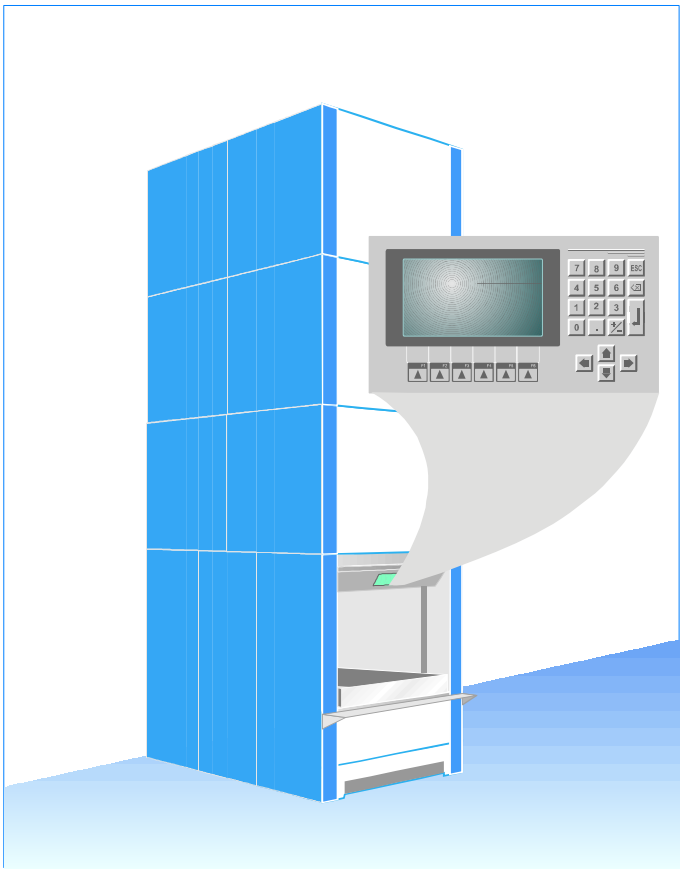
KARDEX
ONE FOR ALL.
REMSTAR

OP2000

OPERATOR MANUAL

S h u t t l e



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Revision 1.03 - February 2002

Version history

Revision	Description	Date of Introduction
1.00	Start version	August 1999
1.01	Revised version	September 1999
1.02	Revised version	April 2000
1.03	New functionalities (Appendix B-E)	February 2002

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Table of Contents

1 Basic Functions - Shuttle

1.1 Operation / Display

- Input operation via an alphanumeric keyboard – output indication via **graphic liquid crystal display (LCD) with background illumination**

- Output of system information in clear text and/or graphic symbols

- Option of system languages; 4 national languages are stored in the operator panel

- The basic user interface by determination of the storage location
  - Tray number 3-digit, numerical (1 - 999)
  - Position in the tray 3-digit, numerical (1 - 199)
  - Tray depth 2-digit, numerical (1 - 99)

- Multiple diagnostic functions by selection in the information module
  - Running time meter of machine power-on time
  - Running time meter of motor run time
  - Cycle counter, i.e. number of drive starts
  - System status indicator covering the complete basic sensory equipment of the system – error evaluation
  - Firmware / hardware revision display

1.2 Unit Functions

- Due to an optimal integration of the unit and drive control unit, optimal system and travel performances are achieved:
  - High degree of soft-start and soft-stop characteristics
  - Quiet and smooth running characteristics
  - Exact positioning of the tray
  - Height-optimized or fixed shelf allocation
  - Vertical and horizontal speed are adjustable for each tray

1.3 User Surface

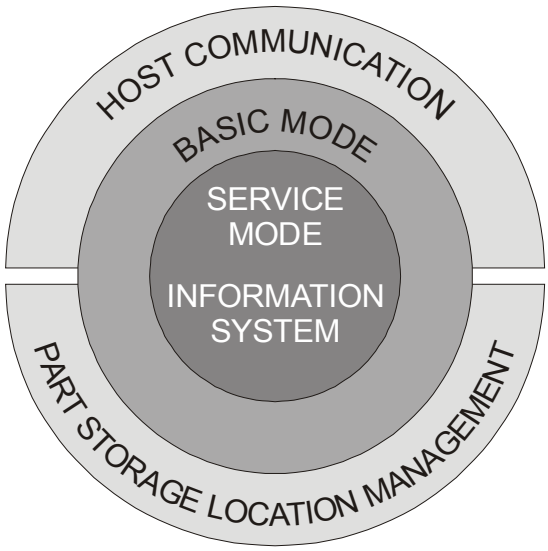
Communication with the unit occurs via the operator panel (OP2000) of the control C2000.

The dialog with the unit occurs by clearly arranged screens and the keyboard of the operator panel.

The user is led through menus adapted to each application, which are again divided into submenus.

This enables even inexperienced users to efficiently operate the units.

The user interface is composed of 5 main menus, which can be separated into operation menus, and service and information menus.



Operation Menus

Basic Operation

Within this menu it is possible to directly select a storage location by entering the respective tray number.
In addition, there is the possibility of manually selecting storage locations (trays) by pushing the UP/DOWN-arrow-keys.

Part Storage Location Management DB2000 (Option)

This menu is available as an option. It comprises the administration of parts and storage locations. By input of the parts number, it is possible to position the pertinent storage location (tray) in the respective access opening. The display of the position on the trays is included.

Host Communication

In this menu, the management of the system controlled by a host computer system (PC-storage administration).

Parallel to the operation via PC, the machine-operator panel can be used (emulation host-console), e.g.:

- Selection of part number
- Selection of order number
- Quantity confirmations, etc.

Service and Information Menus

Service Mode

In this mode, it is possible to adjust connected peripheral units, manage access authorization, operate all motor-driven parts individually, control storage administration.

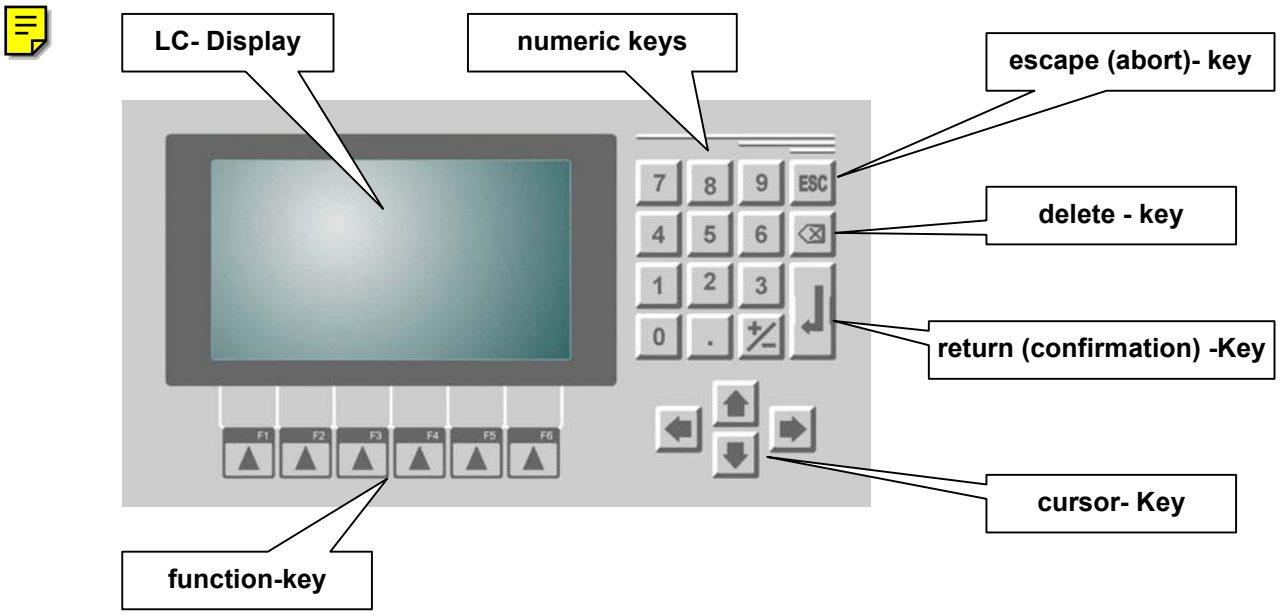
Information System

The information system offers an overview over important data concerning the configuration and the utilization of control and machine.

These main menus branch into submenus.

2 Man – Machine – Interface (MMI)

2.1 Operator Panel of Control C2000



The operator panel of control C2000 has an LC-display with graphic features and an illuminated background. Brightness and contrast of the screen can be adjusted individually.

All entries are made via the operator panel keyboard. This keyboard is divided into numeric keys, cursor control keys, function keys and control keys..

The foil design of the operator panel guarantees industrial water and dust protection according to IP54, as appropriate for industrial use.

2.2 Adjustment of Brightness and Contrast of Screen

Brightness and contrast of the display can be adjusted from the operator panel keyboard.

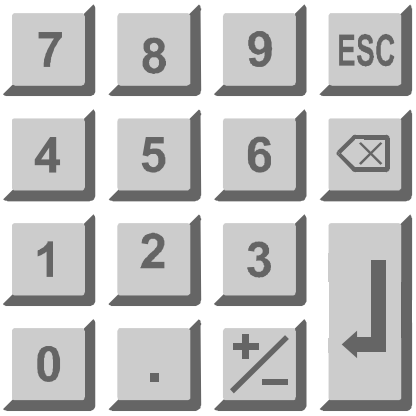
Press and hold the „ESC“ key min. 2 seconds,
then press key ↑ or ↓
simultaneously to adjust brightness

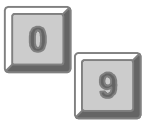
Press key and hold „ESC“ min. 2 seconds,
after that press key ← or →
simultaneously to adjust contrast

2.3 Operator Panel Keyboard

The screens of all menus are operated in the same general manner: They are operated via the operator panel keys.

Numeric key pad / control keys

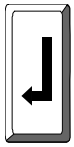




Numeric keys:
When the screen shown on the LC-display allows numeric entries, the input can be done via the keys of the numeric key pad. Alphabetical entries are done in a different manner.

Cancel key (ESC-key):
Cancellation of input / quitting the screen without entries is done with the ESC-key. (Abort key)

Delete key:
By pressing this key, the character to the left of the cursor in the input field is deleted.

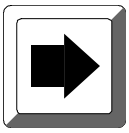


Enter key:
Confirmation and completion of performed entries is always done with the ENTER-key.

Cursor control keys

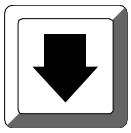
The cursor control keys serve to jump from one field to another within the screen. They are also used to move the selection in a select screen.

left



right

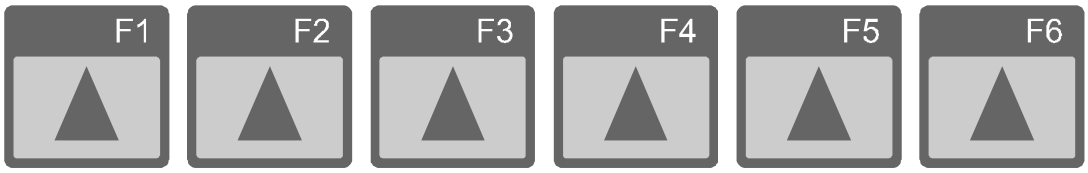
up



down

Function keys

Below the display 6 function keys are arranged, which are labeled F1 to F6 from left to right.



Function keys are controlled by the software, i.e. the function softkey depends on the current operation menu. The current function is identified by a pictograph in the lower part of the display directly above the function key.

2.4 Alphanumeric Character Input

The input of alphanumeric characters can be done via the function keys. Thus, the operator panel offers the possibility to input letters and special characters without the addition of an alphanumeric keypad.
(Note: For special applications an alphanumeric standard keyboard can be connected to the control C2000.)

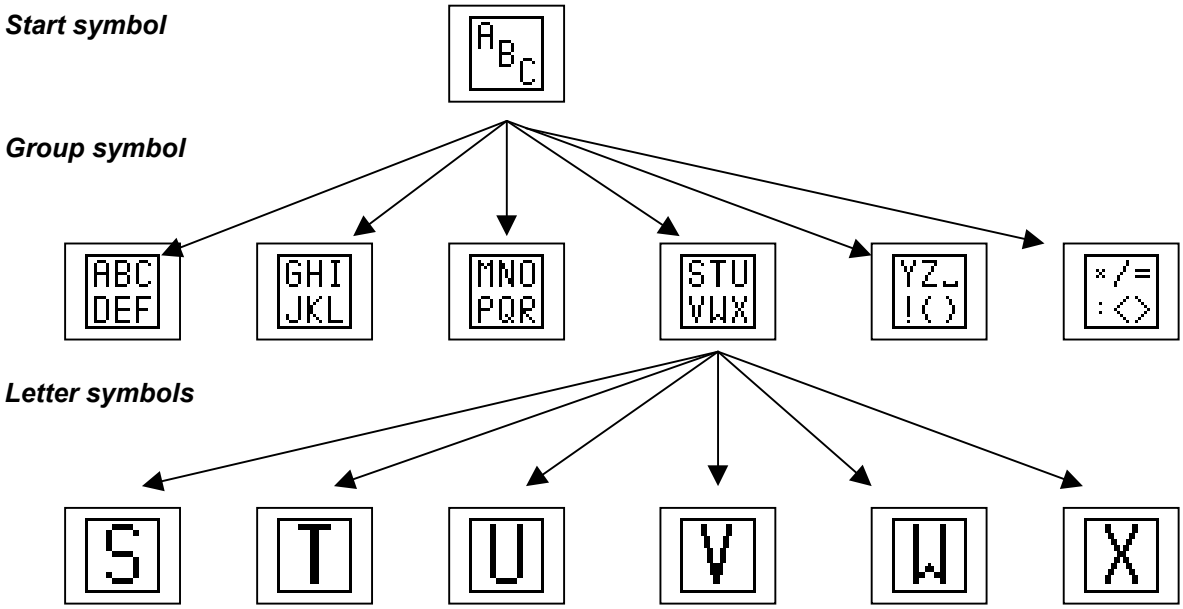
Selection of alphanumeric input:
Whenever this pictograph is shown with this graphic symbol, entry of letters and special characters into the provided fields on the screen is possible.

The letters and special characters are combined in groups of six characters each. After the alphanumeric input is selection, each function key is reserved for one of these groups.

After pressing the function key reserved for the group containing the desired character, the function key reservation changes. Each function key is now reserved for one character of the selected group.

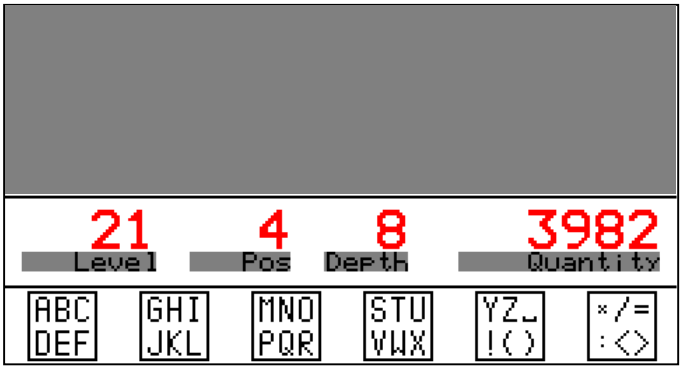
The desired character can then be inserted by pressing the function key reserved for this character.

This system is described in the following diagram.

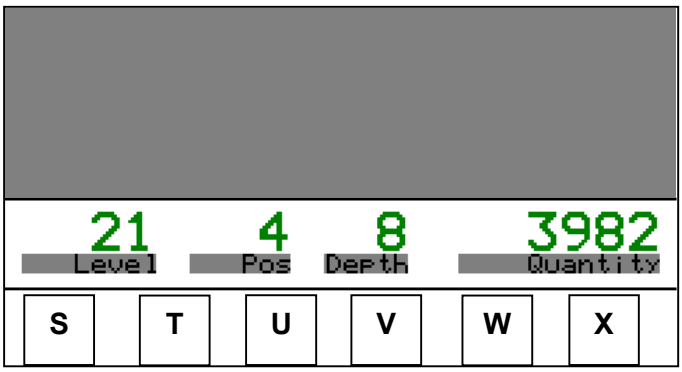


The procedure of inserting a letter or special character and the accompanying change of symbols is shown by means of an example in host communication:

Select „Alphanumeric Input“



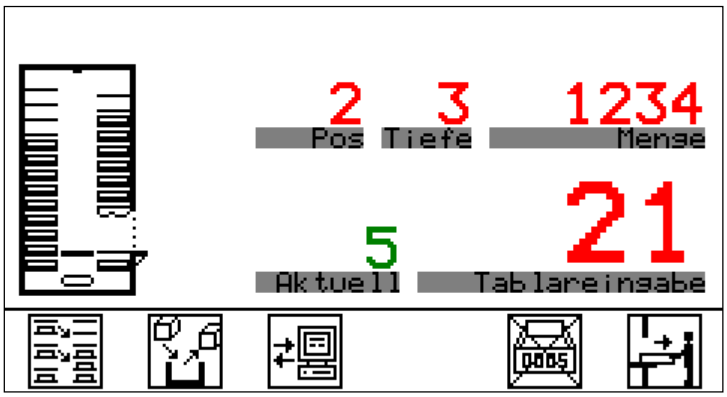
Select a „group“ of characters



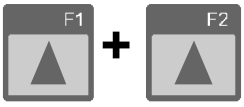
Pressing softkey: Input of the required character

2.5 Direct Language Switch-Over

Control C2000 offers the possibility to display the operator menus in different languages. Select the required l language via by pressing function keys F1 and F2.

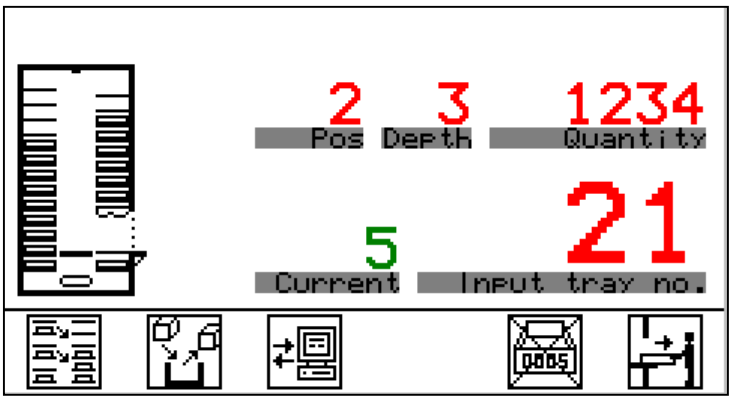


Key combination



Press F1-key and hold.
Press F2-Taste too.

