The material still falling in the hopper after the valve is closed is called inflight material. Depending on the chosen restart mode the overshoot will be corrected. Please refer to the chapter 5.6.2.

Calming time

The calming time starts after the termination of the fine feed and is used to get the inflight material in the hopper and stabilize it. This is especially relevant for screw feeders, vibro feeders and materials with high viscosity.

Tolerance

After expiration of the calming time the batched weight is checked according to the upper (+) and lower (-) tolerance limits. If a limit is finally exceeded tolerance alarm is activated. This alarm has to be reset by the operator or via I/O function.
If the value of a tolerance limit is set to zero the tolerance check for this limit is disabled.
The tolerance value can be used for optimization routines of the process. Please refer to the chapter 5.6.2.

Flow rate

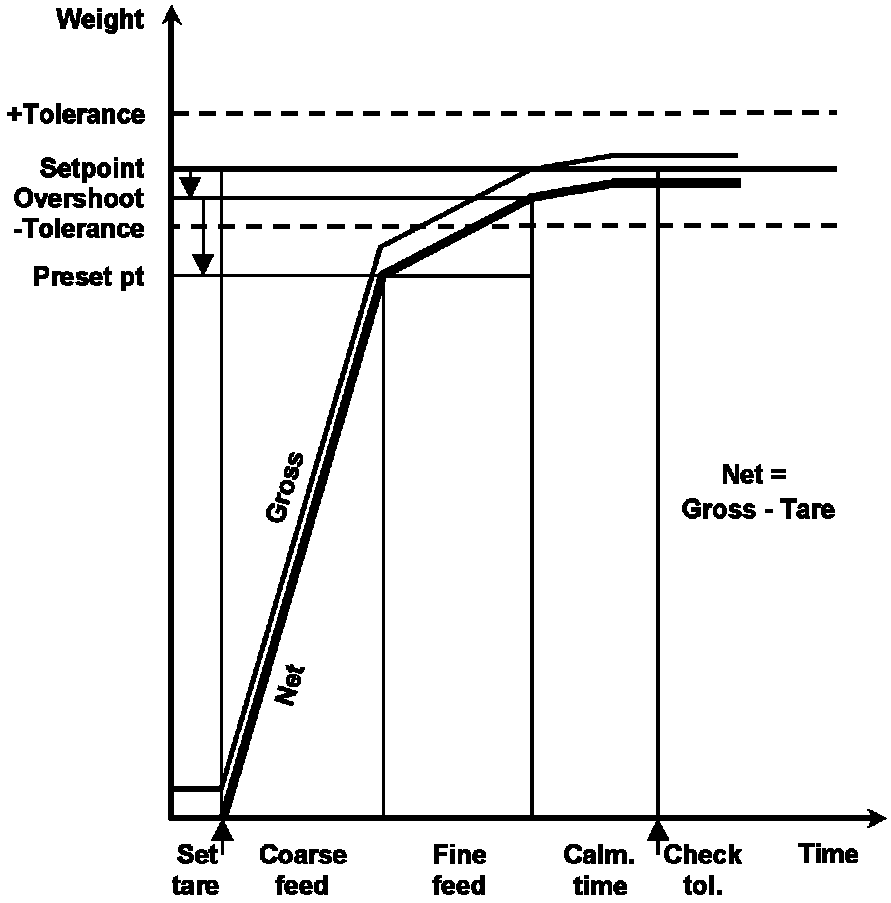
The flow rate of a material component is monitored according to a preset value during coarse feed and 12.5 % of this value during fine feed. If the flow rate is lower than the limit flow warning is activated. This happen already after 5 seconds, if the flow rate is below the limit. After recovery of the material flow the warning is reset automatically. If the preset value is set to zero the monitoring is disabled.

5.6.1 Batch modes

The batch mode defines the batching sequence of a material component. The following batch modes are relevant for the IBC Controller:

5.6.1.1 BATCH MODE 'CHARGE NET B1'

The batch mode B1 is used for charge batching applications based on net weight with the following steps:



Tare: The current gross weight is stored as tare and the net weight starts from zero.

Coarse: The material is batched in coarse feed rate until the switch off level (preset point) is reached.

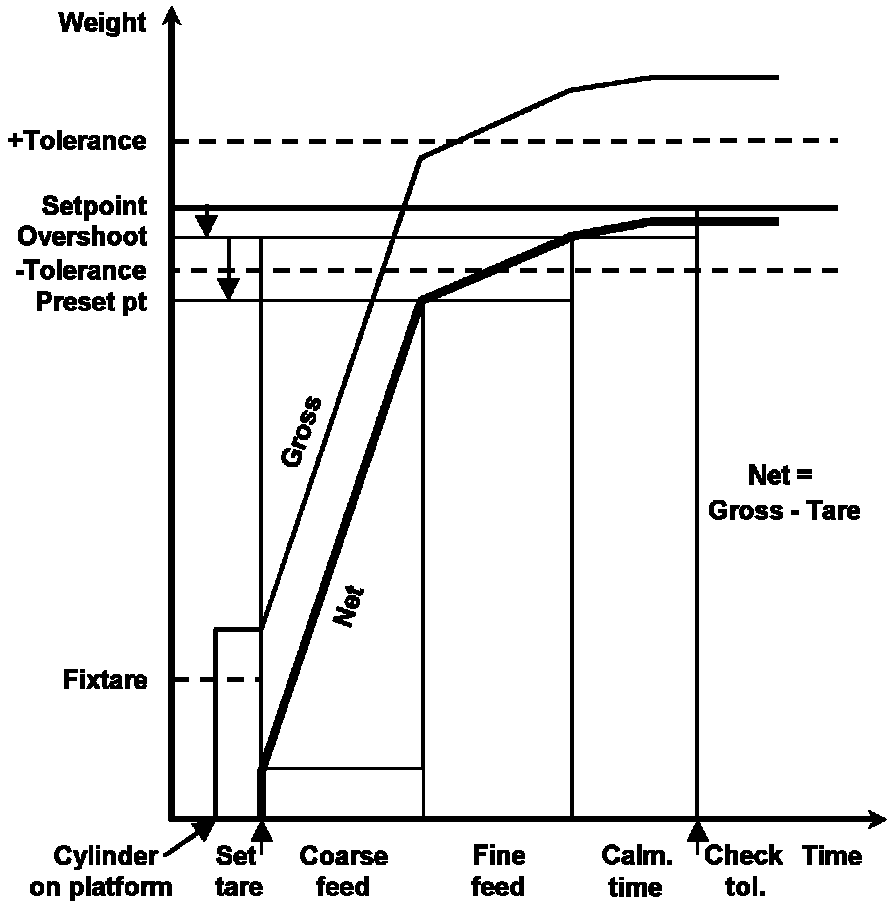
Fine: The material is batched in fine feed rate until the switch off level (over shoot) is reached.

Calming time: Delay time to get the material in the hopper settled.

Tolerance check: The batched weight is checked according to the tolerance values.

5.6.1.2 BATCH MODE 'CHARGE TOP UP B2'

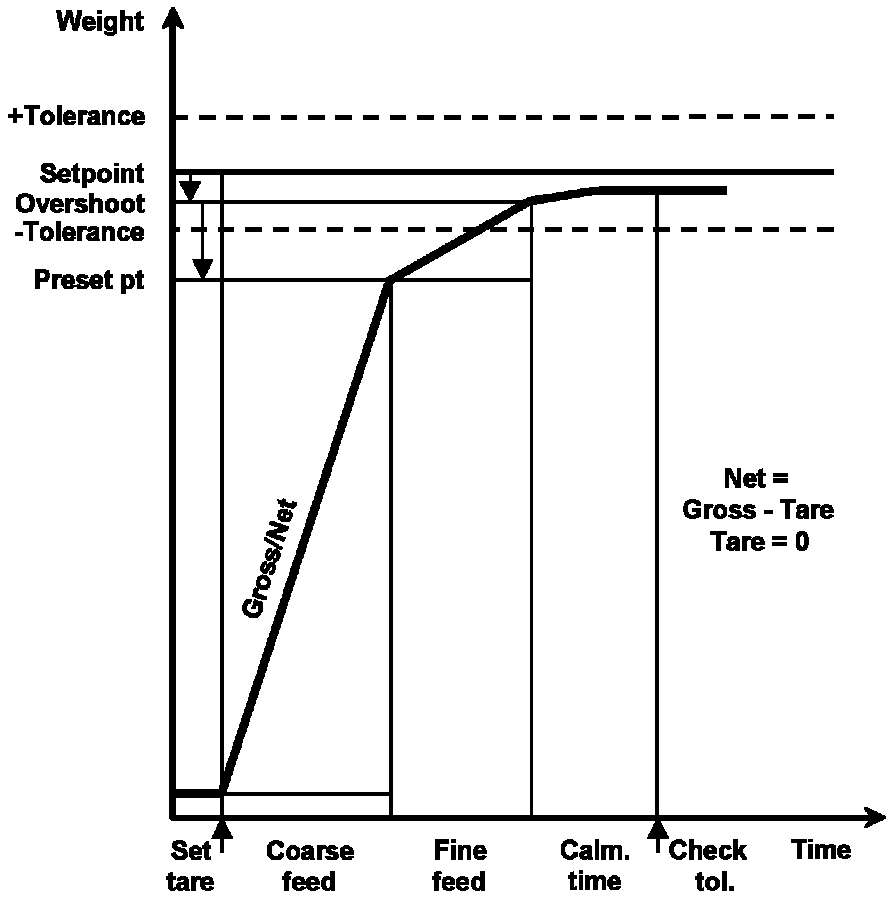
The batch mode B2 is used for charge batching applications based on net weight for top up batching processes with barrels, containers or gas cylinders, which are typically still partly filled. They have known fixed tare values, which are needed for this kind of batching process. It works with the following steps:



Tare:	A known fixtare value is used as new tare value for the batching process. The net weight is gross - tare and can be above zero at the batch start.
Coarse:	The material is batched in coarse feed rate until the switch off level preset point) is reached.
Fine:	The material is batched in fine feed rate until the switch off level overshoot is reached.
Calming time:	Delay time to get the material in the hopper settled.
Tolerance check:	The batched weight is checked according to the tolerance values.

5.6.1.3 BATCH MODE 'CHARGE GROSS B3'

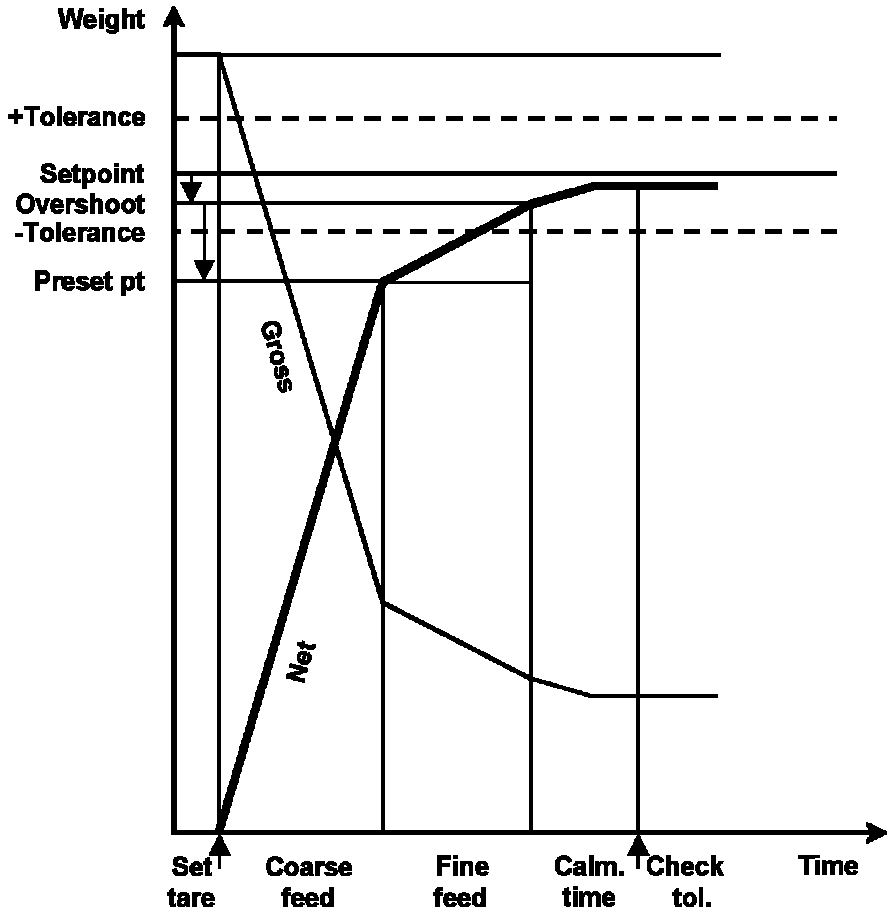
The batch mode B3 is used for charge batching applications based on gross weight with the following steps:



Tare:	The tare is set to zero. Therefore gross and net weight are the same. The gross/net weight starts from the current gross value.
Coarse:	The material is batched in coarse feed rate until the switch off level preset point is reached.
Fine:	The material is batched in fine feed rate until the switch off level overshoot is reached.
Calming time:	Delay time to get the material in the hopper settled.
Tolerance check	The batched weight is checked according to the tolerance values.

5.6.1.4 BATCH MODE 'DISCHARGE NET B4'

The batch mode B4 is used for discharge batching applications based on net weight with the following steps:



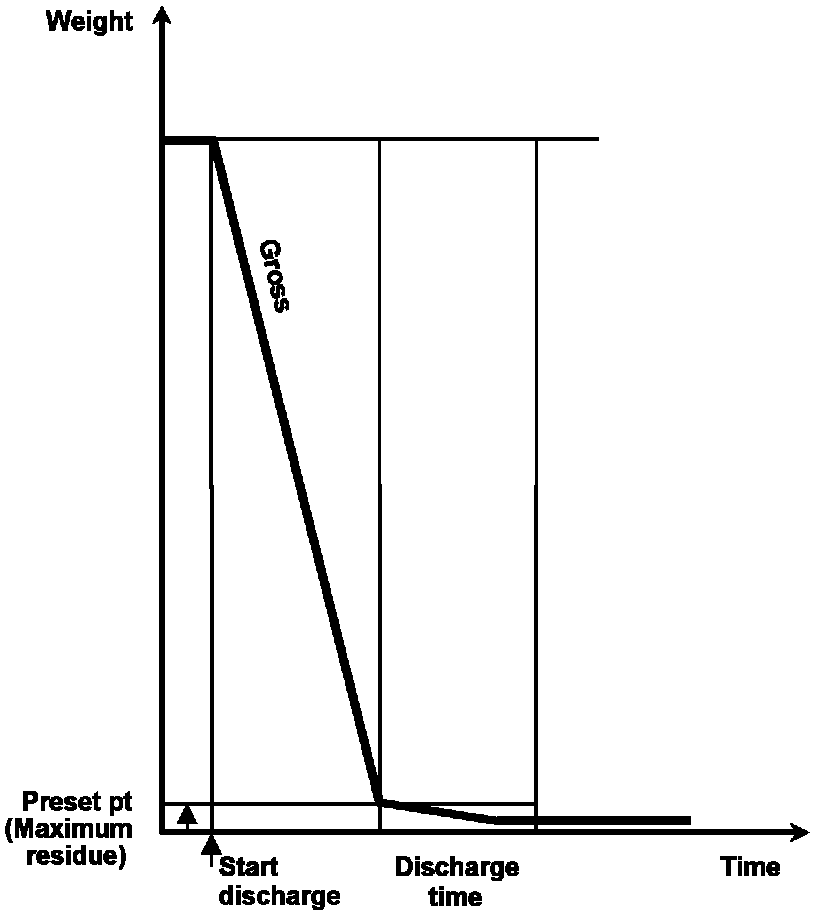
Tare:	The current gross weight is stored as tare and the net weight starts from zero.
Coarse:	The material is batched in coarse feed rate until the switch off level preset point is reached.
Fine:	The material is batched in fine feed rate until the switch off level overshoot is reached.
Calming time:	Delay time to get the material in the hopper settled.
Tolerance check:	The batched weight is checked according to the tolerance values.

5.6.1.5 BATCH MODE 'DISCHARGE TOP DOWN B5'

This batch mode is not useful for the Controller, though it is selectable, as it is irrelevant for a single component application.

5.6.1.6 BATCH MODE 'TOTAL DISCHARGE B8'

The batch mode B8 is used for total discharge of a hopper, vessel or container based on the gross weight. The discharge process continues until the specified maximum residue is reached. Then the valve is kept open for a specified time and the process is finished.



Discharge: The material is batched in discharge feed rate until the gross weight is below the maximum residue (preset point). This parameter is stored under 'preset point'.

Discharge time: Afterwards the valve is kept open for some seconds to get further material out. This parameter is stored under 'overshoot'.

5.6.2 Restart modes

The restart modes define the optimization procedure for the batched weight after the tolerance check and for future batches of a material component. For all restart modes is the optimum case that the batched weight is exactly the same as the setpoint.

(=) = In this case nothing happens.

For all other cases the optimization procedure depends on the chosen restart mode.

The optimization procedure works with the following equations for the overshoot (OVS) update:

New OVS = Old OVS - (Setpoint - final component weight) /2

Corr OVS = Old OVS - (Setpoint - final component weight)

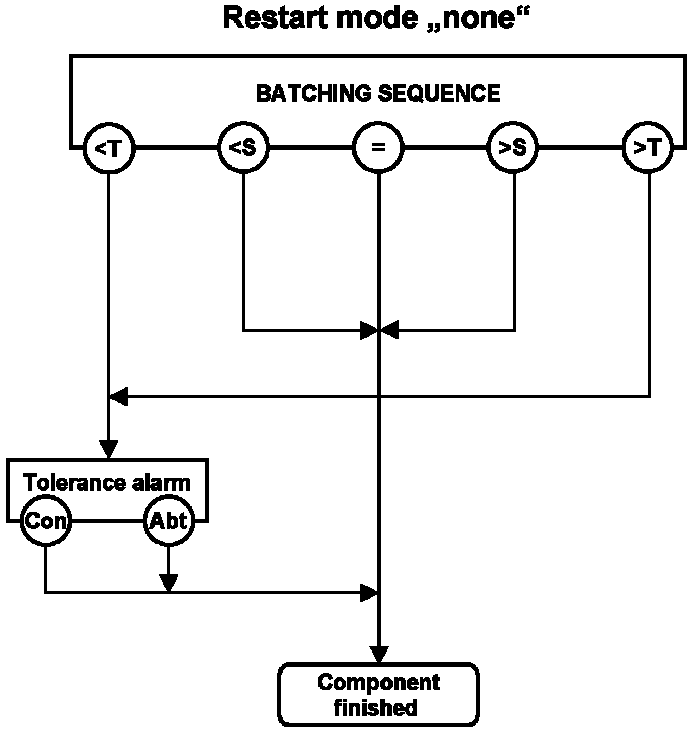
The condition for restart fine feed is that the fine feed switch off level is above the current batched weight.

Restart fine feed = switch off level for fine feed >= batched weight

The following restart modes are available in the Controller:

5.6.2.1 RESTART MODE 'NONE'

This mode is chosen for processes with non-reproducible results. In this case neither the overshoot is updated nor the fine feed restarted.



<T = Batched weight under lower tolerance limit.

The tolerance alarm is switched on. After that the batch can be aborted with the **[Abort]** key or finished with the **[Cont.]** key.

<S = Batched weight within tolerance, but below setpoint.

The batching process is finished.

>S = Batched weight within tolerance, but above setpoint.

The batching process is finished.

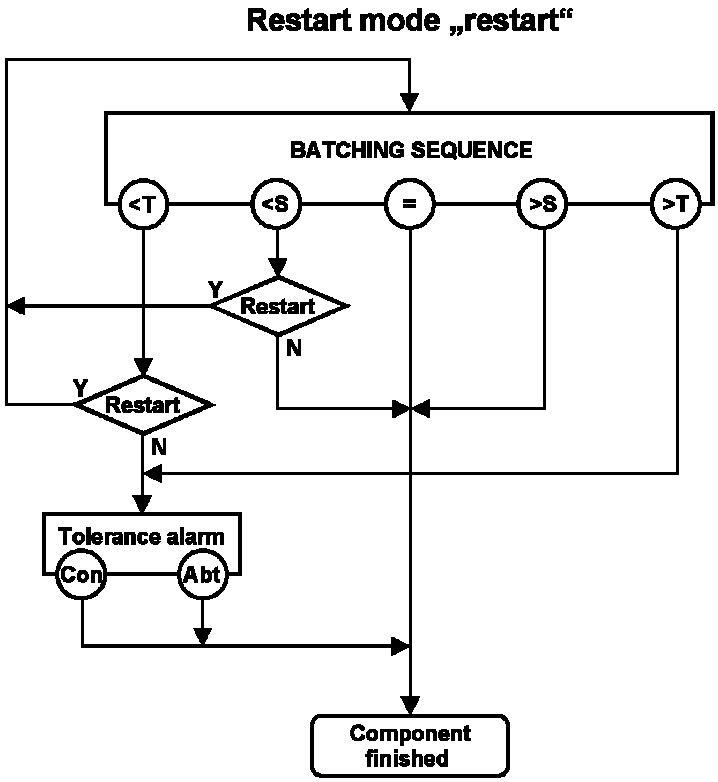
>T = Batched weight above upper tolerance limit.

The tolerance alarm is switched on and the batch can be aborted with the softkey **[Abort]** or finished with the softkey **[Cont]**.

Con = Continue batching Abt = Abort batching

5.6.2.2 RESTART MODE 'RESTART'

This mode is chosen for processes with non-reproducible results. In this case the overshoot is not updated, but fine feed is restarted, if the conditions are fulfilled.



<T = Batched weight under lower tolerance limit.

The fine feed is switched on again, if the conditions are fulfilled. If not, the tolerance alarm is switched on. After that the batch can be aborted with the **[Abort]** key or finished with the **[Cont.]** key.

<S = Batched weight within tolerance, but below setpoint.

The fine feed is switched on again, if the conditions are fulfilled. Otherwise the batching process is finished.

>S = Batched weight within tolerance, but above setpoint.

The batching process is finished.

>T = Batched weight above upper tolerance limit.

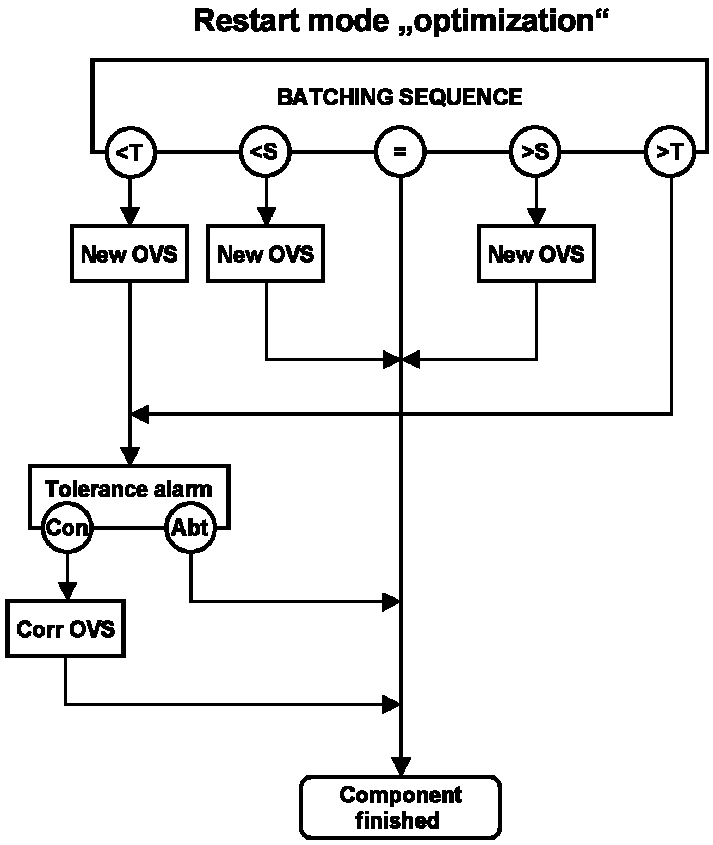
The tolerance alarm is switched on and the batch can be aborted with the **[Abort]** key or finished with the **[Cont]** key.