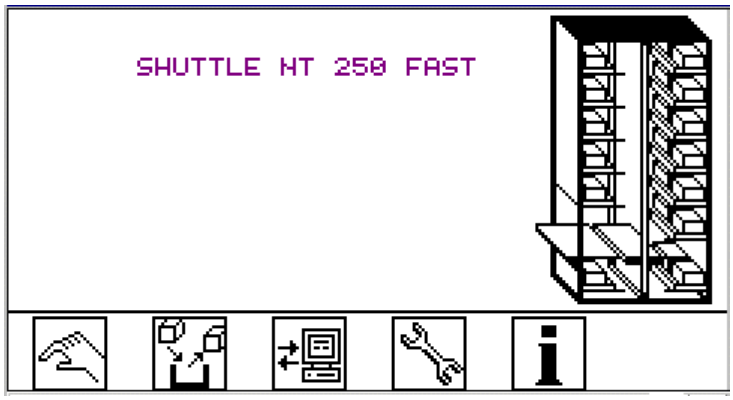
The display switches to the language selection screen. This is where the language can be changed. After the language has been selected, the current screen is displayed in the chosen language. E.g., if English was selected starting from the above screen, the following screen appears in the display:



3 Power-On

3.1 Start-Up Routine

After “Power-On” the control checks several system operating conditions, e.g. stored parameters, error conditions, connected peripherals, sensory equipment, safety functions, etc.
During this start-up routine, the “start-up screen” shown below is displayed on the operator panel. As long as the start-up screen is displayed, inputs are not possible.



After conclusion of the start-up routine, two different cases are possible.

- The first initialization has already been performed once. The display changes to the basic “Menu Selection Screen”. If a screen of the operation menus, basic operation (manual mode) or host communication was displayed before the last power-off, the display changes directly to that screen. If a screen from the menu “Article Storage Location Administration – DB2000 was active, it is switched over to the “DB2000 Log-On Screen”.
  The machine is now ready for operation.

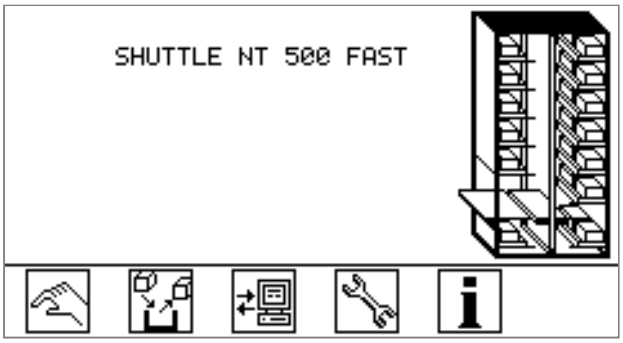
- The machine was turned on for the first time after installation.
  The control recognizes this and immediately branches off into the menu "First Initialization".
  A trained service technican is required for this function.

4 Operation

4.1 Select main menu

Starting from this menu, 5 main menus are called up.

The main menu mask can be called up from each sub-menu - by pressing the -key several times.



Input: Function key

Branching into main menus.
Please note: branching into sub-menus only possible, if released for operator.

“Manual Mode” (manual operation)

"Article Storage Location Administration – DB2000" (Option).

"Host Communication"

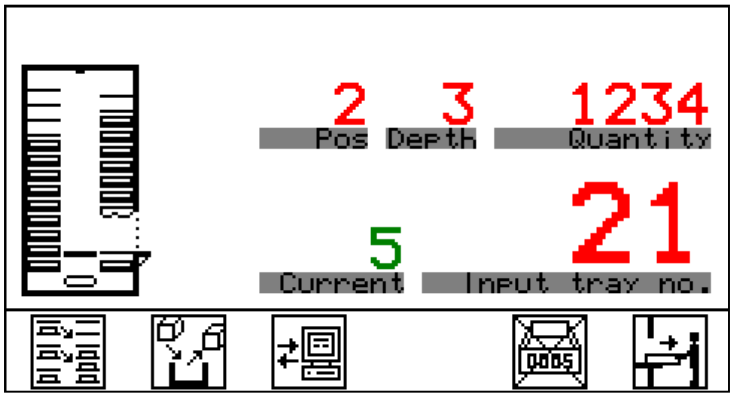
"Service Mode"

"Information System".

4.2 Manual Mode (Basic Operation)

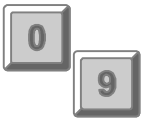
Manual mode allows user-controlled access to trays. Travel of the machine can be initiated semi-automatically by entering the number of the required tray. Further, it is possible to branch from the manual operation mode into the menus “Article Storage Location Administration” and "Host Communication / Host Dialog".

After pressing the function key reserved for  , the basic screen of the manual operating mode is shown in the operator panel display (see below).

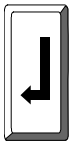


In the field "Current" the number of the tray is displayed, which is currently located in the access opening.

Input:



Input of target tray number
Input of position and depth position in tray (optional).



Start of target tray transport to the access opening.
The target tray is transported to the access opening.

or

Confirmation of a function key:

Input: Function key

Branching into the menu **" Storage Compression "** (Option).

Branching into the menu **"Article Storage Location Administration -DB2000"** (Option)

Branching into the menu „**Host Communication“**

Deletion of entries for the tray currently located in the access.
The tray number, as well as all relevant data related to this tray are deleted after inquiry.

Unlocking of the tray currently located in the access opening4x
The tray may then be removed from the machine.

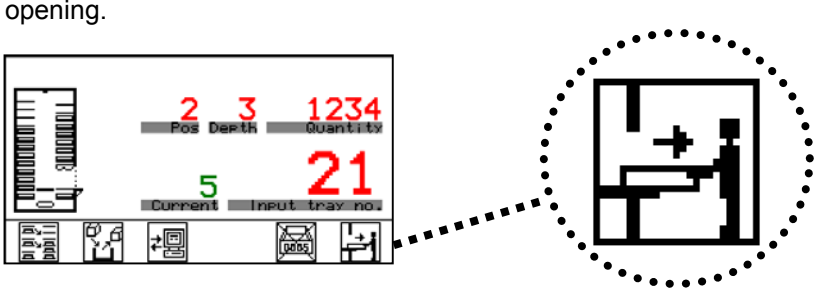
While the unit is in operation, the positioning screen is shown in the operator panel. During this time, input is not possible.

When the machine stops, the basic screen of the manual operation mode appears again. In field "Current", the number of the tray currently located in the access opening is displayed. Data input into the tray input field is possible again.

4.2.1 Operational Modes for Tray Unlatching

Press function key [F6] to enable the following operational modes:

1. Option:
Table option 'hinged table' has not been released OR table is folded down.
By activating function key [F6], it is possible to manually release a tray which is currently in the access opening.



If this tray is completely removed from the access opening, the current tray number is deleted from both tray table and display. The tray is therefore retrieved and has become invalid for the control system.
When restoring this tray, the number must be re-entered.

2. Option:
Table option *Hinged Table* has been released and the table is folded up.
Immediately after the machine operator has ordered a tray into the access opening via the manual, host or data base menu, the current status of the table is evaluated by the control system.
If the table is properly locked, the tray is unlatched automatically and is ready to be transferred on to the table. The number assigned to this tray remains valid for the control system.
Should one of the errors listed below appear, the tray will remain locked

3. Option:
Table option *Tray lock* is released
A tray sitting in the access opening is locked. Press function key [F6] to release the tray.

4. Option:
Table option *Automatic Full Tray Extraction* is released
Tray release is activated as described in Option 1.

Options for unlatching a tray

In order to transfer a tray on to the table, the tray must have been previously unlocked

1. Option:
   A tray, which has been previously transferred into the access opening, is automatically unlocked via the manual, host or data base menu if the table is completely folded up, correctly latched and the table option in the display unit of the software has been released.
2. Option
   In manual mode a tray sitting in the access opening is unlatched manually, when function key [F6] is activated. Same applies to the released table options *Tray Lock* and *Automatic Full Tray Extraction.*

Restoring an unlatched tray

A tray can only be restored if it is positioned completely in the access opening. If the tray (or part thereof) is still on the table, the following message appears:

After a tray has been transported into the access opening, it will be restored and correctly positioned when the [ENTER]-key is pressed.

4.2.2 Positioning Screen

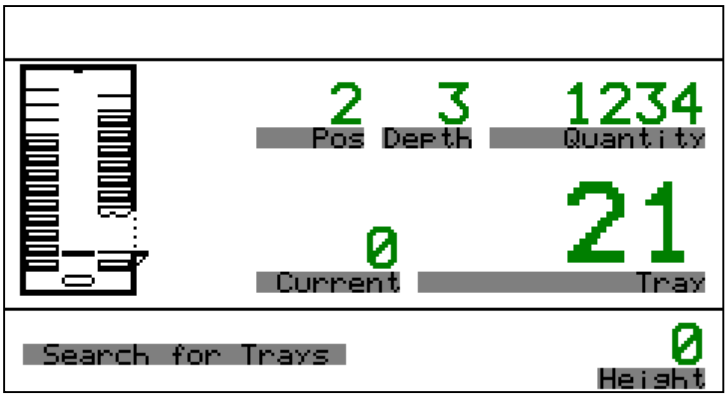
During each travel, i.e. every time a tray is moved, the **"Positioning Screen"** is shown in the operator panel display. As long as the positioning screen is displayed, no input is possible.

Information about height of the actual tray is shown in the lower part of the positioning screen, where otherwise the pictograms of the function key reservation are displayed.

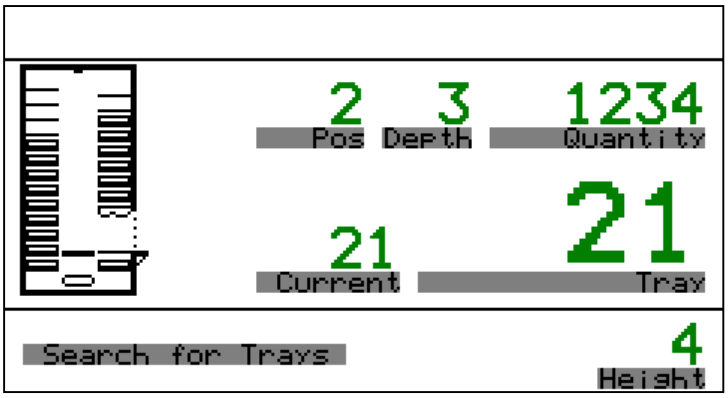
When operating the machine within the menus „Host Communication“ and „Article Storage Location Administration“ the positioning screen contains additional information about storage location and article.

Following the process of retrieving a tray into the access is described:

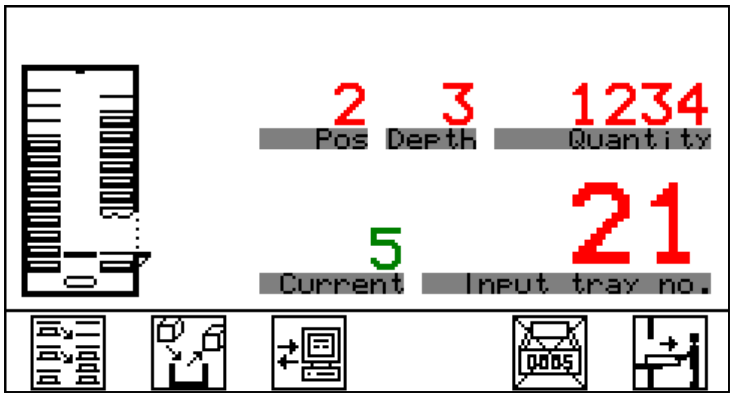
„Retrieve Tray“



As soon as the tray has been pulled onto the extractor, the current tray number and height are displayed.

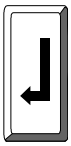


If the tray has been positioned into the workstation without error, the following screen is displayed.



Once finished with the tray, the operator has the following options:

Input:



Without entering a new tray number ;
The current tray is returned to storage.
➔ **„Store Tray**“

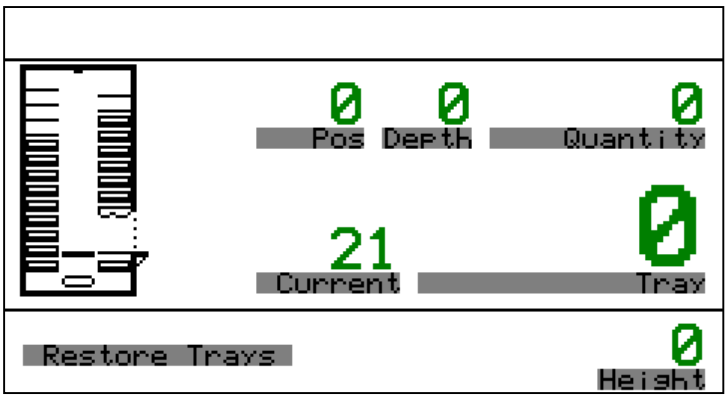
When entering a new tray number in "Tray Input Field"
The current tray is returned to storage, and the next tray is retrieved to the access opening.
➔ **„Store tray ➔ Retrieve tray”**

Deleting of entries of the tray currently located in the access.
The tray number as well as all relevant data pertaining to this tray are deleted.

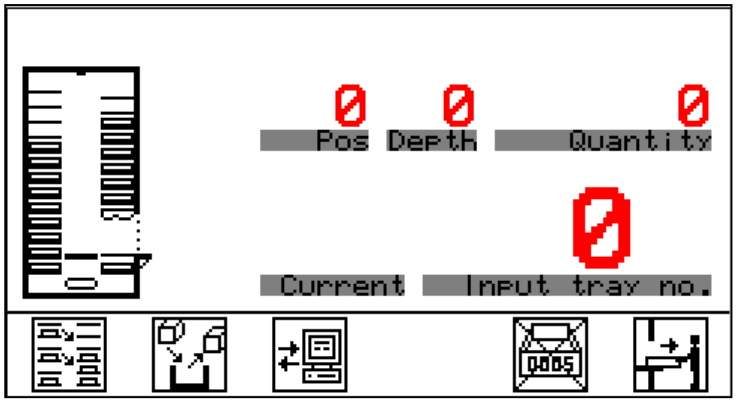
Unlocking of the tray currently located in the access.
The tray may then be removed from the unit.

Branching into the various menus.

„Store Tray”

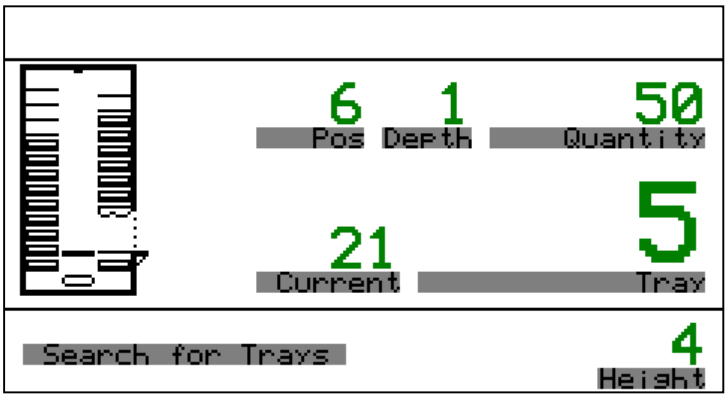


When the storage process of the current tray is consistent, and if no new tray is requested, the basic screen is displayed again.



The subsequent procedure is described on page 16.

When the storage process of the current tray is concluded, and if a new tray has been requested, the process is continued with the function **„Retrieve Tray”**, see example tray no. 5.



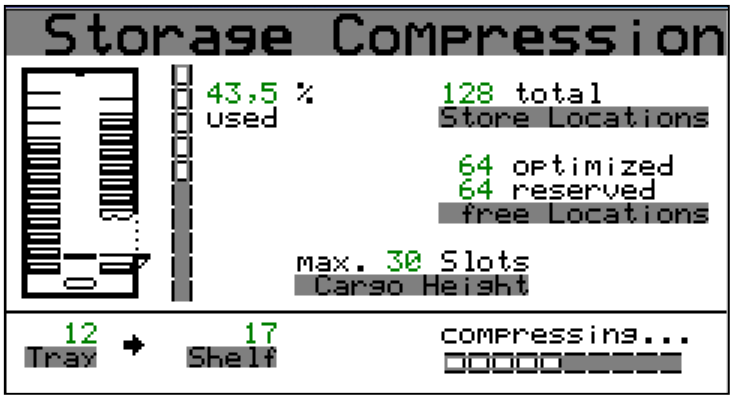
Subsequent procedure see „Retrieve tray“

4.3 Storage Compression

Caused by the optimized storage method single storage locations with a small height could result with raising useful life of the machine which cannot be avoided through technical reasons. This could lead to the fact that a storage item could not be stored though there is enough free storage location.
To make this free space usable again, we have the “storage compression” function.

The “storage compression” creates the possible max. connected free space of the machine. Therefore, the trays from the upper area of the machine will be restored to the bottom.

ATTENTION! Only the trays with the option “optimised” will be restored, the “fixed allocation trays” will resist on the assigned storage shelf!



Abort the function with ESC.
It may take some time until the process will be aborted after pressing the ESC key. The reason is that the last action “tray” on “storage shelf” will first be finished.

After aborting the function it can be continued starting from the condition in which the trays are stored at that time.

Warning! The storage compression process may take some time depending on the unit height and the degree of the “storage location splitting”.

4.4 Article Storage Location Administration "DB2000"

As an option, there is an Article Storage Location Administration available, which is directly integrated into the control.

The main functions of this system are:

- Article storage location administration
- Empty location administration
- Administration of stock
- Minimum stock check
- FIFO (First-In-First-Out)
- Reports on display / printer

To call up the menu "Article Storage Location Administration" press the designated function key with the pictograph  .

The menu article storage location administration is described in a separate user manual (ID:35694.9).

4.5 Host Communication

The control has the possibility for down- and up-loading messages and commands from/to a connected computer system, e.g. status messages, but also inputs done at the operator panel. The complete dialog – protocols, telegrams – is described in a separate manual "Host Dialog" (Id.-No. 35 816.8).