Con = Continue batching Abt = Abort batching

Restart = Restart of fine feed

5.6.2.3 RESTART MODE 'OPTIMIZATION'

This mode is chosen for processes with normally reproducible results. In this case the overshoot is updated, but fine feed is not restarted.



<T = Batched weight under lower tolerance limit.

The overshoot is updated according to "New OVS" and the tolerance alarm is switched on. The batch can be aborted with the **[Abort]** key or continued with the **[Cont.]** key. In the second case a further correction on the overshoot according to "Corr. OVS" is done before the batching process is finished.

<S = Batched weight within tolerance, but below setpoint.

The overshoot is updated according to "New OVS" and the batching process is finished.

>S = Batched weight within tolerance, but above setpoint.

The overshoot is updated according to "New OVS" and the batching process is finished.

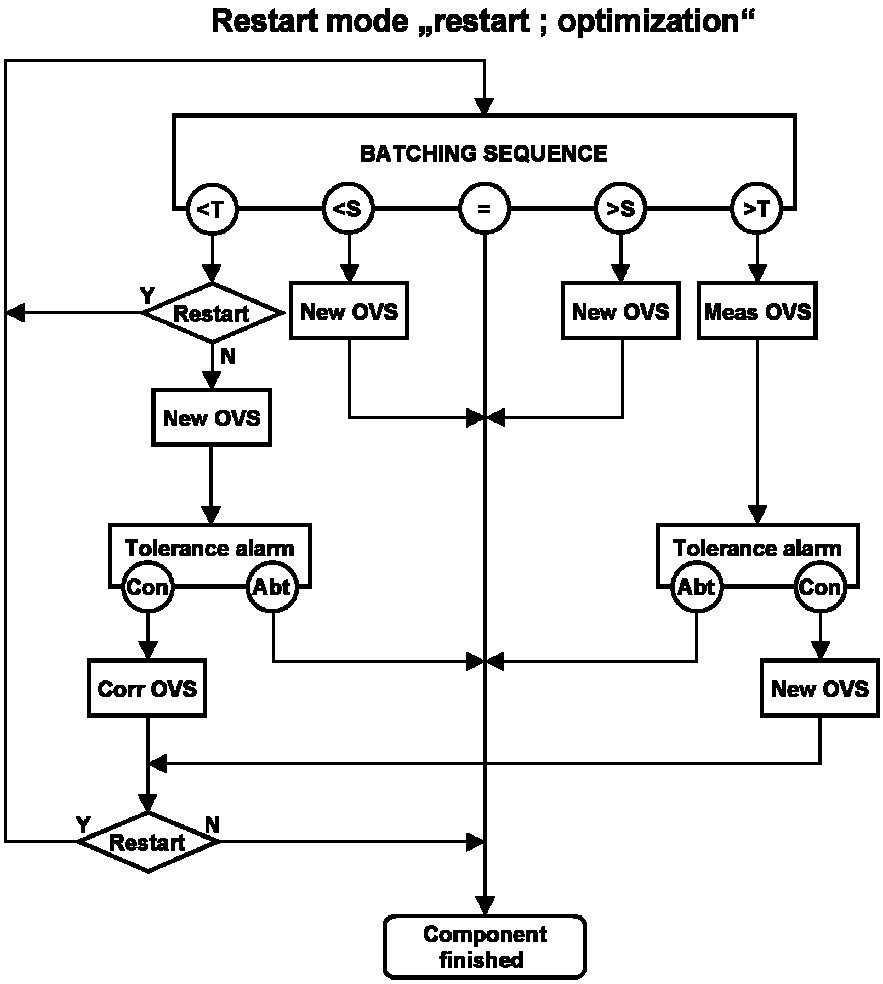
>T = Batched weight above upper tolerance limit.

The tolerance alarm is switched on and the batch can be aborted with the **[Abort]** key or continued with the **[Cont.]** key. In the second case a further correction on the overshoot according to "Corr. OVS" is done before the batching process is finished.

Con = Continue batching Abt = Abort batching

5.6.2.4 RESTART MODE 'RESTRT. ; OPTIM.'

This mode is chosen for processes with reproducible results, but the influence of exceptional results on the overshoot correction is suppressed. In this case first fine feed is restarted, if the conditions are fulfilled. Afterwards the overshoot is updated.



<T = Batched weight under lower tolerance limit.

The fine feed is switched on again, if the conditions are fulfilled. If not, the overshoot is updated according to "New OVS" and the tolerance alarm is switched on. After that the batch can be aborted with the **[Abort]** key or continued with the **[Cont.]** key. In the second case a further correction on the overshoot according to "Corr. OVS" is done and fine feed is switched on again, if the conditions are fulfilled.

<S = Batched weight within tolerance, but below setpoint.

The overshoot is updated according to "New OVS".

>S = Batched weight within tolerance, but above setpoint.

The overshoot is updated according to "New OVS".

>T = Batched weight above upper tolerance limit.

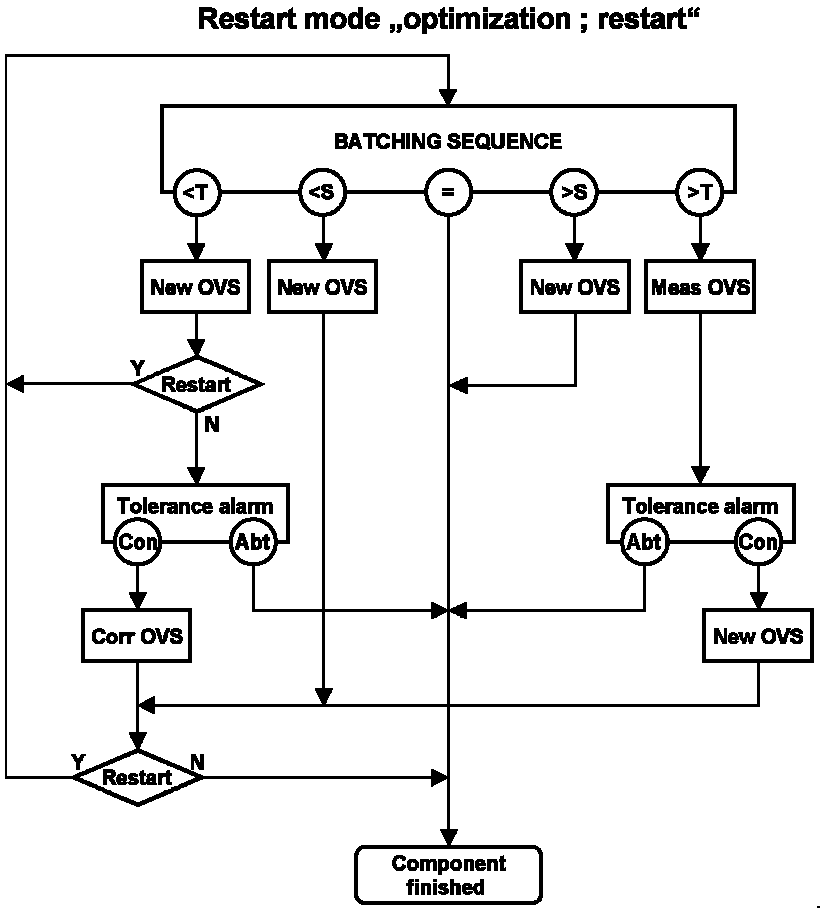
The current overshoot is measured and the tolerance alarm is switched on. The batch can be aborted with the **[Abort]** key or continued with the **[Cont]** key. In the second case the overshoot is updated according to "New OVS".

= Continue batching

= Abort batching

5.6.2.5 RESTART MODE 'OPTIM. ; RESTRT.'

This mode is chosen for processes with reproducible results. In this case first the overshoot is updated. Afterwards the fine feed is restarted, if the conditions are fulfilled. This mode allows the best optimization for normal batching applications and is the preferred mode.



<T = Batched weight under lower tolerance limit.

The overshoot is updated according to "New OVS". Afterwards is the fine feed switched on again, if the conditions are fulfilled. If not, the tolerance alarm is switched on. After that the batch can be aborted with the **[Abort]** key or continued with the **[Cont]** key. In the second case a further correction on the overshoot according to "Corr. OVS" is done and fine feed is switched on, if the conditions are fulfilled.

<S = Batched weight within tolerance, but below setpoint.

The overshoot is updated according to "New OVS".

>S = Batched weight within tolerance, but above setpoint.

The overshoot is updated according to "New OVS".

>T = Batched weight above upper tolerance limit.

The current overshoot is measured and the tolerance alarm is switched on. The batch can be aborted with the **[Abort]** key or continued with the **[Cont.]** key. In the second case a further correction on the overshoot according to "Corr. OVS" is done and fine feed is switched on, if the conditions are fulfilled.

The overshoot is updated with half of the difference between net and setpoint. Afterwards is the fine feed switched on again, if possible. If not, the tolerance alarm is switched on. After that the batch can

be aborted with the **[Abort]** key or continued with the **[Cont.]** key. In the second case a further correction on the overshoot is done and fine feed switched on, if possible.

= Continue batching

= Abort batching

= Post batching finemode

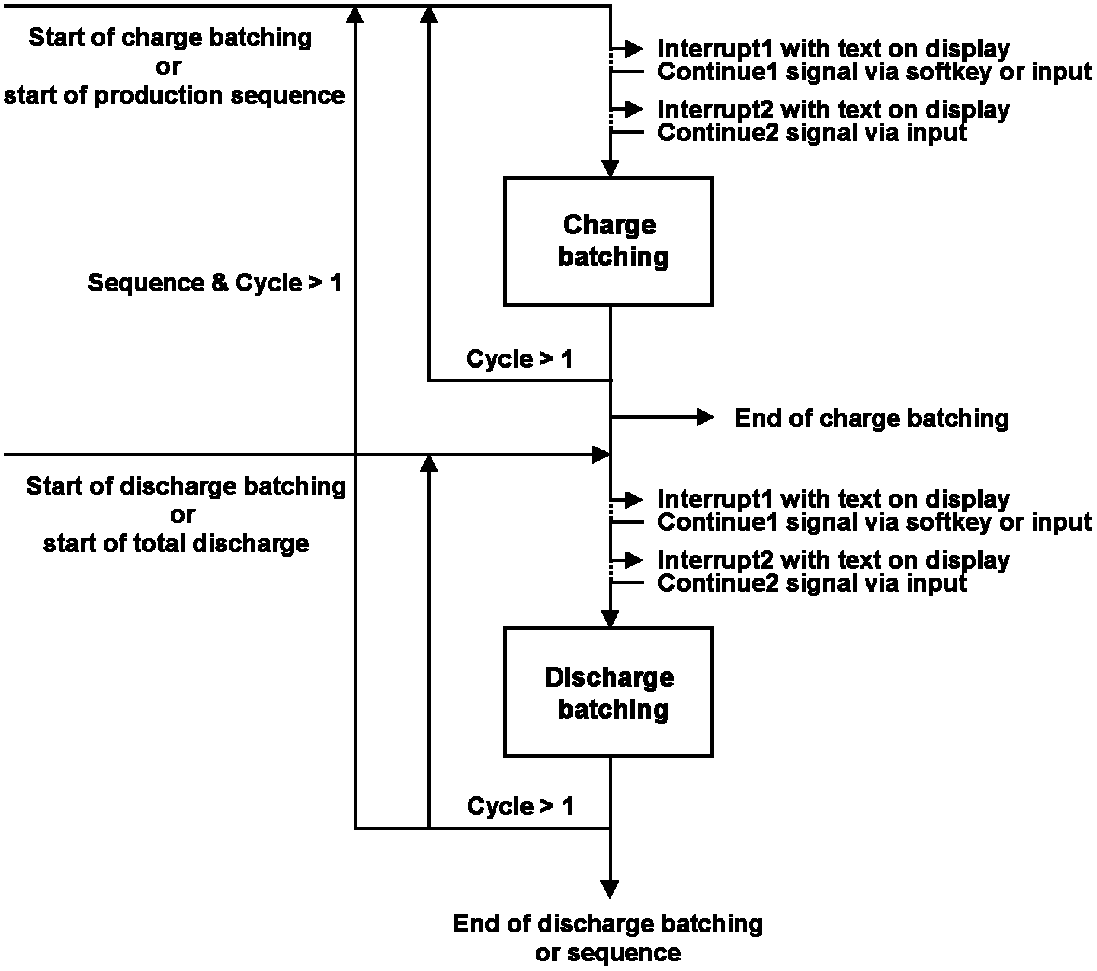
5.6.3 Interrupt/Continue signals

For interlocks with the process two independent interrupts for both, charge and discharge batching processes, can be activated and configured. For all interrupts customized textes of maximum 20 characters can be configured, which are displayed on the upper line after the stop of the batching process.

To continue the process the first interrupt can be acknowledged either by softkey or by input, the second interrupt only be acknowledged by input signal. All interrupts and the configured textes are entered in the production data table of the selected application.

The selection of the kind of interrupts is done with the data entry to the production table.

The process scheme for single charge or discharge processes, sequences of both inclusive cycles >1 is shown below.



5.6.4 Fixtare values

For the application **loading station** fixtare values 1-9 can be entered in the production parameter table. This is useful for filling processes with known fixtares of barrels, container or gas cylinders, which are still partly filled. These fixtare values can be recalled in the production modus via **[Fixtare]**, so that the contents can be topped up to a total value.

6 Production

The chapter Production is split into the chapter **Start of production** and the four applications **Charge batchhopper**, **Loading station**, **Filling station** and **Big bag discharge**.

6.1 Start of production

Before a batch is started the Controller checks whether the conditions for this batch are fulfilled. This means that the maximum weight of the weighing point (hopper or platform) is not exceeded and the weight does not fall below zero (setpoint > contents). If the conditions are not fulfilled the batch can not be started.

An exception is the big bag discharge batching, where the contents of the big bag is for the last batch usually smaller than the setpoint. The missing amount is automatically batched from the next filled big bag.

The start menu and other menus during the batching process like alarm messages are application dependent. Therefore some functions are only accessible in specific applications, but not in all of them. A batching process can be started in the mode **Setpoint** by the entry or recall of a setpoint and other component specific data. Furthermore a batching process can be started in the mode **Container** by the selection of an ident for a bin, tote, container etc. Please refer to the following items under 'Start options'.

6.1.1 Start options

There are different start options available, which allow an accurate tailoring of the solution to the technical problem. These options are explained in the following chapters.

6.1.1.1 SETPOINT ENTRY

Before start of a batching process the definition of a setpoint and a number of cycles is required. This can be performed in three different ways:

1) The setpoint and the number of cycles are entered by the operator before start, if the stored setpoint in the production parameter table is 0. All other component parameters are recalled from the production parameter table.
2) The setpoint is recalled from the production parameter table, if it is > 0. They have been entered together with the other component parameters in the production parameter table and they are not anymore displayed before start.
3) The setpoint is > 0 and has been entered together with the batch mode in the container table and is now recalled via the ident, but not anymore displayed before start.

Depending on the application is there a charge table and/or a discharge table with the relevant data available. The structure of the tables is explained in detail:

Container table for charge batching processes

Name:	Name/ident of a bin, tote, container e.g. blue container.
Setpoint:	Standard charge capacity e.g. 50kg
Batch mode:	B1, B2, or B3
Fixtare:	With batch mode B2 the use of fixtare values is possible.

All entered charge parameters like setpoint and batch mode are disabled, if a bin, tote, container etc from the charge table is selected. These parameters are stored under the name/ident and don't need to be entered again.

In the batching mode B2 also fixtare values can be used. This is especially important for charge batching processes in partly filled units.

Container table for discharge batching processes

Name:	Name/ident of a bin, tote, container e.g. blue container
Sollwert:	Standard discharge capacity e.g. 25kg
Batch mode:	B4
Fixtare:	No fixtare entry

All entered discharge parameters like setpoint and batch mode are disabled, if a bin from the discharge bin table is selected.

Example:

With the feature fixtare the fixtare value for a gas cylinder type can be entered and recalled lateron for the charge batching process. The contents of the gas cylinder can then always be topped up to the same amount. Please refer to the chapter 5.3.

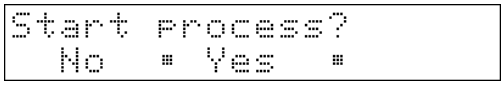
6.1.1.2 NUMBER OF CYCLES

To repeat the selected process the number of cycles can be entered as start parameter. The cycle number 999 corresponds to indefinit. Has this value already been entered with the other parameters, the entry of the cycle number will be jumped across.

6.1.1.3 START CONFIRMATION

Is the parameter **Batch start** set to **Inquiry** the inquiry will be performed immediately after the batch start.

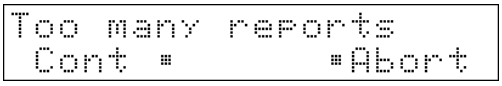
With the softkey **[Yes]** the batching process is started. With softkey **[No]** the entered value will be stored, but the batching process not started.



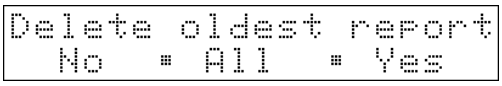
This function is useful, if the setpoint shall be changed manually and directly at the Controller, but the batch start is initiated via digital inputs.

6.1.1.4 BLOCKING OF PRODUCTION START

If there are too many batch reports* in the memory this message is displayed and the batching process is not started. Select softkey **[Abort]** for return to the start process menu. Select softkey **[Cont]** to delete reports.

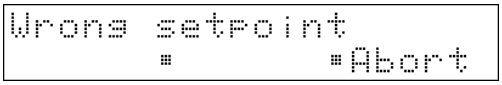


After softkey **[No]** the controller returns to the start process menu. After selection of softkey **[Yes]** or **[All]** one or all reports are deleted and the batching process is started.

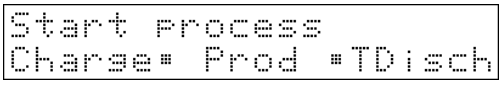


This can happen, if the printer is not ready to print, the cable connection is defective or the parameter setting is wrong.

If the sum of setpoint and current gross weight exceeds the full scale range the batching process is not started and the corresponding message is displayed.



With the softkey **[Abort]** the batching process will be aborted and the start process menu is displayed.

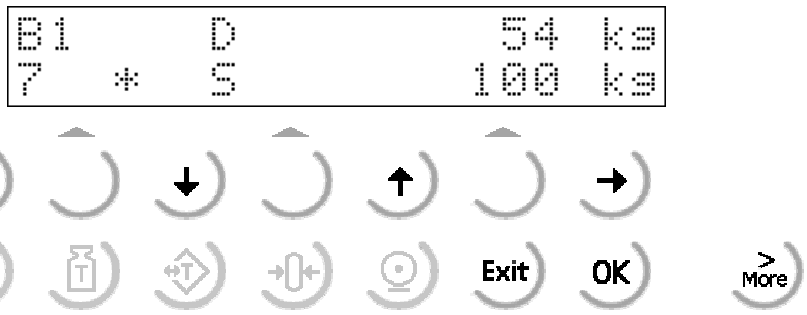


6.1.2 Status display

During the batching process the operator can monitor the progress of the batching process by means of the the status indication:

- Gross weight = B
- Net weight = N
- Tare weight = T
- Difference weight = D
- Setpoint = S
- Batch mode = B1, B2, B3, B4, B6, B8
- Current cycle number = 1 *
- Maximal cycle number = 999

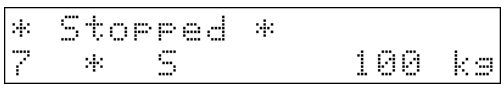
The two line display shows the batch mode, the difference weight, the current cycle and the setpoint. Pushing the left softkey displays the total cycle number.



Via the number of the cycles are displayed.
Via changes the indicated weight for at least 3 seconds to the gross weight.
Via changes the indicated weight for at least 3 seconds to the tare weight.

6.1.2.1 STOP OF THE BATCHING PROCESS

By pressing Stop the batching process can be stopped. The corresponding message on the upper display line alternates with the normal indication. The square flashes.

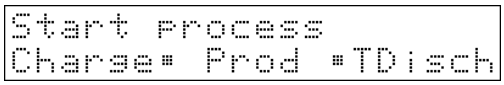


6.1.2.2 CONTINUE OF THE BATCHING PROCESS

If the batching process is stopped, pressing Stop changes the display to this indication.

With **[Cont]** the batching process will be restarted (also after tolerance alarm).

With the **[Abort]** the batching process will be aborted and the start process menu is displayed.



Is there still another cycle to follow the current cycle the display shows the following message. In this case either the current cycle or all cycles can be aborted.

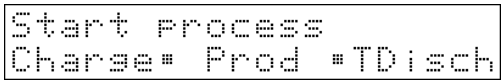
6.1.2.3 MESSAGES DURING THE BATCHING PROCESS

Is one of the entered tolerance limits exceeded the batching process is stopped and the message *** Tolerance alarm *** alternates on the upper display line with the normal indication. The square flashes.

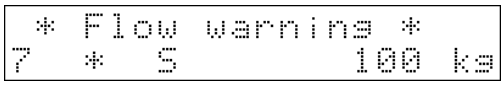
A further pressing of Stop changes the display to this indication.

Via **[Cont]** the batching will be restarted and the start production menu is displayed.

Via **[Abort]** the batching process will be aborted and the start process menu is displayed.

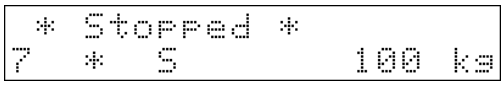


Is the flow rate below the entered minimum value the message *** Flow warning *** alternates on the upper display line with the normal indication. The square flashes.



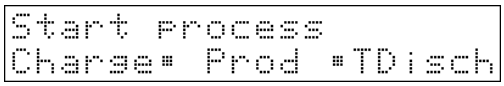
The flow rate is still continuously monitored. If the minimum flow rate is afterwards exceeded the flow warning is automatically reset.

After pressing Stop the corresponding message alternates on the upper display line with the normal indication. A further pressing on Stop shows the indicated menu.

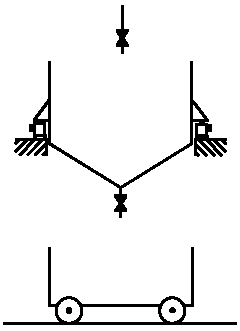


With **[Cont]** the batching will be restarted and the normal indication is displayed.

With **[Abort]** the batching process will be aborted and the start process menu is displayed.



6.2 Application 'Charge batchhopper'



Charge batching in a hopper on load cells with subsequent total discharge.

Function principle A: The charge and discharge process are started separately. The hopper is filled manually or via a charge batching process in B1 or B3 mode. Afterwards the hopper is totally discharged in B8 mode.

Function principle B: The process charges a defined amount of material in the hopper and discharges the hopper afterwards. Optionally this process can be automatically repeated.

The batch modes and the restart modes are explained in detail in chapter 5.6.1.

6.2.1 Charge

Access to the **production start menu** via **[Start]** .

```
IBC Controller
Start ↳Param ↳Setup
```

Selection of the **charge process** via **[Charge].**

```
Start process
Charge↳ Prod ↳TDisch
```

The start conditions have to be set to **Start by [Setpoint]**. If the setpoint has been set to 0 in parameter entry mode, the last entered value in production mode is displayed. It can be changed and entered via [OK] and the process starts.

```
Setpoint
                100  kg
```

If the setpoint was entered ≠ 0 in parameter entry mode and no start check is set, the process starts with the entered setpoint without displaying it before start.