The interfaces through which the systems (control and computer) are communicating, is set in the menu "Service Mode".

ATTENTION !

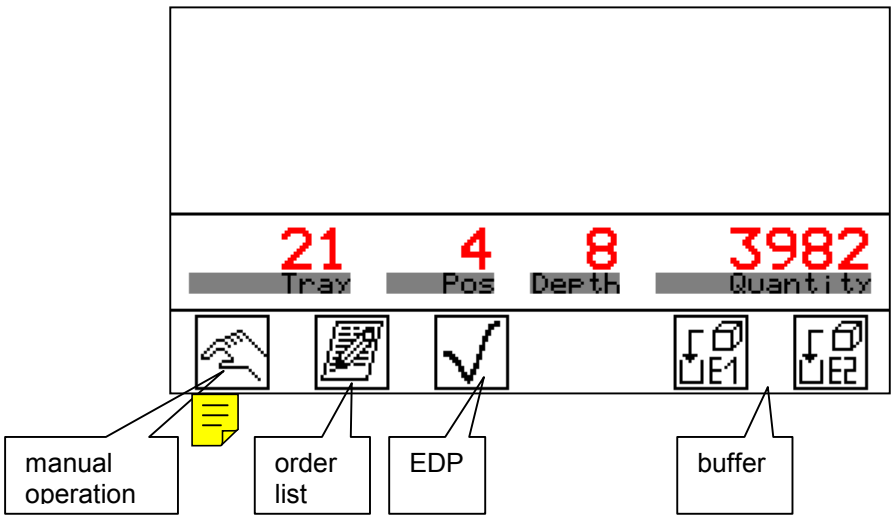
Communication between control and host is only possible, if the menu „**Host Communication“** on the operator panel is active.

The menu “Host Communication" enables the simulation of the host system’s workstation (e.g. PC monitor / keyboard) by the operator panel. The essential functions, which can be performed from the menu, are:

- Processing of order lists, which are loaded into the control by the host (E1-, E2-handling), with acknowledge message to the host
- Store / retrieve parts to / from stock by communicating with the host (EDP call-up; F2 handling

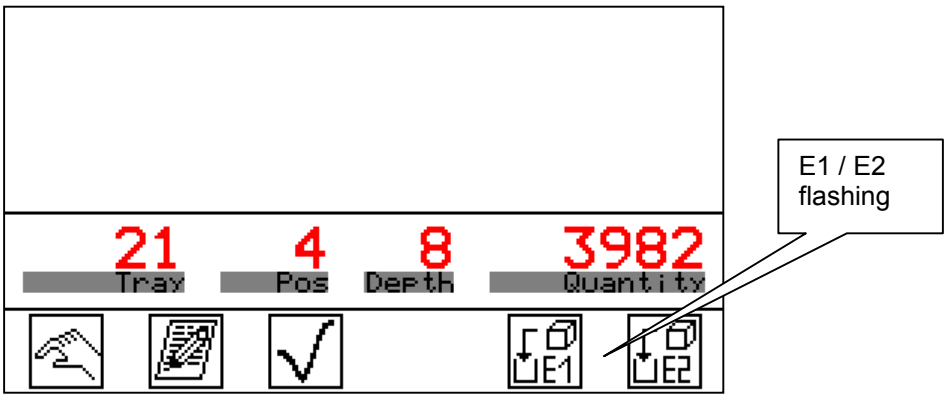
The menu "Host communication" is called up by pressing the function key reserved by 

Subsequently, the basic screen of the menu “Host communication” appears in the operator panel display.



4.5.1 Commission List Handling

Pending transactions in the buffers E1 / E2 are signaled by **flashing softkeys E1 / E2**.



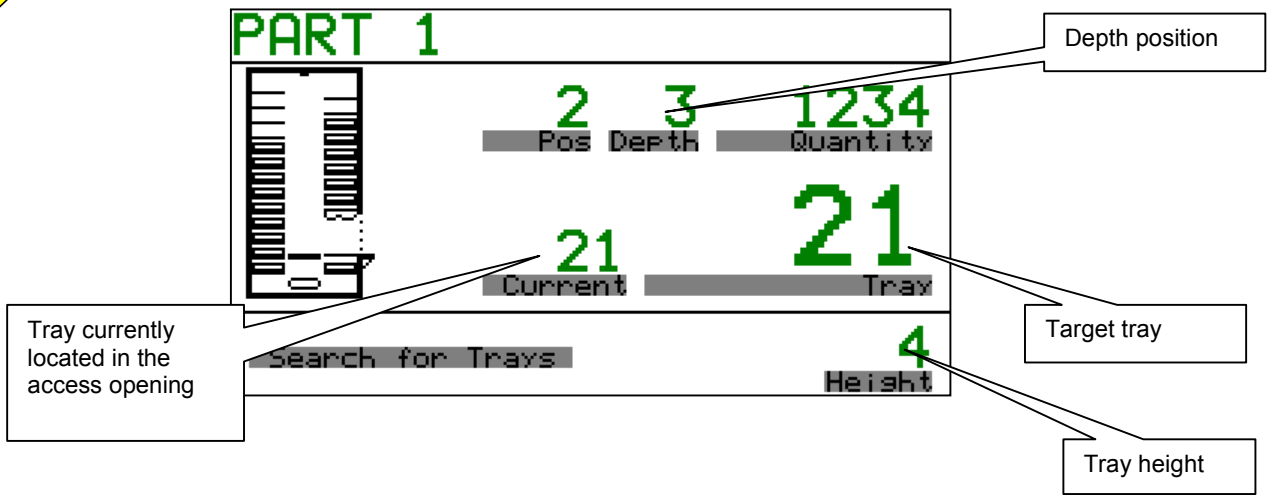
Input: Function key / Softkey

Selection of a data record from the E1 or E2 list buffer.

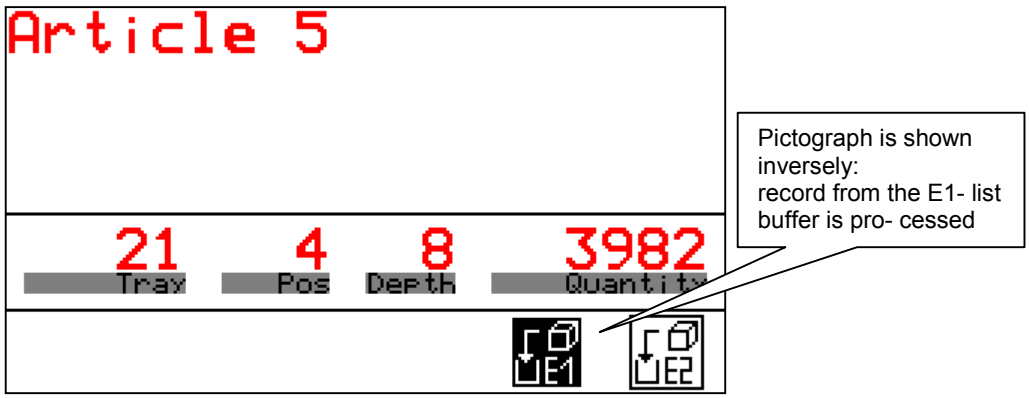
Subsequently, a data record from the selected buffer is processed. The pictograph of the selected function is shown inversely during that time.

The tray containing the article indicated in the data record is retrieved into the access opening.

While the unit is moving, the positioning screen is shown in the operator panel display (below). In the menu "Host Communication" the current article number, the precise article storage location (tray, position in the tray, as well as depth position in the tray) and the quantity transaction.

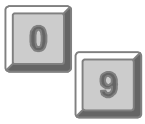


When the target tray is delivered, the data record information is shown on the basic screen of the menu "Host Communication".



Input:

- **Quantity Correction:**



Before the data record is reported back to the connected host system, the input / output quantity can be adjusted. For adjustment, the displayed quantity is overwritten by means of the numeric keys.

- **Handling Report to Host:**

Confirmation of handling, in order to send report to host system.

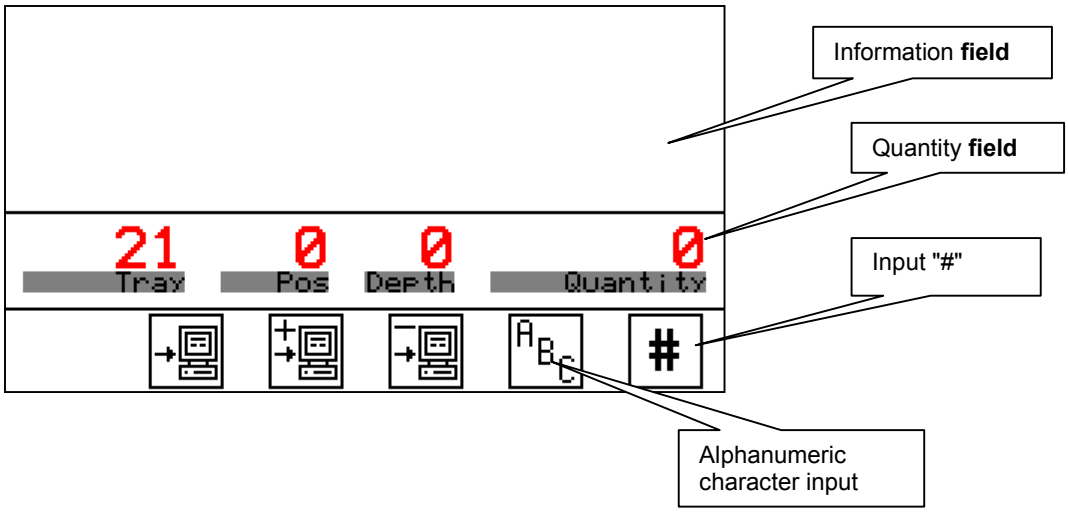
The „Softkey“ looks normal again, if there are no further data records available in the E1 / E2 list buffers. If it is flashing, additional records are available.

4.5.2 EDP Call-Up (Storage / Retrieval of Parts)

With this function an optional alphanumeric information will be sent to the host, e.g. an article number for storage / retrieval. Special software on the PC is required for this function.

The menu "EDP Call-Up" is selected by pressing the designated function key.

Subsequently, the screen for the menu "EDP Call-Up" is displayed. In order to promt that input of information is expected, the information field is shown inversely.



Input: EDP-Call-Up

- **Input of Article Information:**

Input of any text into the **Information field** (e.g. article number, order number), depends on the functionality of the host system.

Input of transaction quantity into **quantity field**.

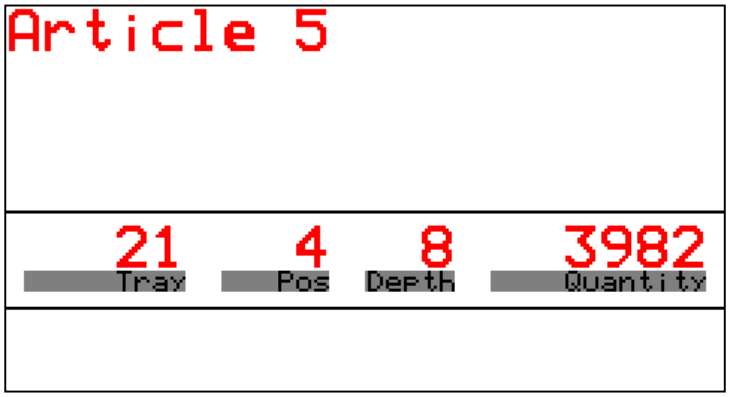
- **Confirmation of Input and Report to Host:**

Confirmation without reference to input of storage or retrieval.

Confirmation of quantity for storage of parts to stock.

Confirmation of quantity for retrieval of parts from stock.

Inputs are locked as long as data transfer to the host is active. This status is announced to the user by the following screen (example) in the operator panel display.



Abortion of program execution possible by pressing ESC

4.5.2.1 Confirmation of Commission Storage / Retrieval to the Host

By EDP call-up the communication with an article storage location administration program (e.g. a program of the PowerPick-family) can be produced. For the handling of data records to be commissioned, which had been made available by such a program, the control C2000 offers a facilitation of work by the function key reserved for ☑

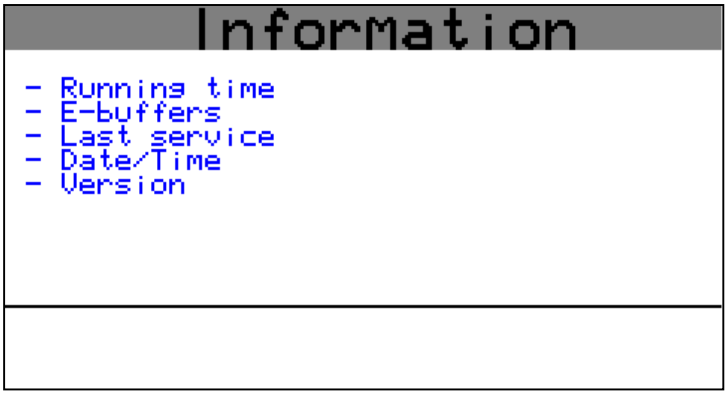
After the call-up of a commission by the article storage location administration program in the menu "EDP call-up", the data records of the called-up commission are displayed one after the other in the basic screen of the menu "Host communication". Each displayed commissioning data record must first be reported to the article storage location administration program, before the next data record of the commission is displayed.

By means of the function key reserved by ☑ a data record (without quantity correction) can be confirmed directly on the basic screen of the menu “host communication”.

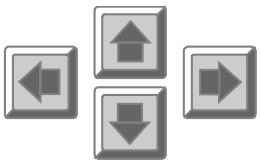
4.6 Information System

The menu "Information" offers the possibility of displaying important data concerning the configuration and the utilization of control and machine. Inputs in the sense of messages to the system are not possible within the menu "Information".

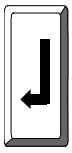
The menu "Information" is selected by pressing the function key. 
Subsequently, in the basic screen of the menu "Information" various functions are offered to choose from.



Selection of function:



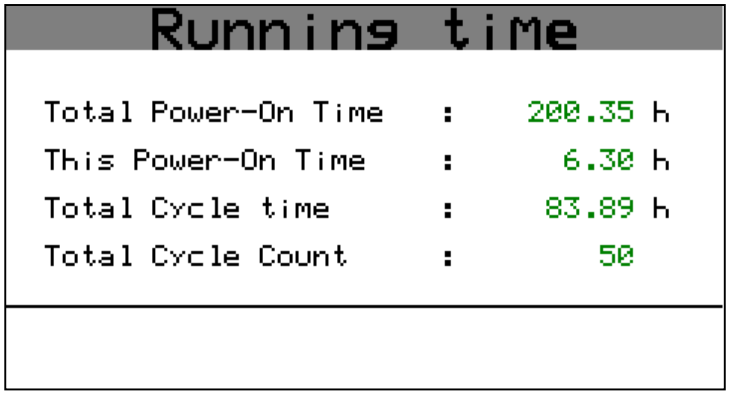
Select a function by means of the **CURSOR-keys**.



The selected function item is started by pressing the **ENTER-key**.

4.6.1 Running Time Meter / Access Counter

The display function "Running time" is selected from the menu "Information". Subsequently, the following screen is shown (example):



Display of:

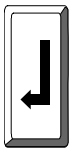
Total Power-on Time – Operating time of machine, accumulated from the time of last initial start-up. During an initial start-up the value is reset.

This Power-on Time– Operating time of machine since the last power-on.

Total Cycle time – of machine, accumulated from the time of last initial start-up. During an initial start-up the value is reset.

Total cycles Count – frequency of drive starts, accumulated from the time of last initial start-up. During an initial start-up, the value is reset.

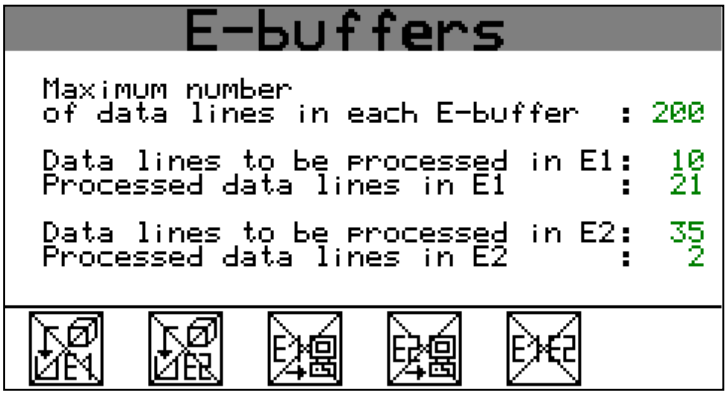
Input:

 **or** 

The display function is aborted. The screen of the menu "Information" is shown again.

4.6.2 E-Buffer Display

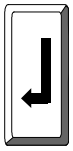
The display function "E-buffers" is called up from the menu "Information". Subsequently, the following screen is shown (example):



Display:

The contents of both host buffers E1 and E2 are displayed. Separated into data records, which have to be processed yet, and data records ready to be called back.

Input:

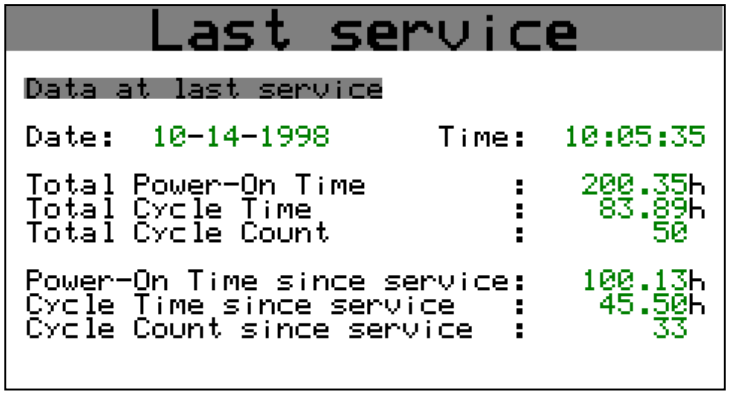


or

The display function is aborted. The screen of the menu "Information" is shown again.

4.6.3 Last Service

The display function "Last service" is selected from the menu "Information". Subsequently, the following screen is shown (example):



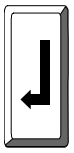
Display:

- Date of last service (more precisely, since the last function "Save Service Date" was conducted.
- Power-on time, motor running time (in hours) and total motor cycles, i.e. added up since the last initialization.
- Power-on time, motor running time (in hours) and motor cycles since the last service operation.

ATTENTION !

The service data are only logged, if the function „Save Service Date“ is selected!

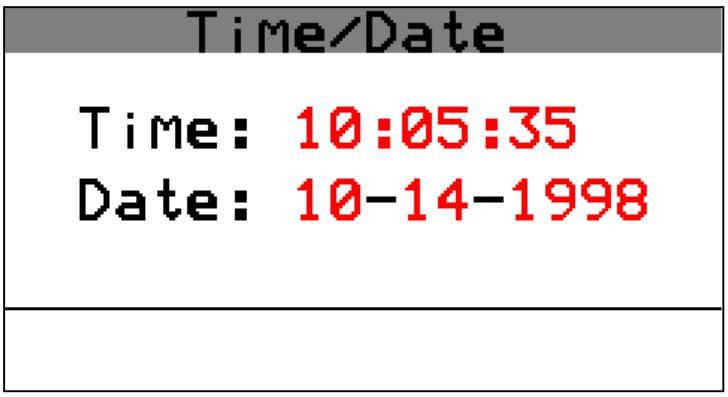
Input:

 **or** 

The display function is aborted. The screen of the menu "Information" is shown again.

4.6.4 Display of Date and Time

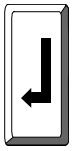
The display function "Date/Time" is selected from the menu "Information". Subsequently, the following screen is shown (example):



Display:

Date and time at the moment of call-up of the display function item.

Input:

 **or** 

The display function is aborted. The screen of the menu "Information" is shown again.

4.6.5 Revision Display

By using the function "Version" the software and hardware revision status of control C2000 can be displayed. The display function "Version" is called up from the menu "Information". Subsequently, the screen "Software Version" is shown (example):

Display:

The revision status of the following software modules is displayed:

CPU-Software: Control software incl. the operating system

DB2000: Optional Article Storage Location Administration software

OP-BIOS: Basic input output system of operation panel
OP-TOS: Operating system of the operation panel
-Software: up-to-date application software of the operation panel

Input:

Switch-over to hardware version display

or ESC

The display function is aborted. The screen of the menu "Information" is shown again.

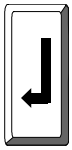
The hardware version display is called up starting with the software version display by pressing the function key reserved by 

Display:

Serial number and check date of the installed hardware module.
Modul GS200-xx is the identity number for the CPU (Central Processing Unit) of C2000.
Modul GS202-xx is the identity number for MIF1 (Machine interface) of C2000.

Eingabe:

Switch-over to the software version display.

 **or** 

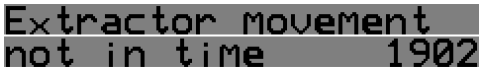
The display function is aborted. The screen of the menu "Information" is shown again.

5 System Messages

The system shows messages on the operator panel display, in order to inform the user of activities currently taking place or having been completed, error states having been determined and breaches of defaults.

Error states threatening safety are shown until they are remedied and until the error message has been confirmed by the ENTER-key. Other, less critical warning signs and messages, are only shown momentarily. A confirmation of entry is not required.

The possible system messages are listed as follows:

SYSTEM MESSAGE:	EXPLANATION:
General Error messages	
	Stored tray information is completely or partially destroyed. Unit is no longer fully operational.
	Stored shelf positions are completely or partially destroyed. Unit is no longer fully operational..
Operation-/Software- Error messages	
	Entered tray number is not available in the tray table.
	Entered tray number already exists in the tray table
	Tray denied to user in user administration.
	During retrieval , tray is sitting on folded up table.
	Entered access opening unknown to control system.
	Admissible maximum height of storage items exceeded during retrieval.
	During height-optimized restorage, no storage place found for storage goods height
	Entered shelf number is out of range, ie. is not available in tray table.
	Entered shelf found, but not vacant.
	Real height of storage goods exceeds height allocated to this tray in the tray table.
Hardware Errors	
	Extractor fingers not in correct position. > Check sensory system in diagnostic function of extractor.
	Extractor positioning takes too long >load parameter list frequency inverter, check motor, sensory system and mechanism.
	Extractor motor overheated. > load possibly overcharged. Temporarily switch off controls to cool down motor and check mechanism .

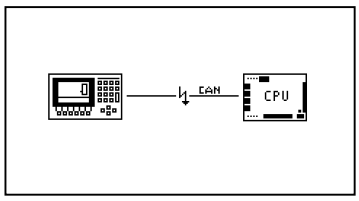
SYSTEM MESSAGE:	EXPLANATION:
Lift position out of tolerance 1904	Problems when positioning lift system > check motor and sensory system. Move lift to reference point in diagnostice function
Lift positioned at the top 1905	Lift has reached upper limit stop. > Check tray table, check switch S3 on extractor , if required, move lift to reference point in diagnostice function
Lift positioned at the bottom 1906	Lift has reached lower limit stop > Check tray table, check switch S4 on extractor , if required, move lift to reference point in diagnostice function.
Lift control detects overspeed 1907	Lift motor speed excessively high. > If this appears repeatedly, enter menu *Service, Unit, Frequency inverter* and press [F1]-key for access to frequency inverter parameter list
Engine speed of lift not reached 1908	Lift motor speed excessively low. > If this appears repeatedly, enter menu *Service, Unit, Frequency inverter* and press [F1]-key for access to frequency inverter parameter list
Lift motor is overheated 1912	lift motor overheated. > load possibly overcharged. Temporarily switch off controls to cool down motor and check mechanism .
Unexpected tray in workstation 1913	Tray sitting in the access opening. > Remove tray and check switch 1S5 and sensory system in access opening.
Destination occupied by a Tray 1914	Tray sitting in the access opening. > Remove tray and check switches 1S5, 1B3 (IN21) ad 1B4 (IN20) in the respective access opening.
Tray in workstation out of position 1915	Tray position in access opening not correct. > Adjust tray until message stops appearing.
Unexpected tray on extractor 1916	Unsecured tray on extractor. >Check extractor finger position in diagnostic function of lift.
Tray on extractor out of position 1917	Extractor sensors indicate incorrect tray position. > check proximity switches B4 (IN13) and B7 (IN14)
No tray at this shelf 1918	Tray to be retrieved is not found in shelf > Check entry into tray table. Tray is either removed or stored in a different shelf.
Table not locked in an endposition 1919	Hinged table not fully locked. > check mechanism and table switches (table top = IN24, table bottom = IN25),
Fingers wrong at Table Extractor 1920	Tray extractor finger are neither in front not in rear stop position. > Move extractor fingers in one of the stop positions in diagnostic function mode.
Tray not unlocked 1921	Tray lock could not release tray from access opening. > check lock mechanism
Front door is opened 1922	Front door access opening not correctly open or closed. > check switch 1S6.
Function aborted 1924	Function aborted by control system.
Height control Hardware error 1925	Height detection system indicates hardware error. > contact service centre.

SYSTEM MESSAGE:	EXPLANATION:
Height control not free 1926	Height detection system indicates that hardware error, access opening is not vacant> > poss. obstacle in access area.
Traylocking Timeout 1931	> Check lock and tray mechanism
Slide door movement not in time 1932	Safety shutter can not be opened/closed correctly. > check safety shutter mechanism
Tableposition wrong HARDWARE-ERROR 1934	Hinged table switches indicate hardware error. > Contact your service centre.
Timeout Tray extractor 1935	Tray full extraction (in/out) could not be fully completed. > Check extractor mechanism and sensors.
Tray is not locked 1936	Tray lock could not lock tray in the access opening. > check lock mechanism.
HARDWARE FAILURE from Tray lock 1938	Lock system indicates hardware error. > contact your service centre.
Frequency inverter error message	
Inverter error 2000	Connected inverter indicates error . > Return to basic menu and switch off unit.
Inverter 100 not found!	Message can appear during unit start-up routine.Press [ENTER]-button, if message remains, contact your service centre.
Inverter CAN 2002	Communication with frequency inverter is interrupted. > Contact your service centre.
General error messages	
Safety Circuit 2101	Interruption of the safety circuit. > Restore operational safety, press green key 1S8
Emergency stop 2102	Press emergency-stop switch. > Restore operational safety, turn emergency-stop switch counter-clockwise to release; press green key 1S8.
Program error 2105	Relay in exit OUT11 (MIF1/GS202) stuck. > Press [ENTER]-key to acknowledge message. If error remains after switch off/on, contaict your service centre.

SYSTEM MESSAGE:	EXPLANATION:

General messages

Machine busy	Unit drive system is active.
Process aborted!	Last operation aborted (eg.. by pressing [ESC] – key).
Execute ? ENTER:yes ESC:no	inquiry, whether to carry out an operationl.
Ungültiges Passwort	Authorization missing, wrong password.
Option not released	Option not released.
Tray table is empty	Temporarily no tray stored in control system.
Wrong Code	Incorrect code entered.ie automatic shift into Basic Menu.
Low Battery! Please change	Voltage in lithium batteries in CPU : 2,75V > Contact your service centre.
LOW BATTERY! DO NOT TURN OFF!	Voltage in lithium batteries in CPU : 2,75V > Contact your service centre.
Data have been corrected !	Control unit automatically corrects data entered incorrectly.
No help available	This message can appear after pressing function key [F1] in a mask, when no assistance programme is available.



The start-up routine cannot be completed, if a connection to the control C2000 cannot be established.
If there is no success in establishing a connection to the control C2000 within 10 seconds after machine power-on, the following screen is displayed.

In this case contact your service center.

6 Service Mode

The menu "Service Mode" consists of all input possibilities, which are necessary to initialize a unit, the interfaces and the overall functionalities.

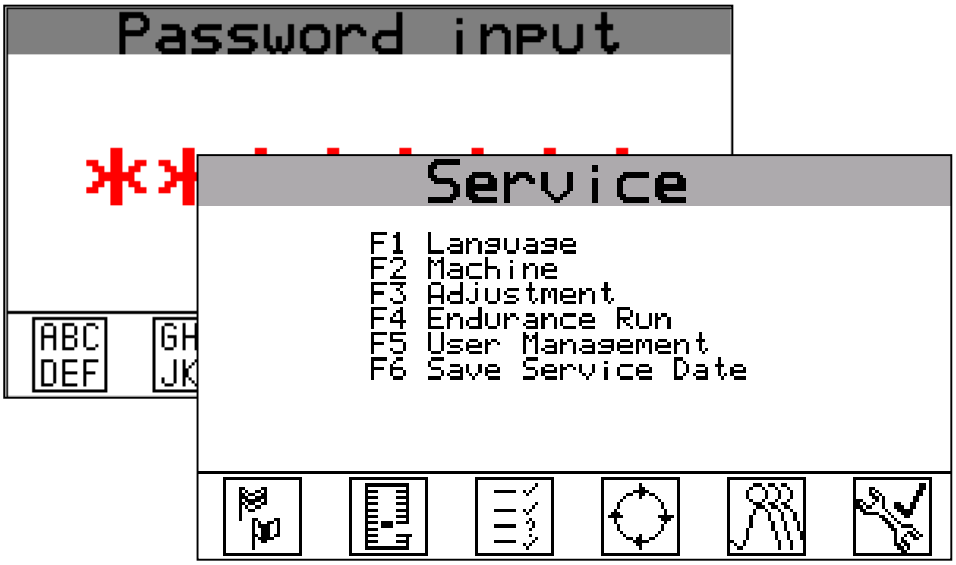
The menu "Service mode" is activated by pressing the function key reserved by  . or, in case user names have been stored, by entering Password **752** into the User Log In Menu:

Access to menu "Service mode" is protected by a password. At the factory, the password "752" is pre-defined. This password can be changed in the sub-function „Adjustment“. After the menu has been selected, the user is asked to enter a password via the screen on the display shown below.

Access options for Service Mode

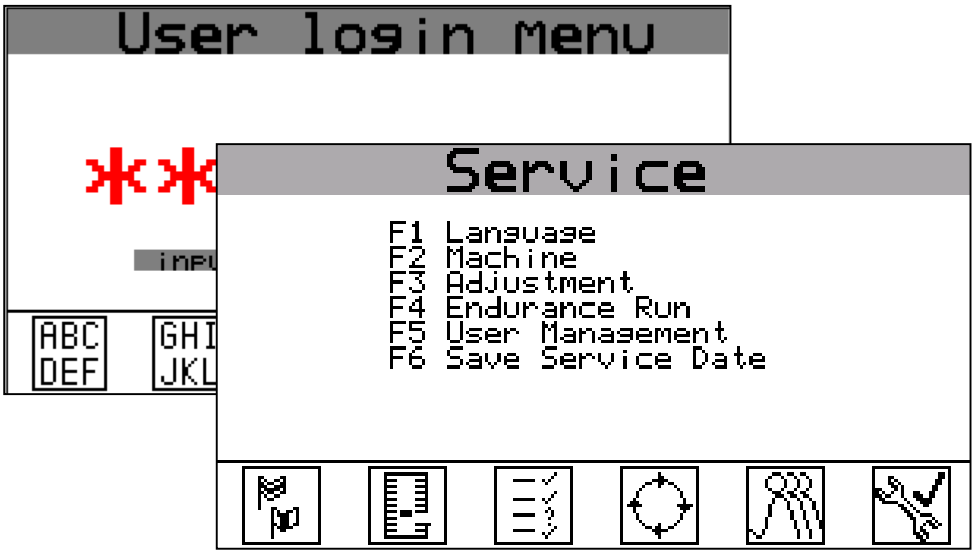
1. Option:

Entering Customer Service Password **752** from the Main Menu Mask enables access to Service Mode.



2. Option:

Entering Customer Service Password **752** from the User Log In Menu enables immediate access to Service Mode

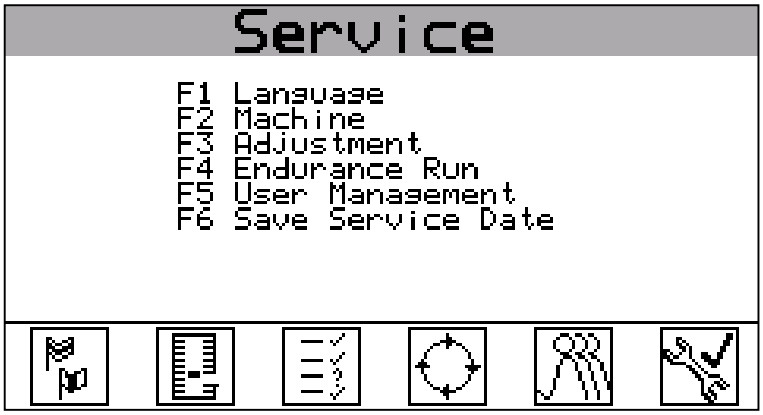


Now the user can enter a password via the numeric keys and/or the function keys. The entry of the password is hidden, i.e. as a protection against unauthorized viewers, instead of the entered character a star (✻) is shown on the display.

Password entry is completed by pressing the ENTER-key.
If an incorrect password is entered, the screen switches over to the basic mode screen.

If the correct password was entered, the basic screen of the “service mode” menu appears in the operator panel display.

Depending on the input of the user, branching into submenus occurs, where the different setup functions can be selected. The user has the following input options.



Input: Function key

Selection of the system language

Definition of unit parameters

Adjustments

Activate the endurance run function
For presentation and test purposes an endurance run function is available.

Call User Administration.

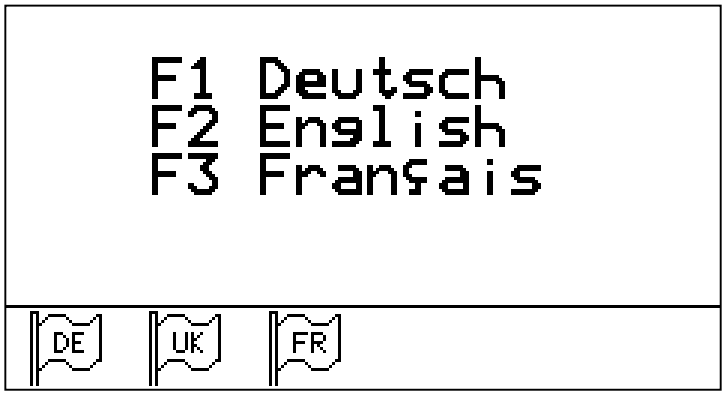
Store service date
This function is only accessible to an authorized service technician!!

6.1 Selection of System Language

Control C2000 offers a choice of 4 system languages. Which languages are implemented depends on the equipment. The system language can be selected in the menu “Selection of system language.”

The menu "Selection of system language" is called up by pressing the function key. 
In addition, this menu can be selected from every user screen, without having to explicitly switch over into the service mode

After the selection, the language selection screen is shown in the operator panel display. Following is an example of a language selection screen of a control, which is equipped with the system languages German, English and French.



The user can now determine the system language by his input.

Input: Function key

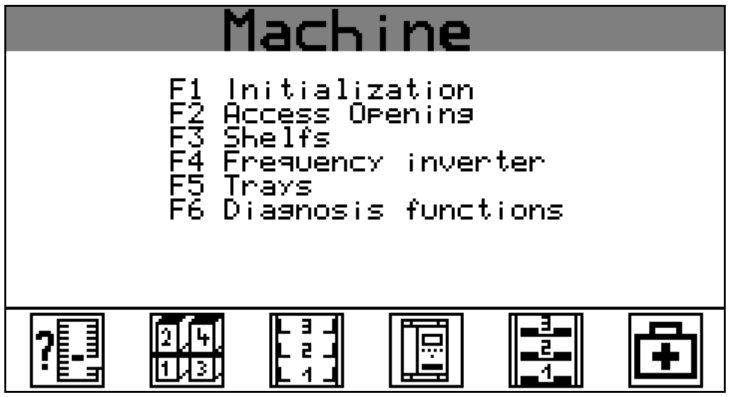
Language switch-over:
The system language is selected by pressing the function key assigned to the pictograph, which depicts the desired language by the international motor vehicle country code.

After the selection, the display jumps back automatically to the previous screen. The letter is now presented in the selected language.

6.2 Definition of Machine Parameters

The machine parameters are defined in the menu "Machine".

The menu "Machine" is selected by pressing the function key  .
Then the basic screen of the menu "Machine" appears in the display.