In both cases the display shows now batch mode, difference weight, cycle number and setpoint. The charge batching process is performed the usual way in coarse and fine feed with tolerance check, if parameters are set.

```
B1     D          100 kg
1   *  S          100 kg
```

If the batched weight is within tolerance limits the process is finished, and the Controller shows the process start menu.

```
Start process
Charge↳ Prod ↳TDisch
```

Have the tolerance limits been entered ≠ 0 and have these limits been exceeded *** Tolerance alarm *** is set, the process stops and the square flashes slowly.

The process can be finally stopped via [Stop] and the menu on the right will be displayed.

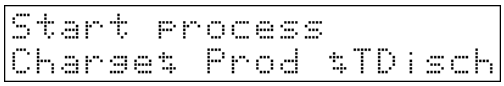
```
* Tolerance alarm *
1   *  S          100 kg
```

```
 Cont ▪       ▪Abort
```

In both cases the process will be finished, but according to the selected restart mode the correction of the overshoot will be different (please refer to chapter 5.6.2).

6.2.2 Production

Via **[Prod]** a sequence of a charge and a discharge process will be selected. Only for this sequence a cycle number > 1 can be entered in parameter entry mode.



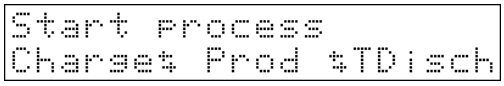
If the **Setpoint** has been set to 0 in parameter entry mode, the last entered value in production mode is displayed. It can be changed and entered via OK and the process starts.

If the setpoint was entered ≠ 0 in parameter entry mode and no start check is set, the process starts with the entered setpoint without displaying it before start.

The display shows batch mode, difference weight, cycle number and setpoint.

The charge batching process is performed the usual way in coarse and fine feed with tolerance check, if the tolerance limits have been entered ≠ 0.

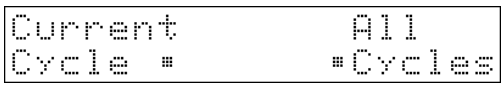
Is the batched weight within entered tolerance limits the discharge process starts automatically.



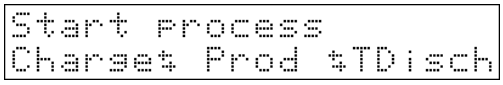
After termination of the discharge process the Controller shows the process start menu, if the entered cycle number is 1. If the cycle number is >1 the sequence will be repeated as many times as the entered cycle number requires.

If the **process is stopped** by tolerance alarm and then Stop or Stop Stop is pressed ,it can be continued via **[Cont]** or aborted via **[Abort]** .

If there are still more cycles to follow after **[Abort]**, the message on the right appears on the display. Either the current cycle or all cycles are aborted.

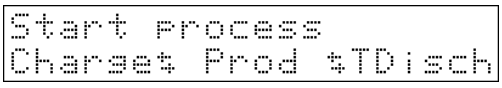


If **[All cycles]** are selected the Controller returns to the Process start menu. If **[Current cycle]** is selected the next cycle is performed.

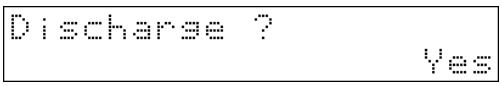


6.2.3 Total discharge

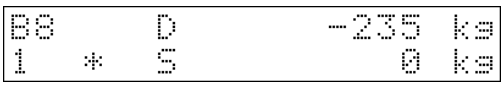
Access to the **total discharge** of the batching hopper is selected via **[TDisch]**.



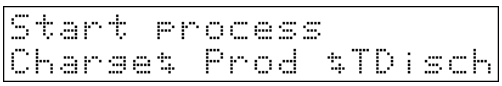
Via **[Yes]** the total discharge is started and will be performed the usual way. (Please refer to the chapter5.6.1.) and the process start menu will be displayed.



The status information with Batch mode, difference weight, cycle number and setpoint is displayed.

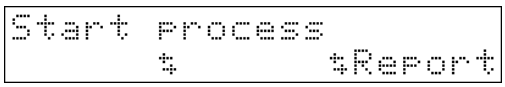


After termination of the total discharge the start process start menu is displayed.

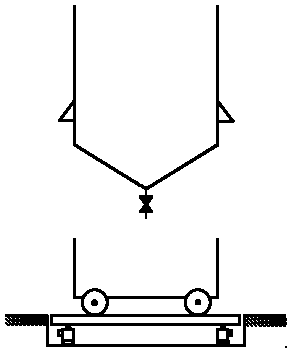


6.2.4 Report

Via  after termination of the batching process and in the process start menu reports can be printed (please refer to chapter 7).



6.3 Application 'Loading station'



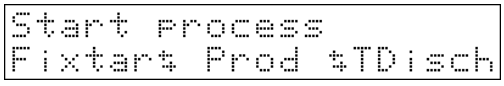
A vessel, container or barrel on a platform or a truck on a truck scale are filled in a charge batching process in B1, B2 or B3 mode. The entry of fixed tare values for the barrels, containers or cylinders is possible.

The silo can be only manually filled. Total discharge is also possible via the IBC Controller.

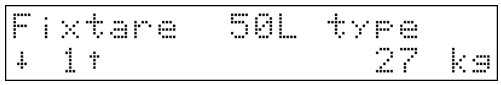
The batch modes and the restart modes are explained in detail in chapter 5.6.1.

6.3.1 Fixtare

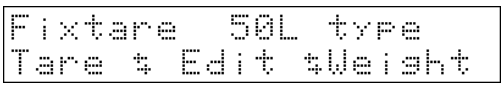
Selection of a batching processes with entry of a **fixtare value** via **[Fixtar] .**



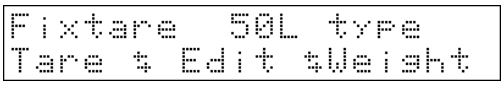
The last called up fixtare value is displayed. With ↓ or ↑ another fixtare value can be displayed and selected via OK. The fixtare menu is displayed.



Via **[Edit]** all fixtare values can be edited. Return to the fixtare menu via OK.

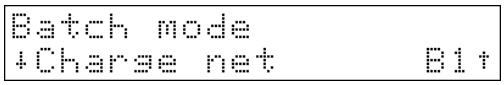


Via **[Tare]** the weighing point is tared with the selected fixtare value. NET appears on the display.



Alternatively the weighing point can be tared with the current weight via **[Weight]**.

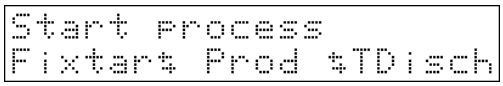
If the start conditions is set to **Start by [Setpoint]** and the setpoint entered in parameter entry mode is ≠ 0 and no start check is selected, the process starts with this setpoint without displaying it before start. Was it set to 0 in parameter entry mode, the last entered value in production mode is displayed. It can be changed and entered via OK, and the process starts.
After that the displayed **Batch mode** can be changed and entered via OK and the batching process starts.



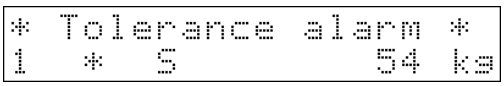
If the start condition is set to **Start by [Container]** the last called up container is displayed. It can be changed and entered via OK, and the process starts.

In both cases the display shows now batch mode, difference weight, cycle number and setpoint. The charge batching process is performed the usual way in coarse and fine feed with tolerance check, if the tolerance limits are entered ≠ 0.

If the batched weight is within the entered tolerance limits ≠ 0, the process is finished, and the Controller shows the process start menu.



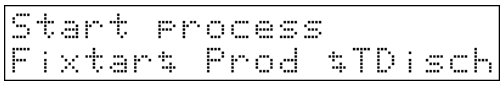
Have the tolerance limits been entered ≠ 0 and have these limits been exceeded *** Tolerance alarm *** is set, the process stops and the square ◇ flashes.



The process can be finally stopped via Stop and the menu on the right will be displayed.

In both cases the process will be finished, but according to the selected restart mode the correction of the overshoot will be different (please refer to chapter 5.6.2).

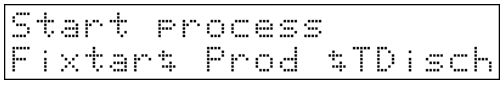
If the cycle number is > 1 the other cycles are performed the same way. Otherwise the Controller returns to the process start menu.



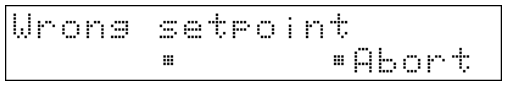
If the **process is stopped** by tolerance alarm and Stop or via Stop Stop ,it can be continued via **[Cont]** or aborted via **[Abort]** .

If there are still more cycles to follow after **[Abort]**, the message on the right appears on the display. Either the **[Current cycle]** or **[All cycles]** are aborted.

If **[All cycles]** are selected the Controller returns to the process start menu. If **[Current cycle]** is selected the next cycle is performed.

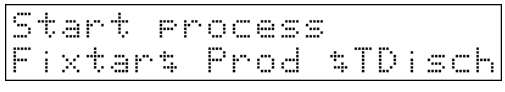


Caution! Is the **batch mode B2 'Top up batching'** selected, the setpoint must be higher than the current gross weight. Otherwise the message **Wrong setpoint** appears on the display.



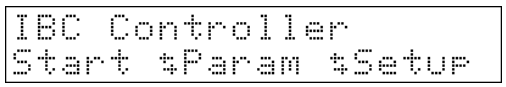
If the sum of setpoint and current gross weight exceeds the **full scale** deflection (FSD), the start of the batching process is inhibited and the same message appears.

Via **[Abort]** the batching process is aborted and the process start menu is displayed..

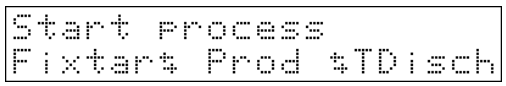


6.3.2 Production

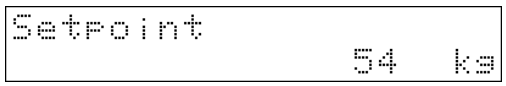
Access to the **production start menu** via **[Start]** .



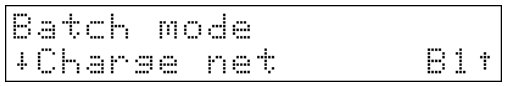
Selection of **a charge batching process** via **[Prod].**



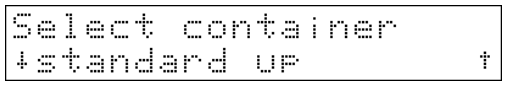
If the start conditions is set to **Start by [Setpoint]** and the setpoint entered in parameter entry mode is ≠ 0 and no start check is selected, the process starts with this setpoint without displaying it before start. Was it set to 0 in parameter entry mode, the last entered value in production mode is displayed. It can be chan-ged and entered via [OK], and the process starts.



After that the displayed batch mode can be changed and entered via [OK] and the batching process starts.

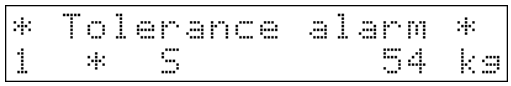


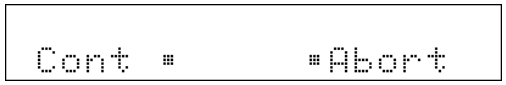
If the start condition is set to **Start by [Container]** the last called up container is displayed.It can be changed and entered via [OK], and the process starts.

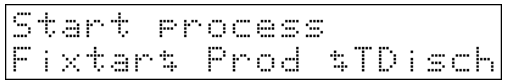


In both cases the display shows now batch mode, difference weight, cycle number and setpoint. The charge batching process is performed the usual way in coarse and fine feed with tolerance check, if the tolerance limits are entered ≠ 0.

If the batched weight is within tolerance limits the process is finished.
If the tolerance limits are exceeded, *** Tolerance alarm *** is displayed and the square ◇ flashes.
The process can be finally stopped via [Stop] and the menu on the right will be displayed.
In both cases the process will be finished, but according to the selected restart mode the correction of the overshoot will be different (please refer to chapter 5.6.2).

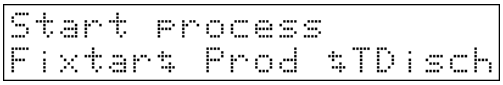




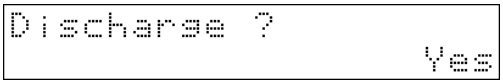


6.3.3 Total discharge

Access to the **total discharge** of the batching hopper is selected via **[TDisch]**.

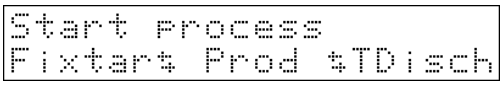


Via **[Yes]** the total discharge is stated and will be performed the usual way. (please refer to the chapter 5.6.1.)



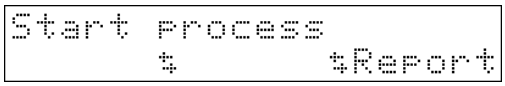
The status information with Batch mode, difference weight, cycle number and setpoint is displayed.

After termination of the total discharge the start process start menu is displayed.

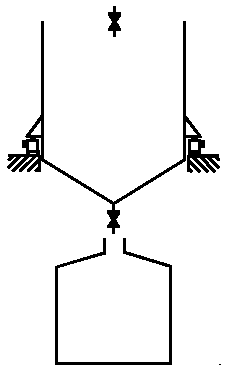


6.3.4 Report

Via  after termination of the batching process and in the process start menu reports can be printed (please refer to chapter 7).



6.4 Application 'Filling station'



Discharge batching process from a hopper on load cells in a container, e.g. big bag, container or barrel. Even trucks are sometimes loaded this way.

The hopper is filled manually or via a charge batching process in B1 or B3 mode. Afterwards one or more discharge batches are performed in B4 mode.

Via total discharge in B8 mode the hopper can be emptied.
The batch modes and the restart modes are explained in detail in chapter 5.4.5.

6.4.1 Charge

Access to the **production menu** from the main menu via **[Start].**

```
IBC Controller
Start ↳Param ↳Setup
```

Selection of a **charge batching** process for filling the batching hopper via **[Charge].**
For filling the batching hopper the start conditions has to be set to **Start by [Setpoint]**. If the setpoint entered in parameter entry mode is ≠ 0 and no start check is selected, the process starts with this setpoint without displaying it before start. Was it set to 0 in parameter entry mode, the last entered value in production mode is displayed. It can be changed and entered via OK and the process starts.
In both cases the display shows now batch mode, difference weight, cycle number and setpoint. The charge batching process is performed the usual way in coarse and fine feed with tolerance check, if the tolerance limits are entered ≠ 0.
If the batched weight is within entered tolerance limits ≠ 0 the process is finished. (A tolerance check for the filling process of the batching hopper is unusual.)

```
Start process
Charge↳ Prod ↳TDisch
```

```
Setpoint
                2000  kg
```

```
B1     D        2000 kg
1   *  S        2000 kg
```

If the tolerance limits are exceeded, *** Tolerance alarm *** is displayed and the square flashes slowly.

The process can be finally stopped via Stop and **[Abort]** and the menu on the right will be displayed.
In both cases the process will be finished, but accor-ding to the selected restart mode the correction of the overshoot will be different (please refer to chapter 5.6.2).

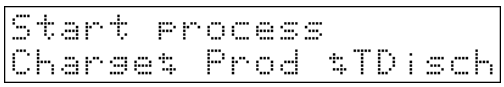
```
Start process
Charge↳ Prod ↳TDisch
```

```
* Tolerance alarm *
1   *  S       2000 kg
```

```
 Cont ▪      ▪Abort
```

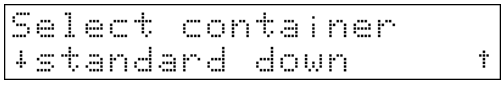
6.4.2 Production

Selection of a **discharge batching process** from the hopper into a container via **[Prod]** .



If the start conditions is set to **Start by [Setpoint]** and the setpoint entered in parameter entry mode is ≠ 0 and no start check is selected, the process starts with this setpoint without displaying it before start. Was it set to 0 in parameter entry mode, the last entered value in production mode is displayed. It can be chan-ged and entered via OK , and the process starts.

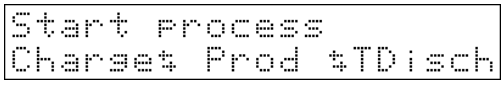
If the start condition is set to **Start by [Container]** the last called up container is displayed. It can be changed and entered via OK and the process starts.



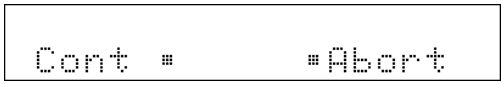
In both cases the display shows now **batch mode**, difference weight, cycle number and setpoint. The charge batching process is performed the usual way in coarse and fine feed with tolerance check, if the tolerance limits are entered ≠ 0.

If the batched weight is within tolerance limits the process is finished.

If the tolerance limits are exceeded, *** Tolerance alarm *** is displayed and ◇ flashes slowly.

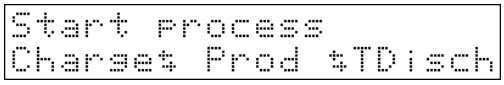


The process can be finally stopped via Stop and the menu on the right will be displayed.



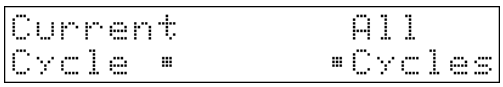
In both cases the process will be finished, but according to the selected restart mode the correction of the overshoot will be different (please refer to chapter 5.6.2).

If the cycle number is > 1 the other cycles are performed the same way. Otherwise the Controller returns to the process start menu.

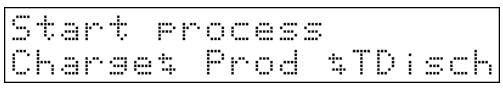


If the **process is stopped** by tolerance alarm and  or via   ,it can be continued via **[Cont]** or aborted via **[Abort]** .

If there are still more cycles to follow after **[Abort]**, the message on the right appears on the display. Either the current cycle or all cycles are aborted.

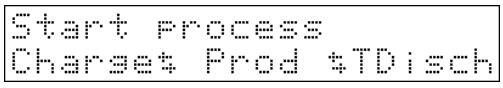


If **[All cycles]** are selected the Controller returns to the process start menu. If **[Current cycle]** is selected the next cycle is performed.

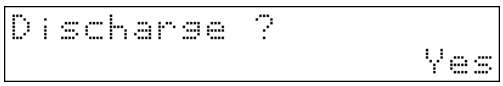


6.4.3 Total discharge

Via **[TDisch]** the total **discharge** of the batching hop-per is selected.

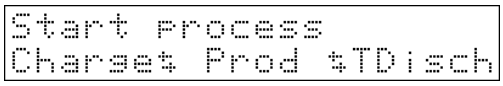


Via **[Yes]** the total discharge is started and will be performed the usual way. (Please refer to the chapter 5.6.1)



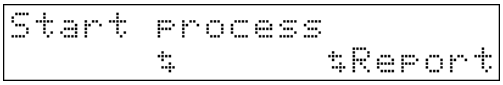
The status information with Batch mode, difference weight, cycle number and setpoint is displayed.

After termination of the total discharge the start process start menu is displayed.

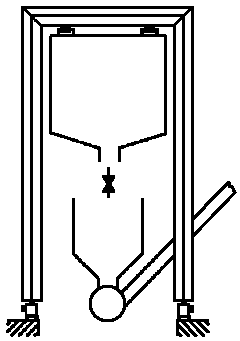


6.4.4 Report

Via  after termination of the batching process and in the process start menu reports can be printed (please refer to chapter 7).



6.5 Application 'Big bag discharge'



Discharge batching in B4 mode from a big bag or container on load cells in a conveyor or another container or vessel, which will be exchanged after this process.

The setpoint for the discharge batching process can be greater than the contents of the container. In this case the container runs dry and the operator is informed by a prompt and an output signal. After replacement of the empty container by a full one the pro-cess will be continued and finished.

Via total discharge in B8 mode the container can be emptied.
The batch modes and the restart modes are explained in detail in chapter 5.4.5.

6.5.1 Production

Access to the **production menu** from the main menu via **[Start].**

```
IBC Controller
Start ↳Param ↳Setup
```

Selection of the **discharge batching** process from the big bag into a conveyor, container etc via **[Prod]**.
If the start conditions is set to **Start by [Setpoint]** and the setpoint entered in parameter entry mode is ≠ 0 and no start check is selected, the process starts with this setpoint without displaying it before start. Was it set to 0 in parameter entry mode, the last entered value in production mode is displayed. It can be changed and entered via OK and the process starts.

```
Start process
      ↳ Prod ↳TDisch
```

```
Setpoint
                100  kg
```

If the start condition is set to **Start by [Container]** the last called up container is displayed. It can be changed and entered via OK, and the process starts.
In both cases the display shows now batch mode, difference weight, cycle number and setpoint. The charge batching process is performed the usual way in coarse and fine feed with tolerance check, if the tolerance limits are entered ≠ 0.

```
Select container
↓standard down      ↑
```

```
B4     D          100 kg
1   *  S          100 kg
```

If the batched weight is within tolerance limits the process is finished.
If the tolerance limits are exceeded, *** Tolerance alarm *** is displayed and the square flashes slowly.

```
Start process
      ↳ Prod ↳TDisch
```

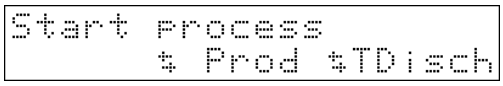
The process can be finally stopped via Stop and the menu on the right will be displayed.

```
* Tolerance alarm *
1   *  S          100 kg
```

```
 Cont ▪       ▪Abort
```

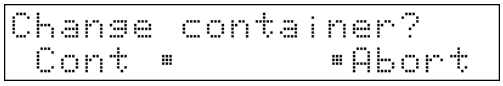
In both cases the process will be finished, but according to the selected restart mode the correction of the overshoot will be different (please refer to chapter 5.6.2).

If the cycle number is > 1 the other cycles are performed the same way. Otherwise the Controller returns to the process start menu.



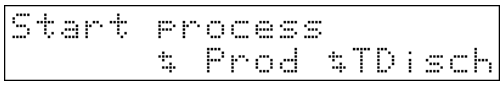
If the **big bag (or container) runs dry** (this is possible, as the recipe simulation is swiched off!), and flow warning appears due to no material flow (the setpoint for material flow must be ≠ 0!), a relevant message for the operator is displayed.

Select **[Cont]** after the big bag (or container) has been changed. The discharge batching process continues and batches the missing amount.



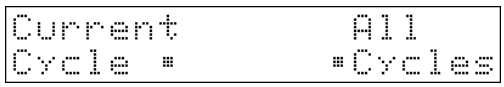
If the setpoint is reached the tolerance is checked and if it is ok, this cycle is finished.

If there is a cycle number >1 entered the other cycles are performed the same way and the process is finished.

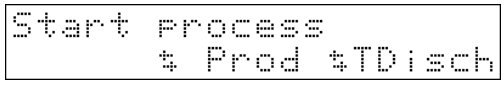


If the **process is stopped** by tolerance alarm and  or via   ,it can be continued via **[Cont]** or aborted via **[Abort]** .

If there are still more cycles to follow after **[Abort]**, the message on the right appears on the display. Either the **[Current cycle]** or **[All cycles]** are aborted.

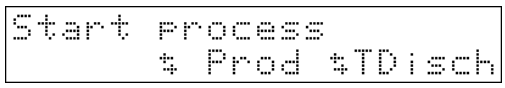


If **[All cycles]** are selected the Controller returns to the process start menu. If **[Current cycle]** is selected the next cycle is performed.