Depending on the input of the user, branching into submenus occurs, in which the various machine-related setup functions can be called up. The following input is possible:

Input: Function key


Initialization of the machine and updating of machine.
This menu is only accessible to an authorized service technician!


Definition of parameters for an access opening.


Add / remove tray positions.


Operation of frequency converter.
This menu is only accessible to an authorized service technician!


Modify shelf table.


Diagnostic functions

6.2.1 Initialization and Update of Machine Parameters

After pressing  in the menu "Machine" the menu "Initialization" appears on the display as follows. This menu is only accessible to authorized service technicians! To unauthorized persons the message "Access denied" is shown.

Input: Function key

 First initialization.

 Set up machine type.

 Learn shelf.

 Learn trays.

It is possible to carry out a complete first initialization – just as during the initial start-up of a machine, or only parts of a first initialization.

ATTENTION !

During the **first initialization** of a machine, before determination of the machine parameters, all internal **tables are reset, i.e. cleared**!

The process and the effect of this function is described as follows.

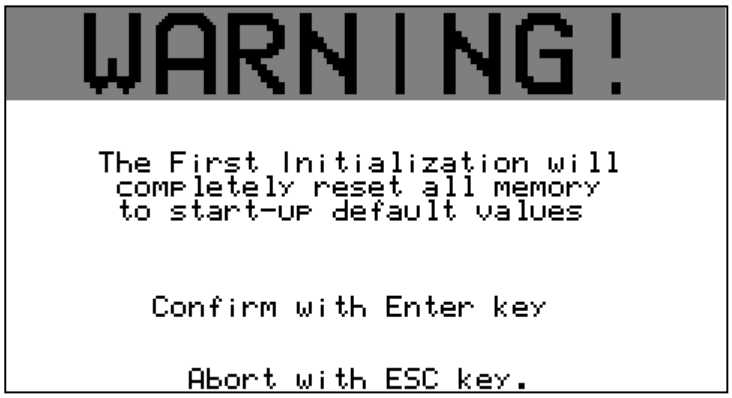
6.2.1.1 First Initialization

ATTENTION !

During the **first initialization** of a machine, before determination of the machine parameters, all internal **tables are reset, i.e. cleared**!

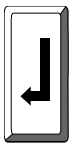
Function "First Initialization" is selected by pressing the function key  .

On the display the following alert appears:



Input: First Initialization

The process is aborted. The previous screen is displayed.

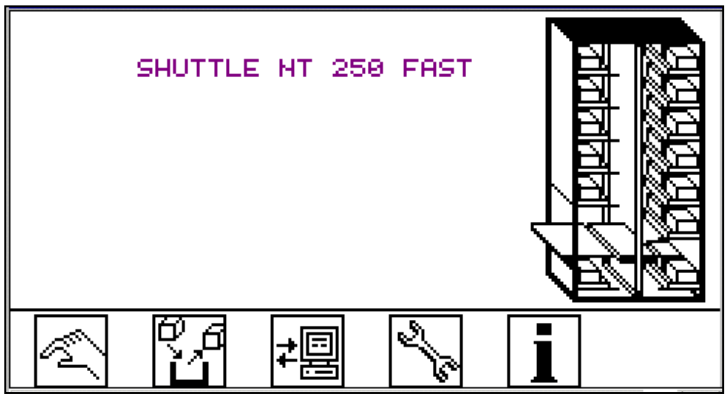


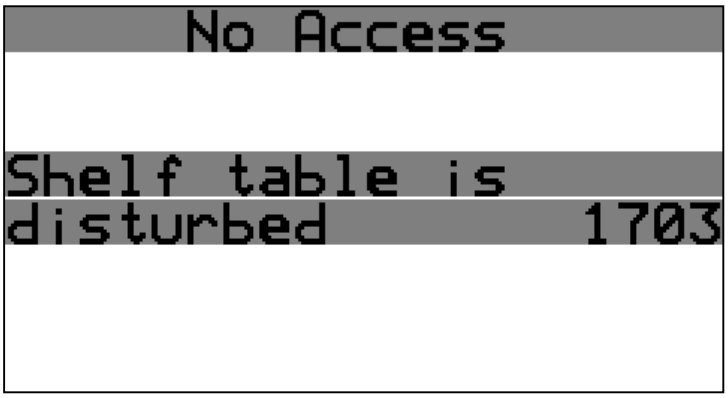
Continue the initialization, the control resets all tables and forces a re-start of the machine! After the restart, same procedure as during an initial start-up.

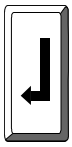
If this process has been completed without error, then the machine is operable and the rest of the parameters can be defined.

First Initialization ➔

The control forces a new start, just as when turning the machine on.

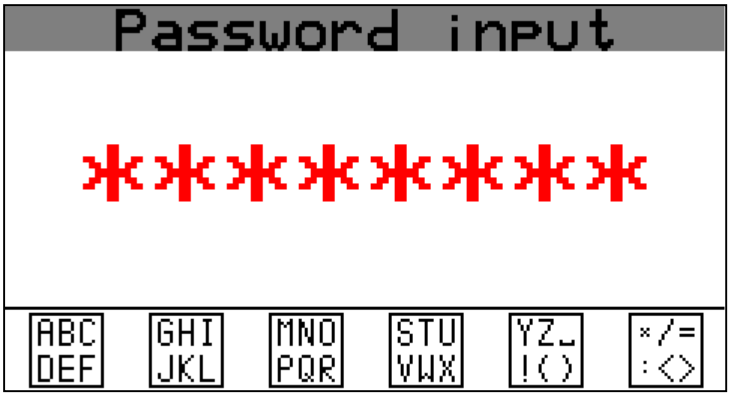






Confirmation, i.e. introduce initialization process.

The following actions should be exclusively performed by an authorized technician, therefore a password entry is requested at this time !



After the correct password has been entered, the initialization cycle is continued.

First Initialization ➔ Selection of System Language

Input: Function key

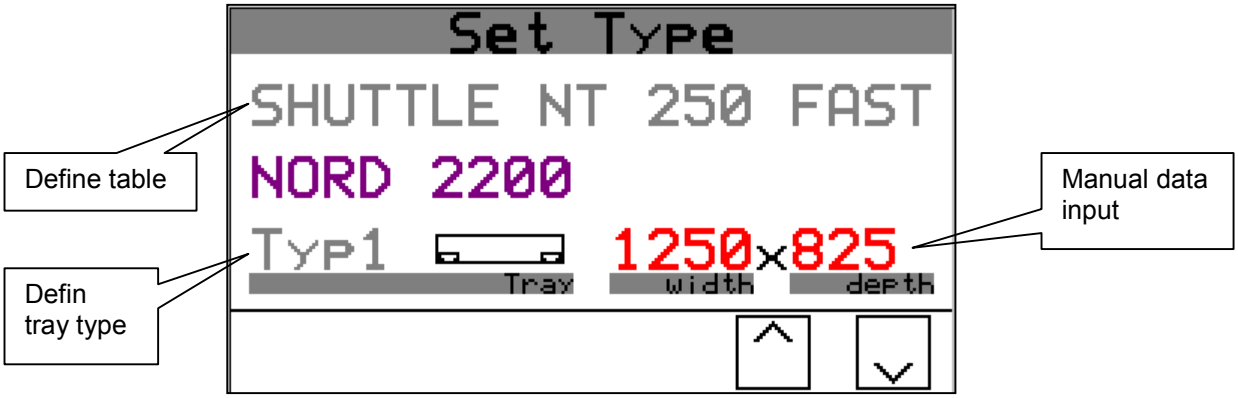
DE Language selection

After language selection, the screen display automatically reverts to the previous screen.

First Initialization ➔ Set up Machine Type

The corresponding machine type must be defined.
Only when the type has been correctly set up, a perfect functioning of the machine is guaranteed, especially with regard to the drive / running characteristics.

The various machine types are listed in a selection list.



Input: Function key

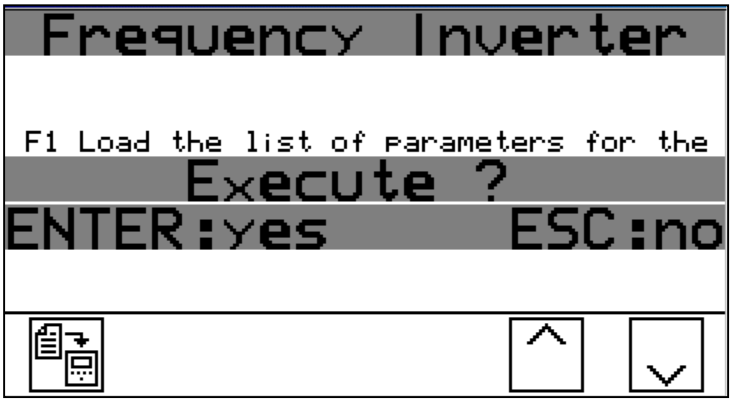
Display of the next value „Machine type“ in the selection field.

Confirmation of selection.

First Initialization ➔ loading operating parameters

At the first initialization, the operating parameters of the frequency converter **must** be loaded!

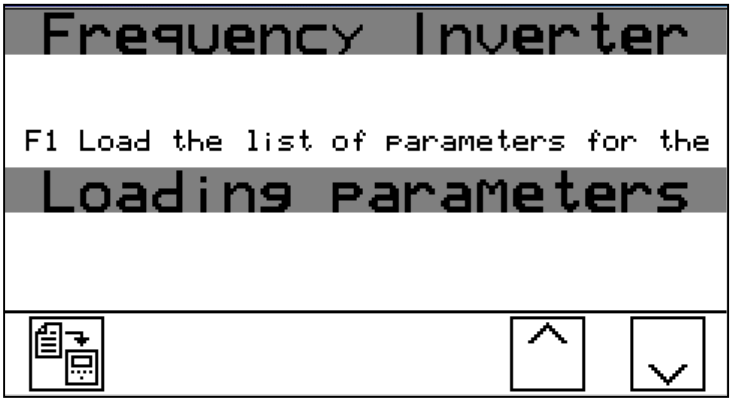
If initialization has already been once performed, this step is not absolutely necessary.



Input: Function key

ESC Abort, i.e. parameters are not loaded into the converter.

Confirmation, i.e. start of load process.



The load process can take a few seconds.

Input: Function key

ESC The function can be aborted at this point.

Confirmation for initialization drive (**Self-Learn**)

First Initialization ➔ Learn Shelves

The control performs an initialization run, starting from the bottom reference point to the top „Soft Stop“, and back again to the reference point.

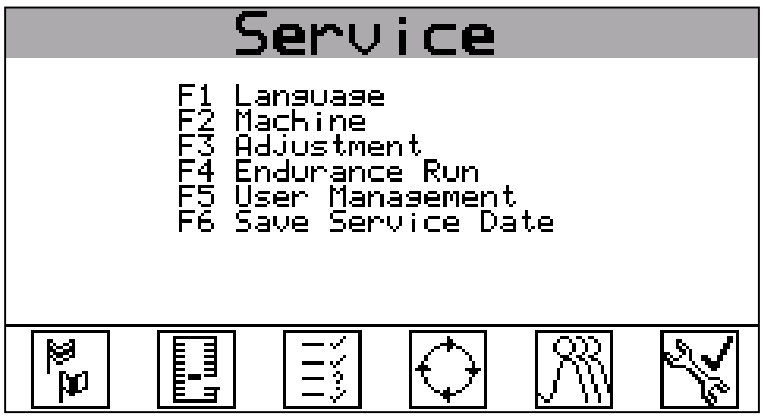
During this run the control automatically recognizes („learns“) the positions for the storage shelves, the access (es), as well as the possibly installed unit reinforcements.

ESC **Initialization run can be aborted at any time. If this case, however, initiation run is incomplete!**

The subsequent procedure is described in chap. „Learn Shelves“

This concludes the initialization cycle.

The next steps of the initialization, i.e. the necessary parameterization of the machine, can be performed.

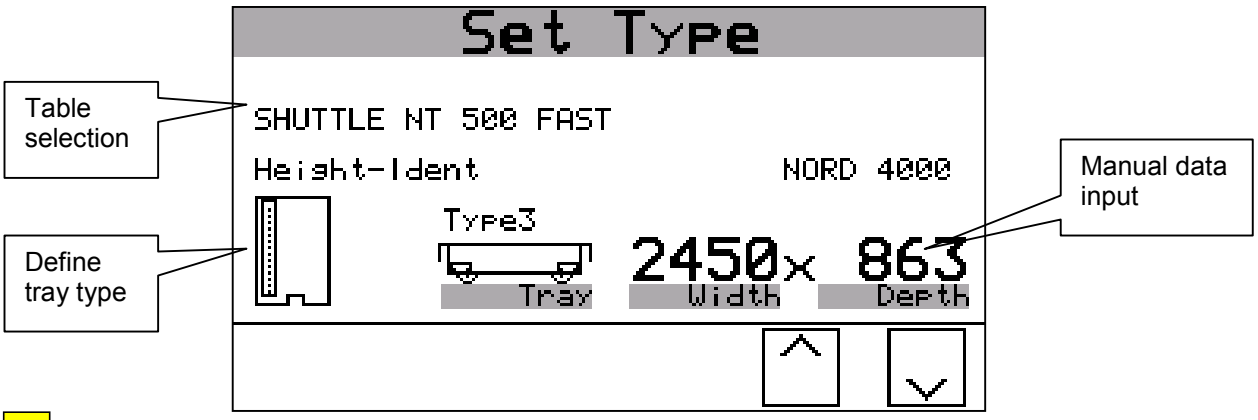


The subsequent procedure is described in chap. „Service Mode“

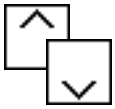
6.2.1.2 Set up machine type

The corresponding machine type must be set up.
Only if the type has been correctly set up, a perfect functioning of the machine is guaranteed, especially with regard to the drive / running characteristics.

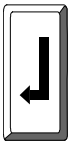
The various machine types are listed in a selection list.



Input: Function key



Display of the next value „Machine Type“ in the selection field.

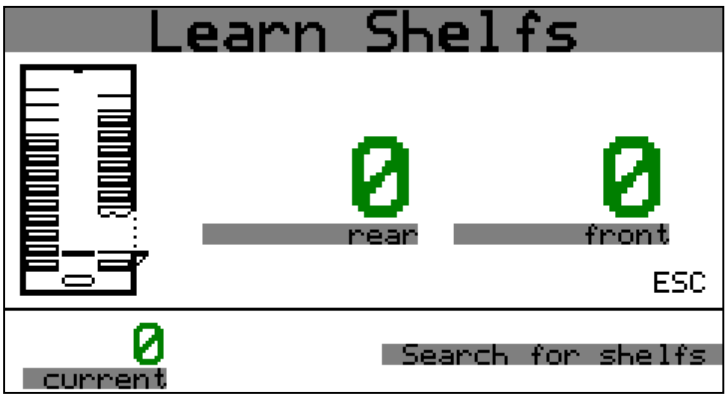


Confirmation of selection, the adjustments are saved.

The process is aborted. The adjustments remain unchanged.

6.2.1.3 Learn Shelves

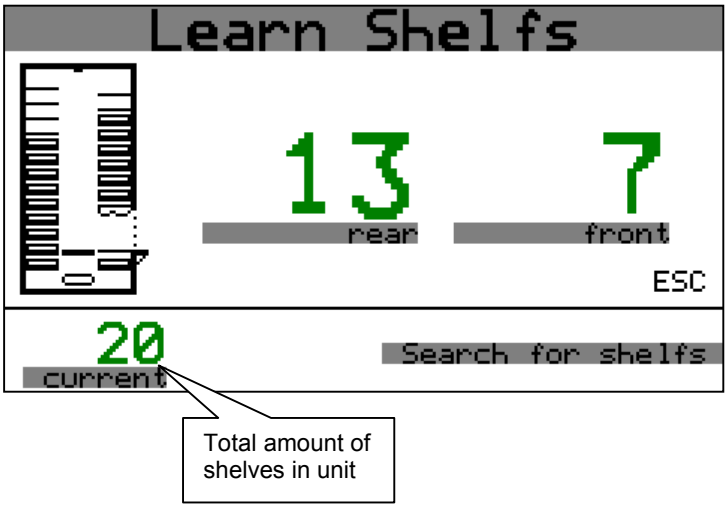
The control performs an initialization run, starting with the bottom reference point to the top “Soft Stop“, and then back again to the reference point.



During this run, the control automatically recognizes („learns“) the positions for the storage shelves of the access(es), as well as the possibly installed field reinforcements.

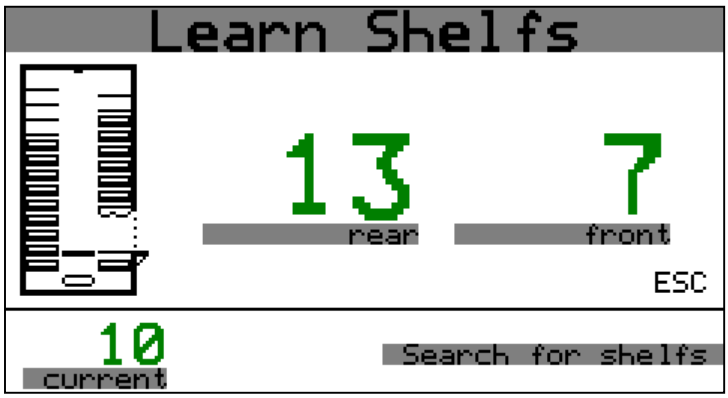
ESC **The initialization run can be aborted at any time ! If this case, however, initialization run is incomplete.**

During the initialization run, the recognized shelves installed in the front and rear part of the machine as well as the total shelf number are displayed.



When the highest point of the machine (Softstop) is reached, two different procedures are possible:
An error has occurred during detection of the shelf positions:
The initialization run is aborted

No error has occurred during detection of the shelf positions:
The initialization run is continued downward, the positions shelves, access(es), and field reinforcements are now verified in downward movement.



If the initialization run has been performed error-free, the lift is positioned on the bottom in the bottom reference point.
The control has saved the positions from this point in time on.

If a valid tray table exists in the control, now the query follows, whether this new shelf configuration table should be accepted or not.