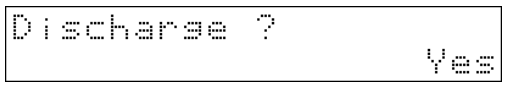


6.5.2 Total discharge

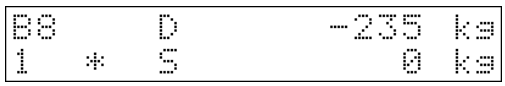
Access to the **total discharge** of the batching hopper is selected via **[TDisch]**.



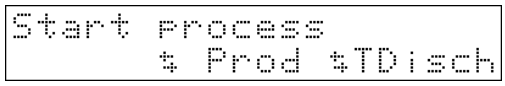
Via **[Yes]** the total discharge is started and will be performed the usual way. (Please refer to the chapter 5.6.1.)



The status information with Batch mode, difference weight, cycle number and setpoint is displayed.

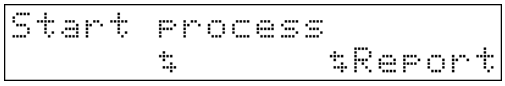


After termination of the total discharge the start process start menu is displayed.



6.5.3 Report

Via  after termination of the batching process and in the process start menu reports can be printed (please refer to chapter 7).



7 Reports

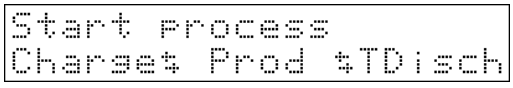
7.1 Print examples

The Batch Controller has various reports for print-out. Some of these reports can be configured freely by PC program "Nice Label Express".

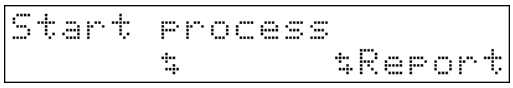
	Configurable with "Nice Label Express"
1. Gewichtsreport.	Nein
2. Dosierreport	Ja
3. Verbrauchsreport	Nein
4. Fixtarawerte	Nein
5. Parameterdaten	Nein
6. Konfigurationsdaten	Nein
7. Setup-Daten	Nein

7.1.1 Reports

Press in the **Start process** menu 

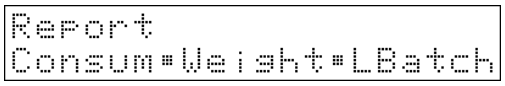


Confirm with **[Report]** to access the report menu.

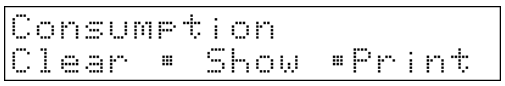


7.1.1.1 CONSUMPTION REPORT

Via **[Consum]** the **consumption report** menu is displayed.



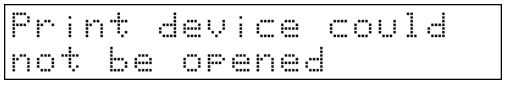
Clear of the consumption value via **[Clear].**
Display of the consumption value via **[Show].**
Print out the consumption value via **[Print]** .



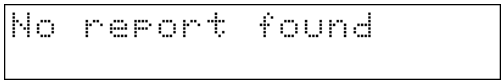

```
Consumption report
Date:     01.07.2004  15:17:28

Consumption
---------------------
                457 kg
```

If there is no printer available the message to the right appears on the display.

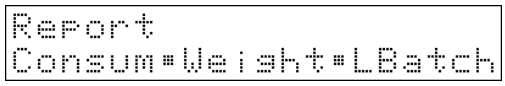


If there is no batch report available an error message appears on the display.



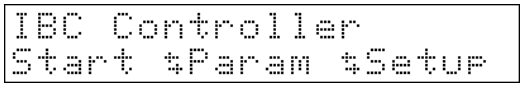
7.1.1.2 CURRENT WEIGHT

Via **[Weight]** the current weight is printed in the configured layout. The layout is configured in the configuration mode.

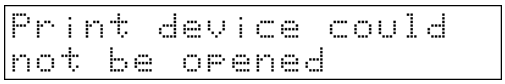



```
SARTORIUS
PROCESS WEIGHING+CO
Date:     01.07.2004  15:31:16
Gross:    A      <0168 kg>
Net:      A      <0100 kg>
Tare:     A      <0084 kg>
---------------------------------
```

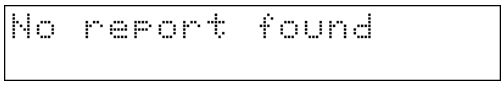
Also the current weight can be printed via  .



If there is no printer available the message to the right appears on the display.



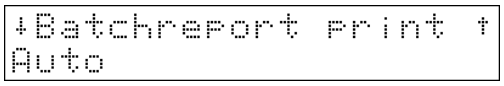
If there is no batch report available an error message appears on the display.



7.1.1.3 BATCH REPORT

Via **[LBatch]** the print out of the last batch reportcan be initiated. The following example shows the usual batch report.

In configuration menu it can be selected whether a batch report shall be printed automatically after each batch or not. If yes, the menu item **Batchreport print** has to be set to **[Auto]**. In the **[Off]** mode it is only stored.
The print protocol is available via serial interface, if **[Setup]-[Software Parameter] Report to** is not **[none]**

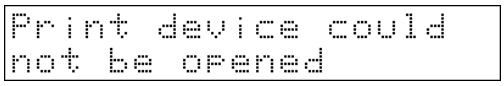


Unless a Nice Label Express layout was defined, the report will be printed out in the following format.
When using "Nice Label Express", layouts "*.lbl" must be used for editing.
The delivery note comprises the print out BATH.lbl.
The data made available in the relevant format are explained in section "Nice Label Express".

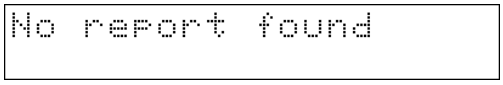
```
Batch report
Date  . . . . . : 01.07.2004  15:55:31

Sequence number . . : 15
Setpoint  . . . . . : 123 kg
Total . . . . . : 123 kg
Start time  . . . . : 01.07.2004  15:55:16
Stop time . . . . . : 01.07.2004  15:55:24
Chargenumber  . . . : 1/2
Status  . . . . . : OK
```

If there is no printer available the message to the right appears on the display.



If there is no batch report available an error message appears on the display.



Batch reports can be printed directly via the programm or a via a configuration file from „Nice Label Express (NLE)" (please refer to chapter 7.2).

7.1.2 Print out Fixtare values

```
Fix tara weights
Date:    06.07.2004  13:46:41

   Name           Value
------------------------------
 1 Container1      <0015 kg>
 2 Container2      <0095 kg>
 3 Container3      <0008 kg>
 4 Container4      <0111 kg>
 5 Container5      <0221 kg>
 6 Container6      <0117 kg>
 7 no name             0 kg
 8 no name             0 kg
 9 no name             0 kg
```

7.1.3 Print out Parameter data

The print out differs depending of the selected application.

```
Parameter set:     Prod
-----------------------------------
Start recipe by    Setpoint
Start value                   0 kg
Batch mode                     B1
Start cycle number    1
Interrupt / Quit    None
Preset value                  0 kg
Overshoot value               0 kg
+ Tolerance value             0 kg
- Tolerance value             0 kg
Minimum flow                  0 kg
Restart mode         None
Calming time                [s]  1


Parameter set:     TDisch
-----------------------------------
Interrupt / Quit    None
Preset value                  0 kg
Wait time                   [s]  1
```

7.1.4 Print out of configuration datas

```
Project configuration data
Date:     01.07.2004  14:38:52
Application version: IBC Controller 02.04.01  rev. 2004-02-06
-----------------------------------------------
Application        Big bag discharge
Input config.
 Slot 1
  Input  1: Start charge
  Input  2: Start process
  Input  3: Stop
  Input  4: Restart
  Input  5: None
  Input  6: None
 Slot 2
  No card for input configuration
Ouput config.
 Slot 1
  Output  1: Charge coarse
  Output  2: Charge fine
  Output  3: Discharg coarse
  Output  4: Alarm tolerance
  Output  5: None
  Output  6: None
  Output  7: None
  Output  8: None
  Output  9: None
  Output 10: None
  Output 11: None
  Output 12: None
 Slot 2
  No card for output configuration
Inquiry before process start: Start
Limit value 1  on: 0 kg
Limit value 1 off: 0 kg
Limit value 2  on: 0 kg
Limit value 2 off: 0 kg
Layout of weightreport                  ;D-G-
Automatic batch report: Off
Customer defined text 1 for report: SARTORIUS Hamburg
Customer defined text 2 for report: PROCESS WEIGHING+CO
```

7.1.5 Setup-Data

The set-up data print-out is described in the Installation Manual.

7.2 Nice Label Express

Reports could be printed directly from the program or via a configuration file from "Nice Label Express (NLE)". With this file, the layout of a report could be altered. The name of the NLE-file is e.g. "BATH.lbl". Does no layout file exist from NLE, the report is printed in a fixed form.

To create a self-defined report, program Nice Label Express is required. With these reports, all variable contents (e.g. weights) and fixed texts (e.g. "Sequence number") are transmitted to the report via variables.

As fixed texts are also transmitted into the print report, the user can create his language adaptations in many cases using "TranslateIt" also for NLE. In this case, "Nice Label Express" is not necessary.

For "Nice Label Express", a fixed variable structure from the application is made available.

Variable for NLE	Type	Describtion	Batchreport
datetime	STR20	Date Time	✕
seqnum	UDINT	Sequence number	✕
setpoint	WEIGHT	Setpoint	✕
actual	WEIGHT	Actual weight (report line, Sum)	✕
recnam	STR18	Recipe name	✕
prodnum	UDINT	Production number	✕
custnum	UDINT	Customer number	✕
reptstrt	STR20	Report start time	✕
reptstop	STR20	Report stop time	✕
repactch	UINT	Report: actual charge	✕
repmaxch	UINT	Report: maximum charge	✕
repalm	STR20	Report: alarms	✕
txthead	STR20	Batch report/Dosierreport	✕
txtdate	STR20	Date/Datum	✕
txtseqn	STR20	Sequence number/Sequenznummer	✕
txtsetp	STR20	Setpoint/Sollwert	✕
txttot	STR20	Total/Total	✕
txtstrt	STR20	Start time/Startzeit	✕
txtstop	STR20	Stop time/Stoppzeit	✕
txtcnum	STR20	Chargenumber/Chargennummer	✕
txtalm	STR20	Status/Status	✕

8 Fieldbus

The controller can become a fieldbus slave for Profibus, Interbus-S or DeviceNet by inserting a fieldbus interface card into Slot 4 for communication of one or several PR 1756 with a communication master (e.g. Siemens S7 Profibus). Data processing at the fieldbus is at intervals of 20 ms.
Weights are always DINT in 'kg' or 'lb', dependent of scale configuration.
The fieldbus interface of the Controller can be used in the Controller, but is limited to weighing functions like set tare, reset tare, set zero, and read weight.
The transfer of complete recipes and component parameters is not possible.
For details please refer to the manual **Fieldbus interface**.

8.1 Configuration

Configuration parameters in menu section **[Setup]-[Fieldbus]:**
[Protocol] The protocol, e.g. Profibus-DP, can be selected.
[Scale Interface] For using the fieldbus interface as described here, parameter **[Scale Interface]** must be set to **[enabled]**.

Configuration parameters in menu **[Setup]-[Software Parameter]**:
The parameter **[S88.01 Interface]** must be set to **'off'**. Additionally, Licence PR 1713/20 or PR 1713/21 must be entered during **[Licence Setup]**.

8.2 Application protocol

The interface works with a 2 * 8-byte write window and a 2 * 8-byte read window. The windows are allocated to the weighing points. The fieldbus exchanges data cyclically with each slave. This means: In every cycle, 8 bytes are written and 8 bytes are read, also if no data contents are changed. Via window 2 (allocated to WP B), the firmware functions and WP-specific functions are available. The functions related to the instrument are handled via window 1 (allocated to WP A).
The application protocol described here is independent of the selected fieldbus and explained as seen from the fieldbus master.

8.2.1 Read window

Byte 0	read data: MSB
Byte 1	"
Byte 2	"
Byte 3	read data: LSB
Byte 4	Echo of *read data type* request
Byte 5	status bits
Byte 6	status bits
Byte 7	status bits

In this window, data are transmitted from the slave (Scale) to the master.
The first four bytes are used for reading a data value. The type of these data is written in byte 4. The data type corresponds to the requirement in the write data window.
Bytes 6 and 7 contain status bits independent of the read value data type.
For status bit reading and writing of direct control bits, a procedure is not required. The general system bits and the status bits are always present and need not be requested in particular. The direct control bits are also available continuously.

Procedure for reading a parameter:

1. Write the data / parameter type into byte 4 of the write window (e.g. net weight) as *read data type request*.
2. Wait, until in 4th byte of the read window, the echo of *read data type request* is equal to the *read data type request* of the 4th byte in the write window.

3. Now, the value is available in byte 0 to 3.

8.2.2 Write window

Byte 0	write data: MSB
Byte 1	"
Byte 2	"
Byte 3	write data: LSB
Byte 4	read data type request
Byte 5	write data type
Byte 6	direct control bits
Byte 7	direct control bits

This window is used to transmit data from the master to the slave (scale).
The first four bytes are used for writing a data value. The type of these data is described in byte 5.
The bits in byte 6 and 7 are independent of the write value data type in direct access.

Procedure for parameter writing:

1. wait, until *write_handshake* = 0 in the read window (PR 1713 is ready to receive new data)

2. write value in byte 0 to 3

3. write data type in byte 5 (*write data type request*)

4. wait, until *write_handshake* = 1 (Log Controller confirms data reception) write 0 in byte 5 (*write data type request*) -> *write_handshake* is set to 0.

8.3 Data formats

Various data formats are used in the interface description:

DINT Most data values are transmitted in the form of a four-byte double-integer value; 32-bit values with polarity sign.
Example: write the fixtare weight value 844.
Write window: byte number / value

0	1	2	3	4	5	6	7
00	01	03	4C		1F		

Example: read negative gross weight value -2.
Read window: byte number / value

0	1	2	3	4	5	6	7
FF	FF	FF	FE	08			

UINT Positive 16-bit value.
Example: line number = 1, 2, 3...65535
Write window: byte number / value

0	1	2	3	4	5	6	7
		00	1A		9D		

USINT Positive 8-bit value.
Example: restart mode = 0, 1, 2, 3 or 4
Write window: byte number / value

0	1	2	3	4	5	6	7
			01		87		

Characters ASCII characters; 8-bit number.
Example: recipe names [characters1...4] = hex52, 45, 43, 31 for name 'REC1'
Write window: byte number / value

0	1	2	3	4	5	6	7
52	45	43	31		96		

The **REAL** format to IEEE 754 ; IEC 60559

REAL : 32 Bit = 1 Bit sign, 8 Bit Exponent bias 127, 23 Bit Mantissa

Example:
200 = 43 48 00 00

```
  4   3    4    8    0    0    0    0
0100 0011 0100 1000 0000 0000 0000 0000
s|        |                           |
 eee eeee e                           |
         1.mmm mmmm mmmm mmmm mmmm mmmm

Sign     = 0
Exponent = 10000110= 134 - bias 127 = 7
```

Mantissa = 1.100 1000 0000 0000 0000 0000 = 1,5625 * 2^7 = 200

STRING is always 20 characters long and transmitted in portions of 5 * 4 characters.

8.4 Read data

All read values are addressed by *read data type request*

Value in byte 4 *Read data type request* All other addresses are reserved		Read data in byte 0...3 (parameters)
Dec	Hex	
4	04	Exponent/unit/step width
8	08	Gross [DINT]
9	09	Net [DINT]
10	0A	Tare [DINT]
12	0C	Gross x 100
14	0E	FSD value [DINT]

Fixed functions can be activated via the bits of bytes 6 and 7 according to the table given below.

	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
Byte 5	write hand-shake	power fail						
Byte 6						tare ac-tive	calibr. changed	test active
Byte 7	out of calibration	standstill	within zero set range	zero within 1/4d	below zero	higher than overload	higher than FSD	Error in analog converter

Note: The addresses and control bits shown with gray background are handled by the firmware part of the interface. All signals are edge triggered. The Controller react on changes only.

Byte 5

Write handshake	0 = PR 1713 is ready to receive new data
Power fail	RAM-data had changed due to a power failure (without batterie buffering) or a cold-start. The "Power fail" status must be reset by setting the signal "Reset power fail" (bit 5 of byte 7) of the write data.

Byte 6

Tare active	scale is tared
Calibration changed	Calibration is changed. If this bit is set, the weighing parameter (Expo/Unit/Step) had to be read again. It will be set after power-on. FSD has to be read again to reset this bit.
Test active	scale is in test mode

Byte 7

Out of calibration	Weight outside W&M conditions. Weight value shows no unit anymore. See W&M conditions: Setup -> weighingpoints
Standstill	scale is in standstill condition
Within zero set range	scale is within zero set range
Zero within 1/4d	scale is zero (+/-weight < 1/4d)
Below zero	scale is below zero
Higher than overload	scale is loaded above FSD + overload range
Above FSD	scale is above FSD (maximum scale value FSD e.g. 5000kg), but lower than FSD + overload.
Error in analog converter	scale is in error condition e.g. 'err 3'. Instead of a weight an error number is shown in the display and in gross, net or tare weight.

8.5 Write data

All write values are addressed by *write data type request*. The data typical for a WP are accessible via various write windows. Access to the WP-independent data is via the write window of WP A or WP B.

Value in byte 5 *Write data type_request*		Write data in byte 0...3 (parameters)	
Dec	Hex		
0 to 15	00 to 0F	reserved	
112	70	Set zero	no write data required
113	71	Tare	no write data required
114	72	Reset tare	no write data required
115	73	Activate test	no write data required
116	74	Reset test	no write data required

Direct control bits (write bits for the fieldbus master)

	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
Byte 6								
Byte 7			Reset powerfail	Test off	Test on	Reset tare	Tare	Set zero

Note: The addresses and control bits with gray background are handled by the firmware part of the interface. All control bits react only on a 0 -> 1 transition. To detect a transition, the respective status has to be present for at least 40ms.

Byte 7

Reset power fail	reset power fail flag
Test off	deactivate analog test
Test on	activate the analog test
Reset tare	reset tare
Tare	set tare
Set zero	set the scale to zero, if the weight is within the zero set range

8.6 Reading weights

8.6.1 Weight value

For reading weights, only the required weight type must be written into byte 4 of the write window (*read data type request*). When the weight value is available, the type is returned in byte 4 of the read window. If the weight request remains unchanged, the most recent weight is always updated.
Parallel to that, the status information in byte 7 has to be read.

Write window: byte number / value

0	1	2	3	4	5	6	7
				08			

Read window: byte number / value

0	1	2	3	4	5	6	7
00	00	11	B4	08			

The displayed numeric value is read out without units and digits behind the decimal point.
Negative values are represented in 2 complement.

Example: Negative weight is -12
Read window: byte number / value

0	1	2	3	4	5	6	7
FF	FF	FF	F4	08			

8.6.2 Exponent, unit, step width

Exponent, weight unit and step width are normally unchanged with a scale and need to be read only once by type 4.

Write window: byte number / value

0	1	2	3	4	5	6	7
				04			

Read window: byte number / value

0	1	2	3	4	5	6	7
02	03	02	00	04			

The signification of the first three single bytes is:

Byte 0: exponent
- 0 = 0000 no digits behind the decimal point
- 1 = 000.0
- 2 = 00.00
- 3 = 0.000

Byte 1: unit
- 1 = mg
- 2 = g
- 3 = kg
- 4 = t
- 5 = lb (pounds)
- 6 = l (liters)

Byte 2: step width 1, 2, 5, 10, 20, 50

In this example, the previous weight must be read as 45,32kg with step width 2 .

8.7 Taring, zero setting

For handling scale functions such as taring and zero setting, the individual bits in byte 7 of the write window are used (assignment). The relevant function is handled by a 0-1 transition of the corresponding bit. For detecting the transition, the respective status has to be present for at least 40ms.

Signification of bits in write byte 7

Bit 7 Set the fixtare value to the actual weight
Bit 6 Tare the scale with the fixtare value
Bit 5 Reset power fail flag
Bit 4 Deactivate analog test
Bit 3 Activate the analog test
Bit 2 Reset tare
Bit 1 Set tare
Bit 0 Set the scale to zero, when the weight is within the zero set range.

Example:

When the scale is within the permitted zero set range, this function is handled once.

Write window:

byte number	0	1	2	3	4	5	6	7
value								01

9 Analog test

During the calibration of the Controller is automatically, a test figure is calculated and stored in the EAROM. The value corresponds to the scale end value e.g. 5000.

During the test procedure the connection to the load cells is interrupted. The test value is displayed without kg or t unit. According to the selection in the calibration procedure either the full value is displayed or the difference between the test figure and the full scale range is displayed.

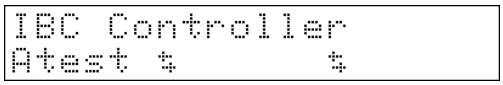
In the main menu is via 

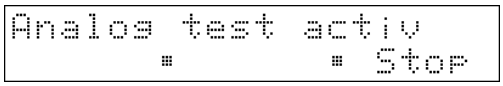
the test menu accessible.

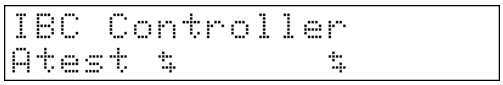
Via **[Atest]** the analog test is carried out and the test figure is displayed on the weight display.

Via **[Stop]** or 

the controller returns to the start prozess menu.







10 Error messages

10.1 Error messages on weight display

On the weight display only errors of the analog section are displayed. They are coded and displayed as 'Error x'.

Display	Meaning / Reason
Error 1	Internal calculation overflow (wrong calibration).
Error 2	Measuring voltage bigger than full sclae plus overload range.
Error 3	Measuring voltage bigger than maximum value of 38 mV. Alternatives are an error in a load cell or a broken löoad cell cable.
Error 7	Measuring voltage negative or load cells connected in wrong order.
Error 8	Error in the ADU, hardware defect or overloaded.

10.2 Error messages on the alphanumeric display

In the case of an error one of these error messages is displayed on the alpha-numeric display. They originate from the current use of the Controller in an application.

Error message	Meaning / Reason
Data bank error	The opening of or the writing in a tabel in the data bank could not be performed. The table is reserved for another program or not otherwise available.
Table is empty	There were no data in the table found.
Name exists already	The entry of new data in the table under a name which is already in use is not possible. All entries in one table must have different names.
Component is used in a recipe	The delete of a component which is used in a recipe is not possible. First the component must be erased from the recipe.

Start Error ##	Errors at the start of a batching process, ##=Error number. 1: Recipe table can not be opened. 2: Unknown recipe. 3: Recipe line table can not be opened. 4: No recipe lines available. 5: Material table can not be opened. 6: No material available. 7: Unknown batch modus. 8: Internal error. 9: No function module with this name available. 10: Recipe lines not in logic order. 11: Invalid PLC-bit address. 13: Wrong function module type. 14: Parameter error in a function module. 15: No free memory space. 16: Parameter error in a function module. 17: Invalid name of weighing point. 18: Analog module not installed. 19: Error in the simulation. 20: Weighing point can not be reserved. 21: Weighing point in error status. 22-29: Internal errors. 30: Production table can not be opened. 31: Writing of data in production table not possible. 32: A recipe is busy. 33-34: Internal errors. 35: No free memory space. 36: No licence for production. 37: Negative setpoint 38: Too many active weighing points in the recipe. 39: Invalid weighing point. 40: Weighing point parameter in the request component invalid. 41: Invalid batch mode for the reactor. 42: No memory space for text parameters (recipe line, materials). 43: Invalid production line number.
No recipe start Start time out	The recipe controller can not execute the recipe.
No batching licence PR 1713/20 or /21	To execute this function a batching licence PR 1713/20 or PR 1713/21 is necessary.
Analog test error	The analog test could not be performed. The weighing point is not free or in error status.
Wrong setpoint Abort	The chosen setpoint does not match with the full scale range of the weighing point.

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