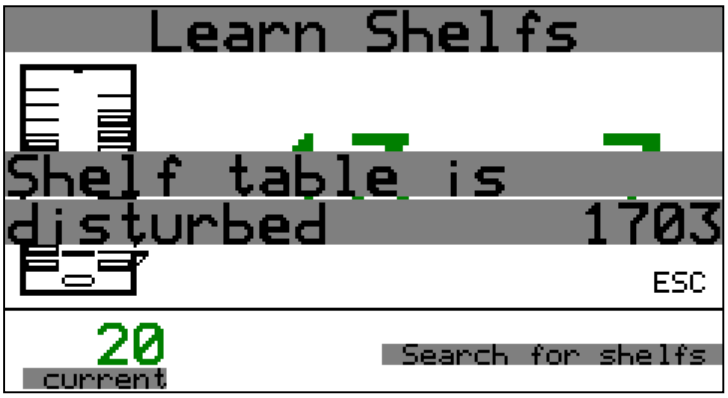
Input:

ESC	The existing tray table is **not** taken over.
↵	The existing tray table is taken over.

This concludes the function „Learn Shelves“; after taking over tray table, operation can continue.

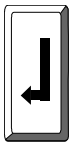
The subsequent procedure is described in chap. „Service Mode“.

During detection of the shelf positions in upward movement an error has occurred.



The initialization run is aborted at this point !

Input:



Verify how many / which shelves were not detected correctly.
➔ With each input a wrong shelf is displayed**.**

The following verifications should be performed by an authorized technician:

- Check machine type; if the wrong type is set up, the control calculates with wrong parameters ➔ **Service Mode,.**
- Check shelf sensors (front & rear) on extractor, defective!? ➔ **MIF-LED**
- Check cable leading to shelf sensors (front & rear)! ➔ **MIF-LED**
- Check adjustment of shelf sensors (front & rear) on extractor for correct functioning (distance) ➔ **Gauge**
- Check shelves, possibly wrong shelves have been inserted ➔ **Dimensional check**
- Check shelves, possibly not correctly installed ➔ **Correct**
- Check installation / alignment of machine, verify extractor, etc. ➔ **Water level**
- Check shaft encoder – type - connection

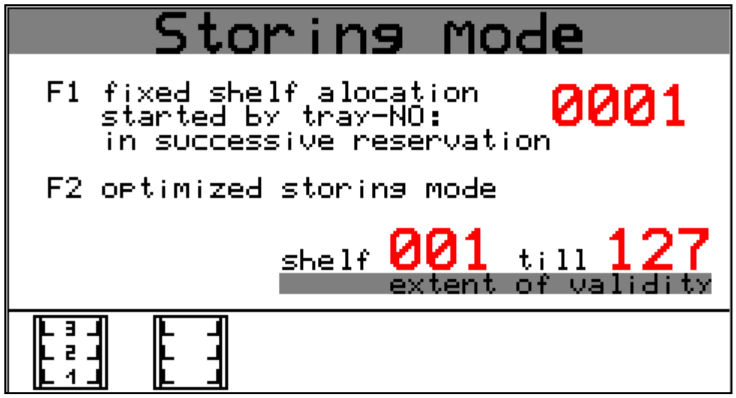
TIPs !

If during the initialization run the control recognizes no shelf at all on one side, then most probably the corresponding shelf sensors (front & rear) are **defective** or **adjusted** so **poorly** that it cannot recognize anything at all!

If during an initialization run the control does not recognize any shelf correctly on both sides, most probably the **wrong machine type** has been defined !

6.2.1.4 Learn trays

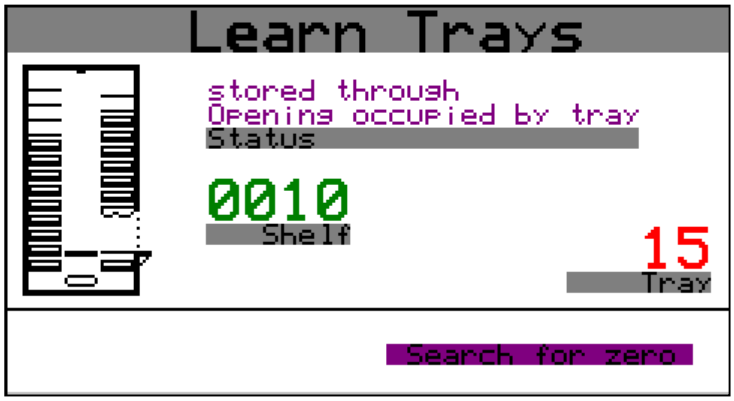
It is absolutely imperative to implement "Leran Shelves" before initialization run "learn trays" can take place, ie. positions in the shelf must be known.



ATTENTION! If function keys [F1] or [F2] are pressed, the complete table chart will be deleted!

Continuous fixed shelf allocation
Trays are not transferred to the access opening, the current tray number is being processed.

Optimized shelf allocation
Each tray is transferred into the access opening to measure the height of the storage items before retrievall and to be allocated a tray number.



After activating one of the function keys, the lift transfers the tray to the first shelf located on the front side. The extractor then tries to pull a tray, if available, on to the lift. If the unit has found a tray, operation continues according to the selected storage strategy.

a) Continuous Fixed Storage Allocation

The tray, with its allocated tray number, is immediately stored.The allocated shelf and the storage space required itself and the next shelf is then registered in the tray chart.

b) Optimized Storage Allocation

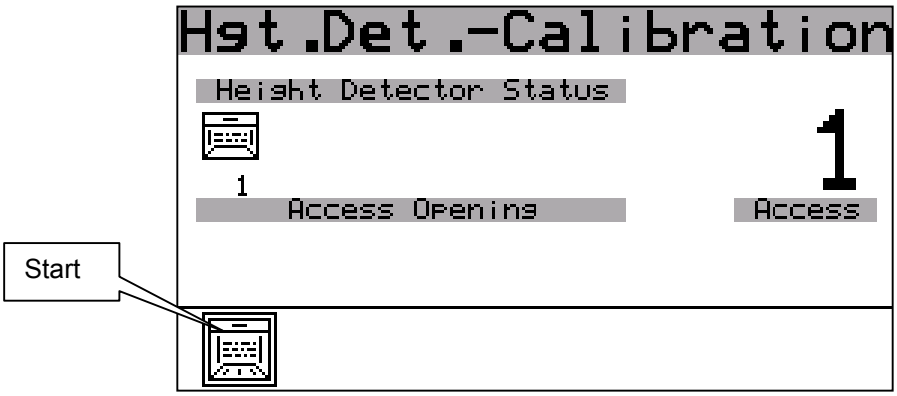
A tray is transported into the access opening; the height of the storage goods is measured. The operator can then individually allocate a tray number. Press the [Enter]-button to restore the tray to its original shelf.

This procedure continues until the last shelf on the front side of the unit is registered.The same then applies to the rear side of the unit.

6.2.1.5 Without function

6.2.1.6 Adjustment of Height Detection System

Before initialization run the height detection system must be adjusted.

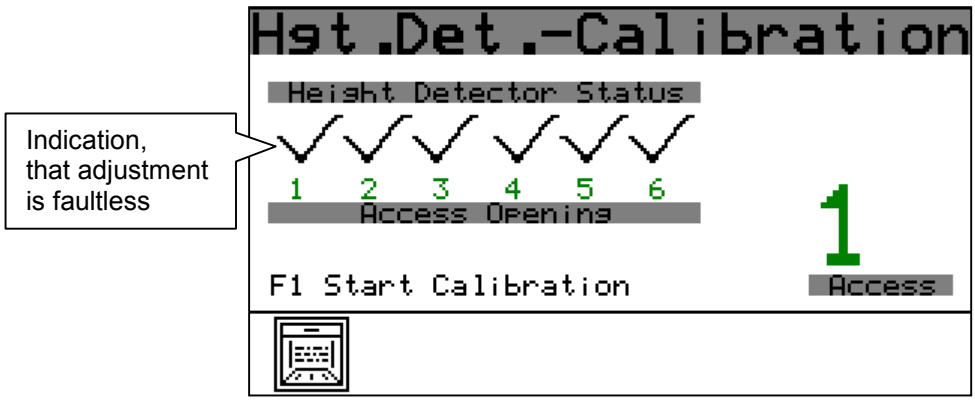


When adjustement is started, the following unit activities are activated:

- IF there is a tray in the access opening, this will be restored
- the extractor is parked underneath the access opening
- the safety shutter (optional) remains open

This will prevent any false reflexions , which might be caused by a tray during the process of adjustment:

If no mistakes occurred during height detection adjustment, the following mask is displayed:

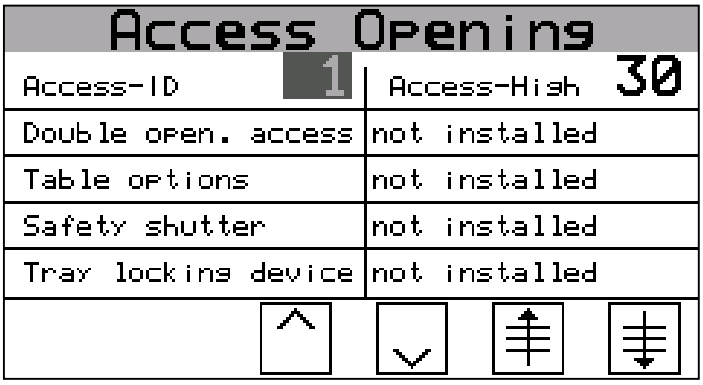


6.2.2 Definition of Access Opening

Before the initial operation of the machine, the number of the access opening must be defined. This is done by user input in the screen “Access Opening”.

The screen "Access Opening" is selected by pressing the function key. 

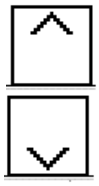
The screen contains fields, where numbers can be input in order to identify the access-ID for the host communication, in which the position of the unit access opening position is defined. Further more unit options can be released or inhibited via this mask.



Function description:

retrieval-ID -> Host	This number helps a connected host pc to identify a retrieval.
double retrieval	Release of access with 2 levels **-> in preparation!**
table options	Release of the following options: **- hinged table;** CPU-Software: C2S000-000 / 01.03.03-00; OP-Software 1S08 or higher version **– tray full extraction**; CPU-Software: C2S000-000 / 02.00.00-00; OP-Software 2S00 or higher version
safety bar	Release of a safety bar which protects the extractor area against un-authorised access **-> in preparation!**
tray lock	Release of an additional locking mechanism in the access opening CPU-Software: C2S000-000 / 02.00.00-00; OP-Software 2S00 or higher version

Description of keys:



select option within the option area

Activate CURSOR- keys to select option field

6.2.3 Modify Shelf Table

After the initialization run (Self-Learn), the control has saved a table, where all information concerning the detected storage shelves, access(es), field reinforcements is deposited.
This table and its entries can be manually modified.

Input: Function key➔ Branching into the sub-functions

Add an entry into the shelf table

Delete an entry from the shelf table

Display the shelf table – without modifications

Verify shelf for position

6.2.3.1 Adding an entry into the shelf table

! This function is implemented at a later point in time !

However, shelves can be added to the machine subsequently and at any time: By calling up an initialization run (Self-Learn, see chap. 6.2.1) the parameters of the shelves, e.g. the position of the corresponding shelf, are detected by the control and the shelf table is updated.

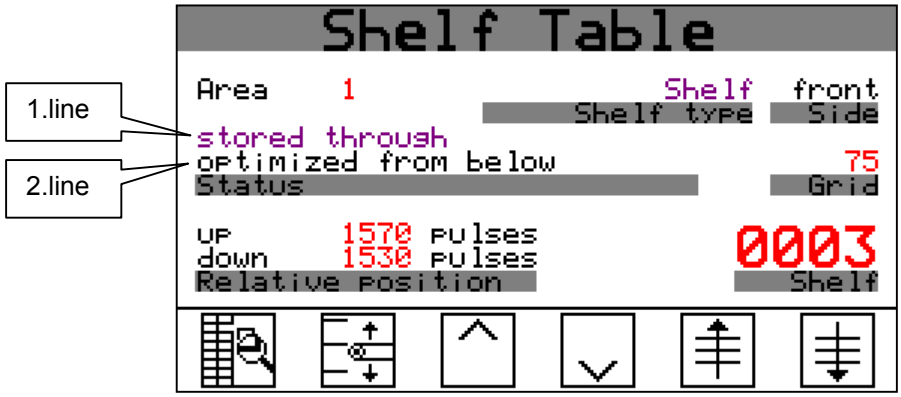
6.2.3.2 Deleting an entry from the shelf table

! This function is implemented at a later point in time !

However, shelves can be removed from the machine subsequently and at any time. By calling up an initialization run (Self-Learn,) the shelf table is updated.

6.2.3.3 Display of shelf table – without modifications

The complete information belonging to a shelf entry is displayed on the following screen.



Shelf Number of the current storage shelf

Area The machine can be divided into several, logical storage areas..
At present, only 1 area is possible.

Shelf type Differentiation between storage shelf, access(es), and unit reinforcements.

Side Position of storage shelf front / rear inside the machine.

Grid Shelves in the machine can be installed with a 25mm pitch.
In this field the pitch value of the corresponding shelf is displayed.

Relative position Shows the number of increments, from above and below, for the actual stop position of the lift at a shelf.

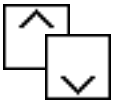
Status A storage shelf can have the following conditions:

1. line	2. line	
Free	Optimized	Height optimization ➔ Shelf is free for height-optimized storage.
Stored through	Optimized below	Height optimization ➔ Shelf is jointly used by storage goods located below.
Occupied	Optimized for tray	Height optimization ➔ Shelf is presently occupied by tray XX.
Free	Reserved for tray	Fix allocation ➔ Shelf is free, but reserved for tray XX.
Free	Reserved below	Fix allocation ➔ Shelf is free, but reserved for storage goods located below.
Stored through	Reserved below	Fix allocation ➔ Shelf is jointly used by storage goods located below.
Occupied	Fix allocation for tray	Fix allocation ➔ Shelf is occupied with fix allocation to tray XX.
	Unknown	The automatic shelf recognition during the initialization run (Self-Learn) could not be allocated to a storage shelf, or access, or a field reinforcement ! Possible problems with the shelf sensor on the extractor (tolerance !?), or the machine type is incorrectly set up !

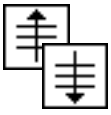
Input: Function key

Display of the corresponding entry in the tray table.
Only possible if a tray is allocated !

Test of shelf positions, i.e. positioning of lift to the storage shelf preset in the field **Shelf**.



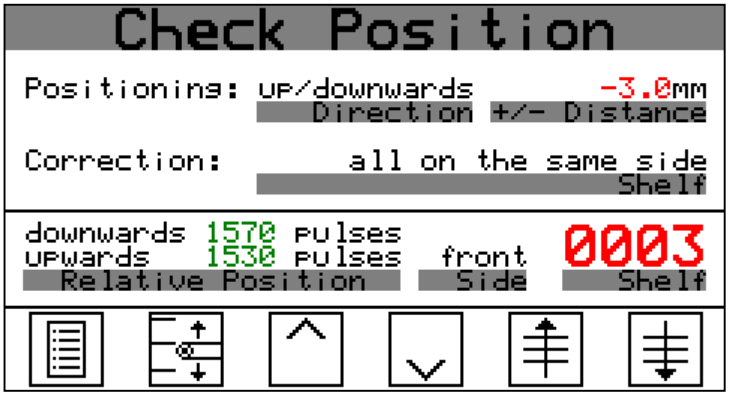
Display of the entries of the corresponding selection list



Scroll – up/down - in the shelf table to the next shelf number

6.2.3.4 Verify shelf for position

This function serves to inspect/correct shelf positions



Direction determines direction of shelf positions to be corrected.

+/- Distance correction value in mm.

Shelf number(s) of the shelf/shelves to be corrected.

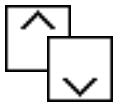
Selection:

This one only	Shelf listed in field **Shelf**.
This one and all above	Shelf listed and all other shelves above.
All on the same side	Front or back, depending on entry in field **side**
all	All shelves independent of any entries.

Input: **Function key**

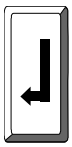
Display of respective entries in shelf table
possible only after selection of valid shelf number in field Shelf !

Inspection of shelf positions.
When positioning a shelf (entry of same in field **Shelf**) any value displayed in field **+/- distance** respective thereof must be taken into account



Display of entries of the respective selection list

Scroll – up/down – in shelf table towards next shelf number



Correction !
Entries in the respective field are adopted and added to the shelf table.

Shelf table remains unchanged.

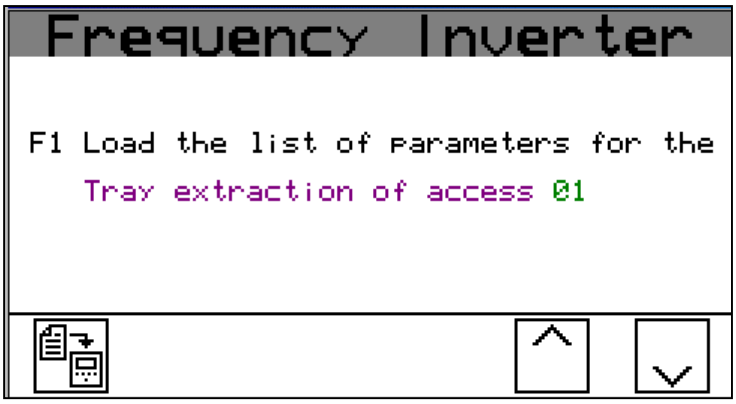
6.2.4 Operation of the Connected Drive Control (Frequency Inverter)

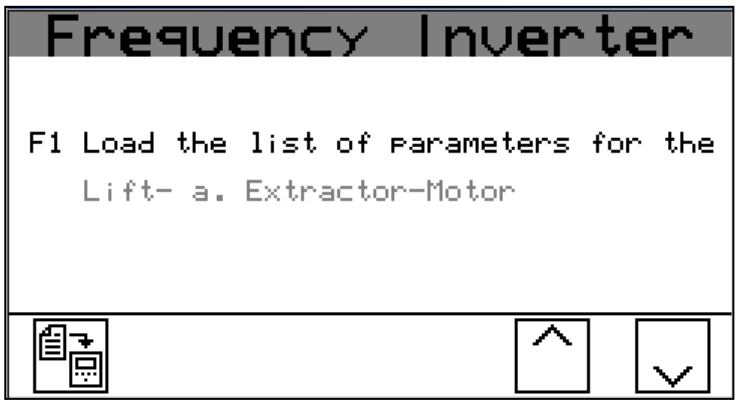
During the first start-up, the standard parameters of the frequency converter are automatically downloaded into the frequency inverter - adapted to the unit type mentioned at the time of initialization.

If, at a later date, possibly modified frequency inverter parameters have to be replaced by these standard parameters, call up the menu "Frequency Inverter". This menu offers the possibility to replace the current frequency inverter parameters by the standard frequency inverter parameters adapted to the machine type.

The menu "Frequency Inverter" is selected by pressing the function key. 
This menu is only accessible to an authorized service technician! To an unauthorized person seeking access the message "Access denied" is displayed.

The basic screen of the menu "Frequency Inverter" is shown as follows.

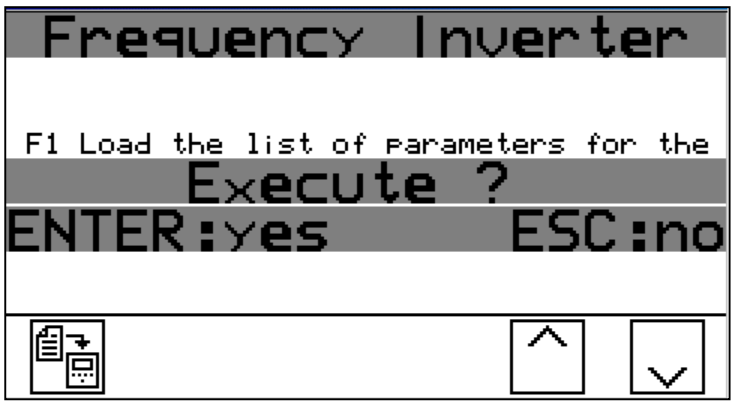




Input: Function key

Load **standard adjustments** (parameters) of the frequency converter
The standard adjustments of the frequency inverter parameters stored in the control are loaded into the frequency inverter.

Since individually programmed frequency inverter parameters may have been deleted (cleared) during loading, there will be a safety check query on the operator panel display. (see below).



Input:

ESC Do not start loading. The process is aborted. The previous screen is displayed.

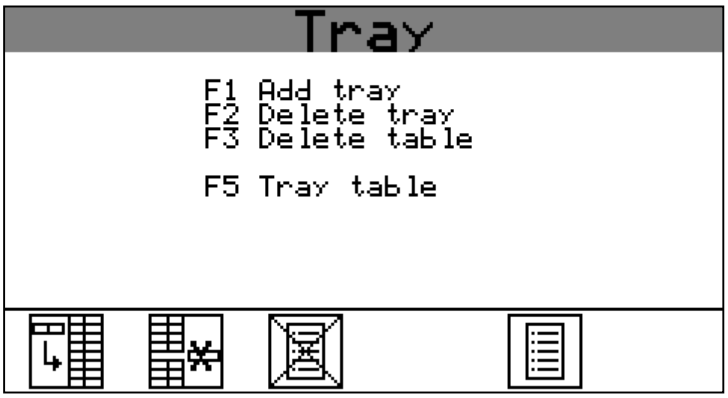
Start loading by pressing the ENTER-key.

The loading of parameter values into the frequency inverter is confirmed by indication of the message "Loading parameters" in the display.

After successful loading, the screen "Frequency Inverter" is displayed again.

6.2.5 Modify Tray Table

The control has saved all information necessary to handle a tray. This tray and entries can be manually modified.



Input: Function key ➔ Branching into the sub-function

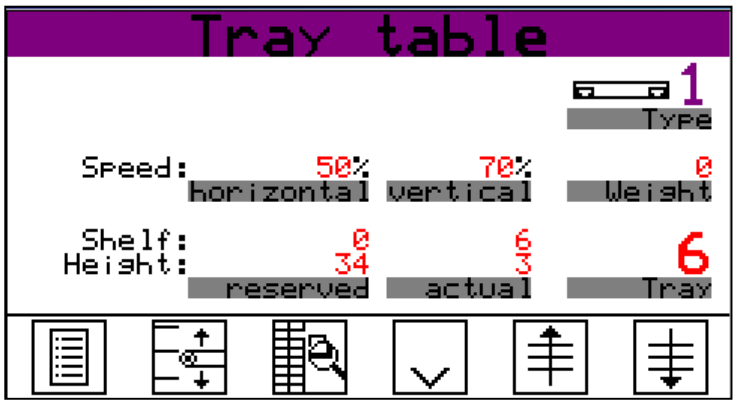
Add an entry to the tray table,

Delete an entry from the tray table,

Delete the entire tray,

Display the tray table – without modifications,

Explanations concerning the tray table



Tray Current tray number

Type Tray type: With rollers on Shuttle 500/750/1000, without rollers on Shuttle 250.
This defines a different positioning of the lift.

Reserved With fixed allocation mode, the shelf number is entered in this field. With optimized Allocation, the shelf number is 0.
The height is the reserved maximum height, also with optimized storage.

Actual Storage shelf, on which the current tray is stored, as well as the current height of the tray.

Extractor Limitation of the extractor speed; 0-100%

Lift Limitation of the lift speed; 0-100%

Weight Limitation of the tray load; in kg

Input: Function key

Display of the corresponding entry in the tray table

Test of tray positions, i.e. positioning of the lift in correlation to the preset tray.

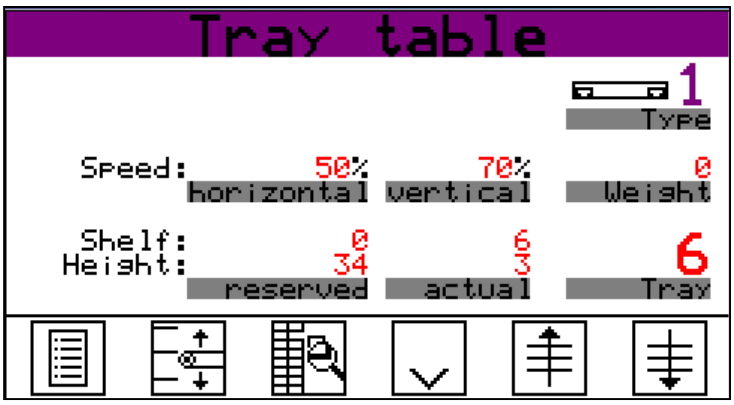
Display of detailed information
This function is implemented at a later time !

Display of the next / previous entry in the corresponding selection list

Scroll in the tray table to the next / previous tray number

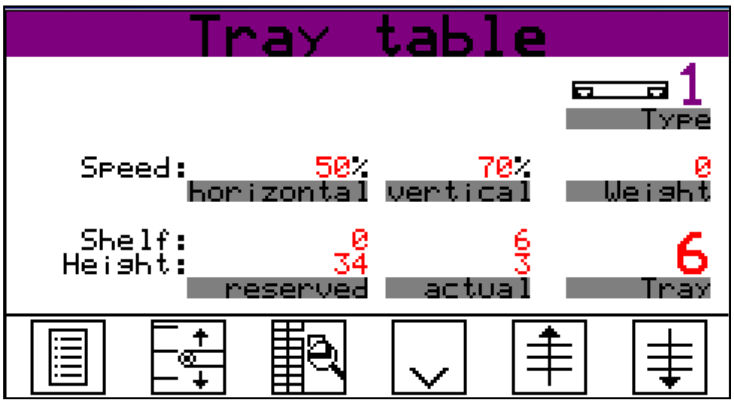
6.2.5.1 Addition of an entry to the tray table

Individual entries can be added to the tray table.



6.2.5.2 Deletion of an entry from the tray table

Individual entries can be deleted from the tray table.



Input: Function key ➔ see explanations tray table

ESC Abort a function **without** modification of the entries

Perform the function add / delete the current tray

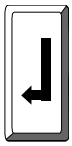
6.2.5.3 Deletion of tray table

With this function the entire tray table can be deleted.

ATTENTION !
This function destroys all information about possibly stored trays. These trays will no longer be known to the control system and can no longer be retrieved into the access opening.

Input:

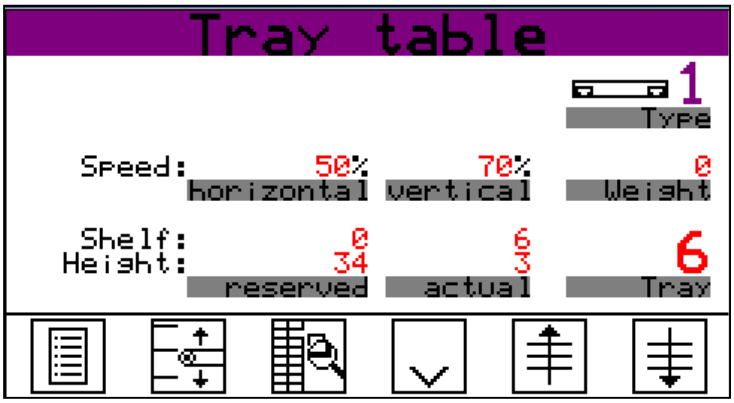
Abort function **without** modification, the table remains intact.



Perform delete function.
The table is then deleted, the control no longer recognizes a tray located in the machine, and cannot retrieve/store it !!!

6.2.5.4 Display of tray table – without modifications

Verification of entries in the tray table.
No modifications are performed.



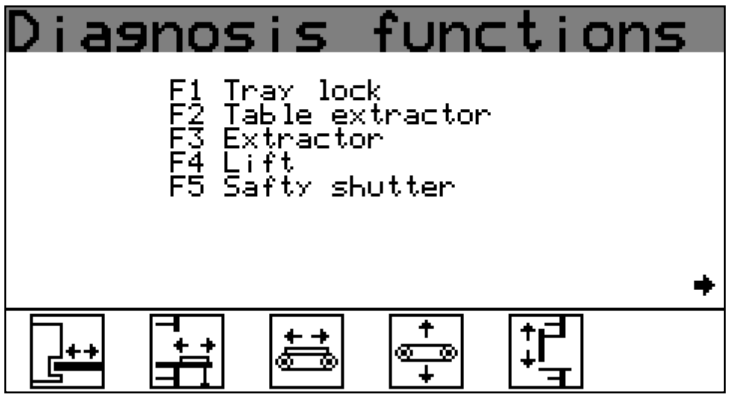
Input: Function key / Softkey ➔ see explanations tray table

ESC Escape the function.

6.2.5.5 Diagnostic Functions

Various diagnostic functions are available, in order to provide options, especially to the service personnel, for setup procedures, error diagnosis, as well as maintenance, etc..

All machine units, which can be moved (actuators), are included with the diagnosis.



Input: Function key ➔ Branching off into sub-functions

 Locking

 Tray extraction

 Extractor

 Lift

 Safety shutter

6.2.5.6 Locking System

Manual operation of the tray locking system, integrated sensory system. This option must be released in mask "Access"

Tray	Number of trays in use
left/ right side	The following positions of the latch are indicated:

undefined	hardware error in the locking system (sensory system motor)
unlocked	positive message: " unlocked "
locked	positive message: " locked "
intermediate	position locking/unlocking process not completed, system still operating

The tray locking system is activated, whether a tray is sitting in the access opening or not

The tray locking system is de-activated, whether a tray is sitting in the access opening or not

Endurance run in this version is not activated.

6.2.5.7 Tray extraction

Manual operation of the tray extraction system, integrated sensory system.
This option must be released in mask "Access" (see chapter "Unit access area")

Tray Number of tray in use

Finger Position The following finger positions are indicated:

unknown	hardware error (sensory system, drive)
rear stop	positive message, finger of extractor in rear position
front stop	positive message, finger of extractor in front position
between	extraction movement not completed, finger of extractor in intermediate position

 move tray to front, from access on to table

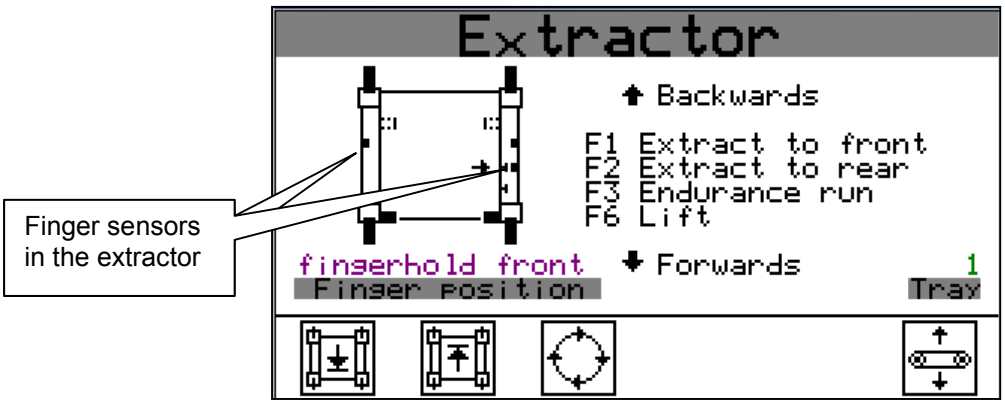
 move tray to rear, from table to access

 endurance run in this version not activated

6.2.5.8 Extractor

Manual operation of the extractor, the corresponding sensor equipment is included in the process.

The point of view is always starting from the point , where the operator stands.
“Forward“ always means transportation to the operator, also at a rear access !
„Backward“ always means transportation from the operator, also at a rear access !



Tray Number of a tray possibly sitting on the extractor.

Finger positions The various finger position options are displayed:

- Top stop
- Top front
- Finger hold front
- Front
- Bottom stop
- Rear
- Finger hold rear
- Top rear
- Unknown

Input: Function key / Softkey


Extractor movement towards the front, e.g. tray from extractor or shelf onto access


Extractor movement toward the rear, e.g. tray from access or shelf onto extractor

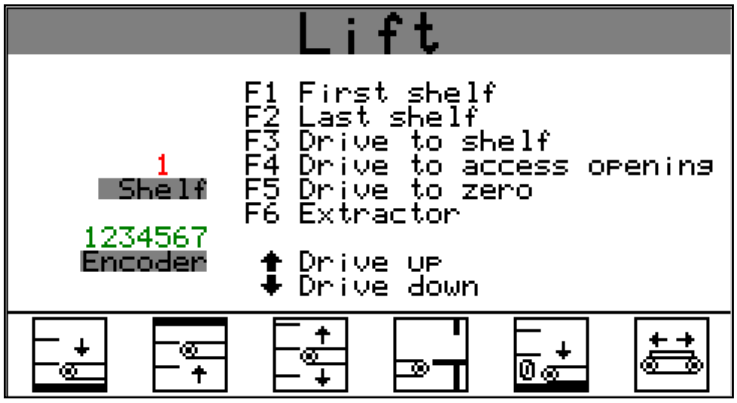

Endurance run in this version not activated


Extractor manually (as long as key is pressed) position forward/back, without taking into account the position sensor equipment.


Changes into menu "Lift"

6.2.5.9 Lift

Manual operation of lift, the corresponding sensor equipment is included in the processes.



Shelf Current shelf number resp. shelf to be driven to.

Incremental Encoder Incremental value of incremental encoder ➔ current position of lift.

Input: Function key / Softkey


Position lift to the first storage shelf entered in the shelf table.


Position lift to the last storage shelf entered in the shelf table.


Position lift to the storage shelf preset to the field **Shelf**.


Position lift to the current access workstation.


Position lift to the reference point of the machine (Zero reference point).


Position lift manually (as long as the key is pressed) upward/downward, without taking into account the storage shelf positions.


Changes into menu "Extractor"

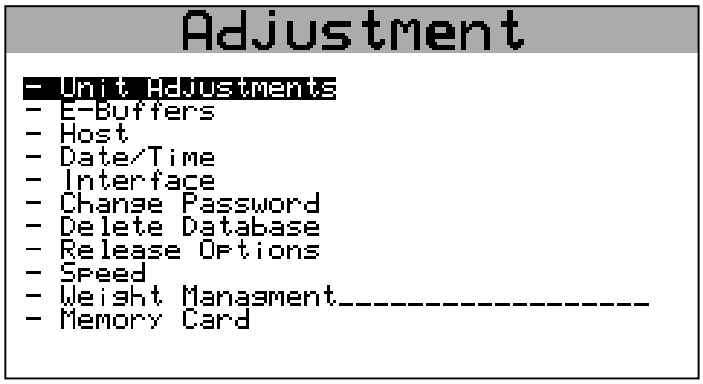
6.2.5.10 Safety shutter

! This function is implemented at a later time !

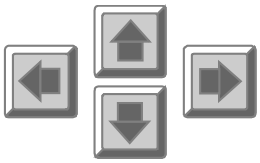
6.3 General Adjustments

In the menu "Adjustment" parameter values used by the control can be adjusted.

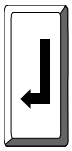
The menu "Adjustment" is selected by pressing the function key. 
Subsequently, the basic screen of the menu "Adjustment" is shown in the display.



Selection of function:



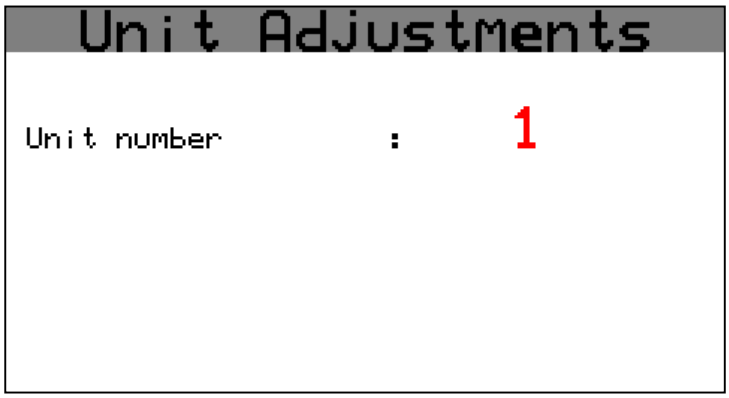
Use **CURSOR-keys** to select a function.



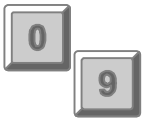
Press **ENTER-key** to activate selected function.

6.3.1 Unit Adjustments

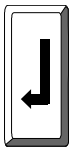
If multiple machines are operated in one network link (e.g. DB2000 with Ethernet-TCP/IP) a uniquely defined label of each machine is necessary, to enable the controls to communicate with each other.



Input:



Logical machine numbers, label in network operation



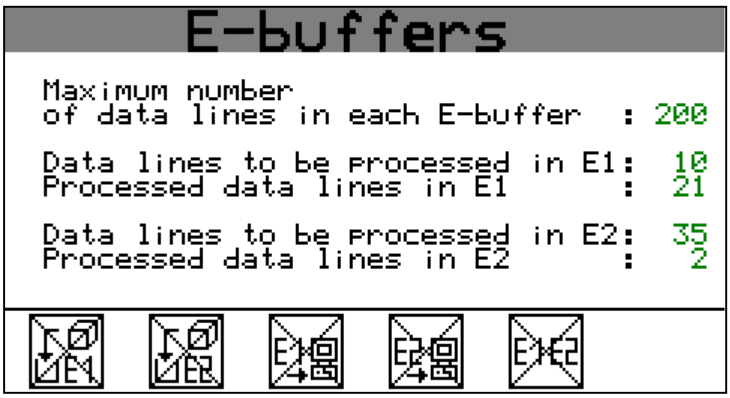
The adjustments are taken over by pressing the **ENTER-key**.

6.3.2 E-Data Buffer

After the function "E-buffers" has been selected in the menu "Adjustment", the screen "E-buffers" is shown on the operator panel display (example: see below).

In this screen the maximum possible quantity of data records (data lines) per host buffer E1 and E2 is shown. This value depends on the predetermined maximum possible length of the alphanumeric additional information field, which is used during host communication. The length of the field can be adjusted in the screen "Host"

For each buffer the quantity of records, which are yet to be processed, and the number of records, which are ready to be recalled, are displayed.



Input: Function key

 Deletion of records to be processed in E1

 Deletion of records to be processed in E2

 Deletion of processed records in E1

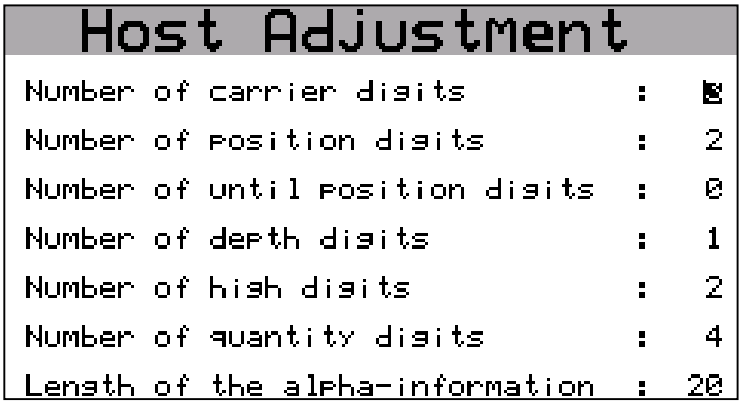
 Deletion of processed records in E2

 Deletion of all records in E1 and E2

6.3.3 Host Adjustments

Adjustments of the string length used during host communication can be made in the screen "Host adjustment".

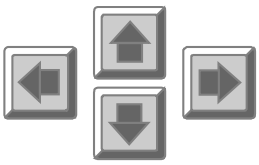
After call-up of the function "Host " on the menu "Adjustment", the screen "Host adjustment" is shown in the operator panel display (example: see below).



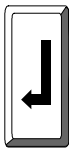
Input:

Enter length of the alphanumeric additional information field used in mode „Host communication“.

Enter length of the quantity field, used in mode „Host communication“.



The switch from one input field to another is effected by means of the cursor keys.

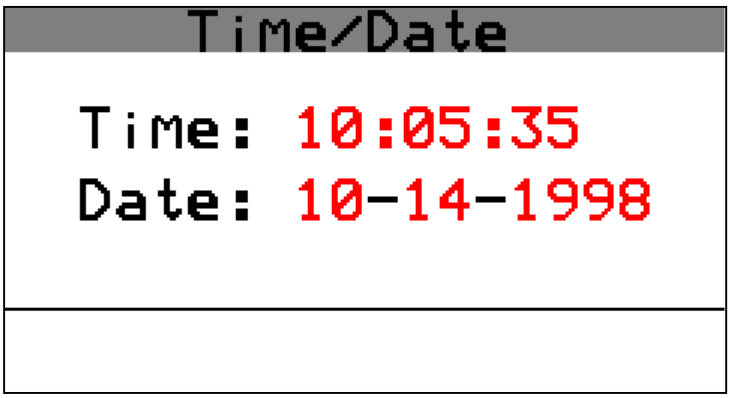


The performed adjustments are saved by pressing the **ENTER-key**.

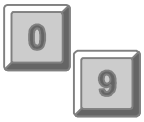
6.3.4 Set Date / Time

Date and time are maintened on the control and continue to run by means of a battery, even when the machine is turned off.

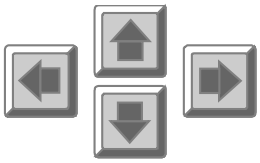
Changes to the settings of date and time can be accomplished in the screen "Date/Time". After the function "Date/Time" in the menu "Adjustment" has been selected, the screen is shown in the operator panel display (example: see below). It shows the current time and date, at the moment the function item has been selected.



Input:



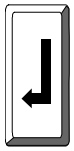
Input of hours, minutes, seconds, month, day, year.



The **CURSOR-keys** are used to move between the fields time, day, month and year.

Change between hour, minute and second within the field time.

The process is aborted. The settings remain unchanged. The previous screen is shown.



Starting of the set time and date with second precision.

ATTENTION !

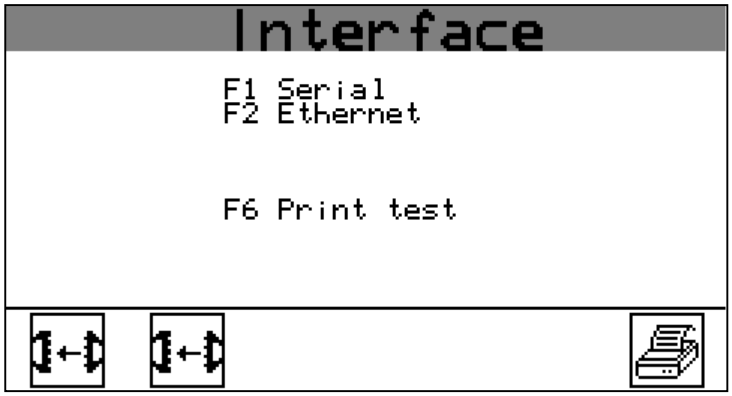
If no changes are to be made, the screen must be left by means of the 

key.
Since time continues to run in the background but is not shown updated on the display, leaving by the ENTER-key would have the effect of setting the time back.

6.3.5 Interface Definition

The definition of interface parameters used for connections with computer systems, barcode readers, printers, scales, etc., occurs in the menu "Interface".

After selecting the menu "Interface" in the menu "Adjustment", the screen "Interface" is shown in the operator panel display (example: see below).



Input: Function key / Softkey - Selection of interface

Serial Interfaces (RS232, RS422 etc.) . Normally used for connection with barcode readers, printers, etc., but also with computer systems.

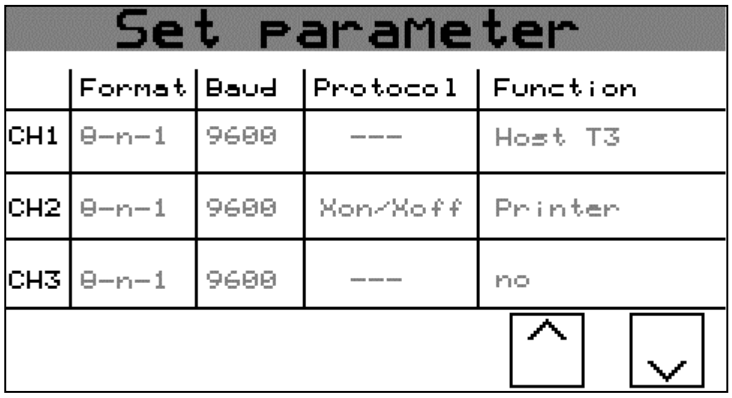
Ethernet (Local-Area-Network-Interface LAN) – Option (in preparation).
Normally used for linking with computer systems.

Testing of a printer connected to a serial interface.
The printer has to be assigned to the interface.

6.3.5.1 Adjustments – Serial interface

With the base control, 2 serial interface channels are available. According to each required function the channels have to be initialized accordingly. This can be done within the screen "Set parameter".

The screen "Set parameter" is selected by pressing the function key F1 reserved by .
Then the screen appears in the display (example: see below).



The screen shows the table of the currently set interface parameters.

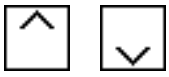
For each interface channel there is an assigned table line. The interface channels are designated **CH1, CH2, CH3.** The respective connectors on the control module are also labeled with these designations.

The parameters are listed in the table columns. The following interface parameters are shown.

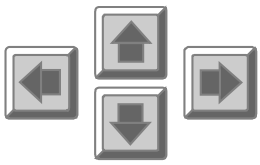
Format:	Adjustment of transmission format, i.e. data and stop bits.
Baud:	Adjustment of transmission speed.
Protocol	Protocol setup. The protocol (---) is not preset as a standard. Presently, the protocol of the software handshake is available.
Function:	Selection of the connected peripheral type, i.e. host, printer, additional display, etc.

The fields containing the parameter values are organized as selection fields. Modifications of the parameter values are performed via these selection fields. In a selection field all possible values of a parameter are shown. These can be displayed by pressing the function keys assigned to the shown pictographs.

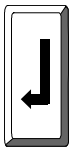
Input: Interface Parameters



Display of the next value in the list of suggestions by pressing the function keys.



Changing from one field to another by pressing the cursor keys.



The performed adjustments are saved by pressing the ENTER-key.

ATTENTION !

Storing of the changes can take up to 2 seconds. If storage has been performed successfully, the message „Done“ is momentarily shown on the operator panel display.

6.3.5.2 Adjustments – Ethernet-TCP/IP

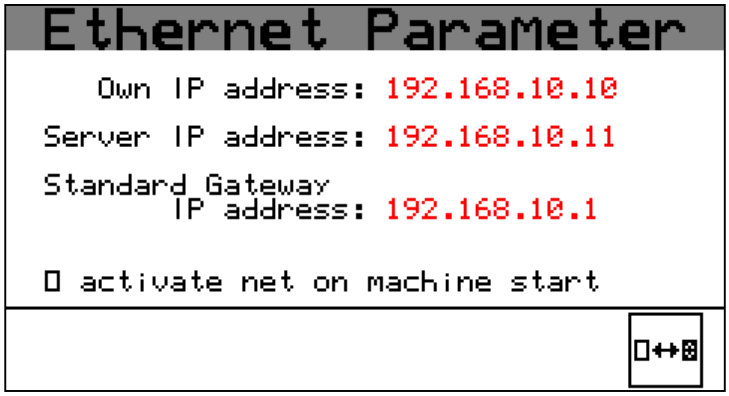
For the networking of multiple machines, e.g. for the administration with DB2000, the Ethernet interface and transmission protocol TCP/IP are used.
This network is structured according to the „Client/Server-principle“, which means that a central control (the ***server***)manages one or more users (or ***clients***).

Example: A database manager, which is centrally installed on the server, which comprises all functionalities, which are necessary for the complete data handling, multiple users communicating with the central data base on one input/output unit.

The networking with ***Ethernet-TCP/IP*** presupposes that to each control in the net an Ethernet-address as well as an IP-address is assigned. These addresses are necessary to enable the controls (network nodes) to communicate with each other via a uniquely defined label.

The **Ethernet-address** is preset at the factory, it is invisible/not modifiable by the user. It is handled like this for safety reasons, in order to prevent duplikate assignments of Ethernet-addresses, it is important, e.g. when an existing network cabling is jointly used.
For the CONTROL C2000, a uniquely defined number cycle is allocated, which exists only once worldwide.

The **IP-address** can be freely selected, in the case that the machines are networked directly with each other with their own cabling.
If an already existing network cabling of the customer's should be jointly used, the assignment of the IP-addresses must be coordinated with the customer's network administrator !



„Own IP-Address“ Label of the „Own“ Machine/Control – ***Client.***

„Server IP-Address“ Label of the Machine/Control, where the database is installed – ***Server***.

„Standard-Gateway IP-Address“ Label of the „Interchange point“, in case that an existing network cabling is jointly used, and that the access is controlled via a ***Gateway.***

Input: Function key

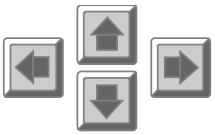
Activate the network after turning the machine OFF / ON.

Before, the **IP-addresses have to be set up !**

Setup of IP-addresses.

Recommendation for the IP-addresses ➔ **only usable with own cabling !!!**

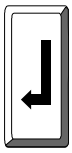
- Own IP-addresses: 192.168.10.12 – 192.168.10.17
- Server IP-address: 192.168.10.11



Changing between the entry fields with the CURSOR-keys.

Entry DOT.
The structure **XXX.XXX.XXX.XXX** of the IP-address is pre-assigned.

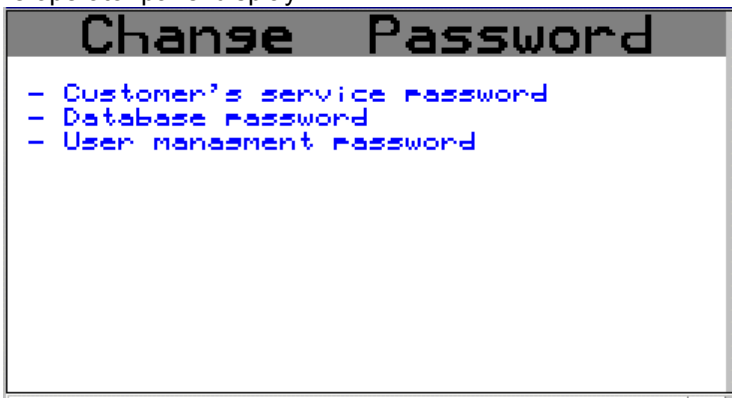
The process is aborted. The setups remains intact..



Confirmation of entry. The setups are saved.

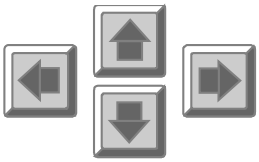
6.3.6 Change Password

After the selection of the menu "Change Password" in the menu “Adjustments”, the selection screen of this menu is shown in the operator panel display.

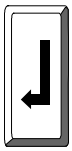


Functions to change the "Customer's Service password"; "Database Password" and "User-Administration-Password" are offered.

Call-up of a Function:



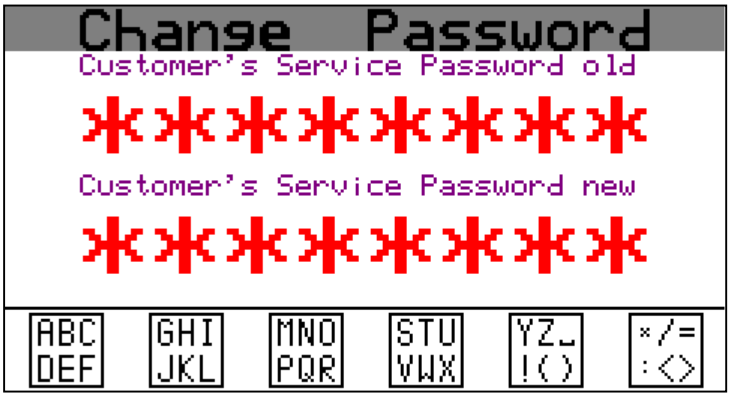
Select a function by means of the **CURSOR-keys**.



The selected function item is started by pressing the **ENTER-key**.

The password is changed in both functions according to the same systematics. It is described with the help of an example for the change of a "Customer's service password" as follows. The change of "Database Password" and "User-Administration-Password" are performed analogously.

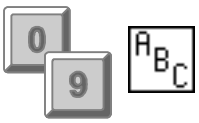
After selection of the function the following screen is shown in the display.



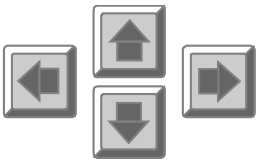
In order to change a password, the old password (,i.e. the current password, which is to be changed,) and the new password (,which is to be used in the future) have to be entered into the respective fields.

All strings produced via numeric keys and function keys are permissable. A string may not contain more than 8 characters. The entry of the passwords occurs hidden, i.e. in order to protect against unauthorized viewing, instead of the entered character a star (*) is put out on the display.

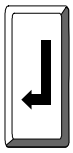
Input: Change password



Input of password.



The input fields for old password and new password are changed by pressing the **CURSOR-keys**.



The entered change of the password is taken over by pressing the **ENTER-key**.

The process is aborted. The settings remain unchanged. The previous screen is shown.

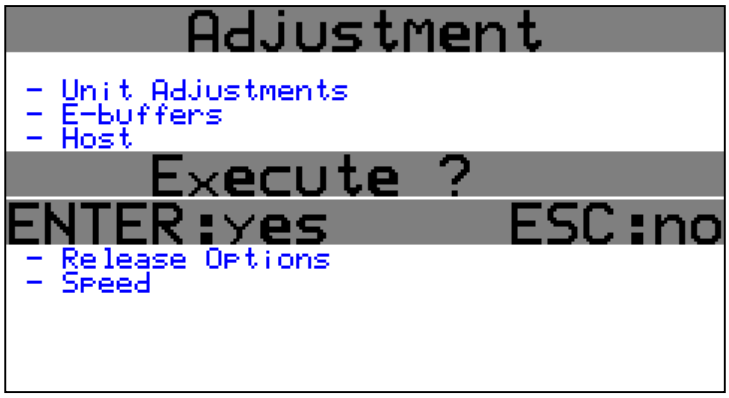
ATTENTION !

It is mandatory that the new password has been entered into the provided field, before pressing the ENTER-key, since otherwise the access is no longer protected by a password.

6.3.7 Delete Database

The function "Delete Database" deletes the database buffer of the internal "Article Storage Location Administration "DB2000".

After the selection of the function "Delete Database" in the menu "Adjustment" the following query is shown in the operator panel display.



Input:

ESC The process is aborted. The previous screen is shown.

Starting of the deletion process by pressing the **ENTER-key**.

After the deletion, the screen "Adjustment" is shown again in the operator panel display.

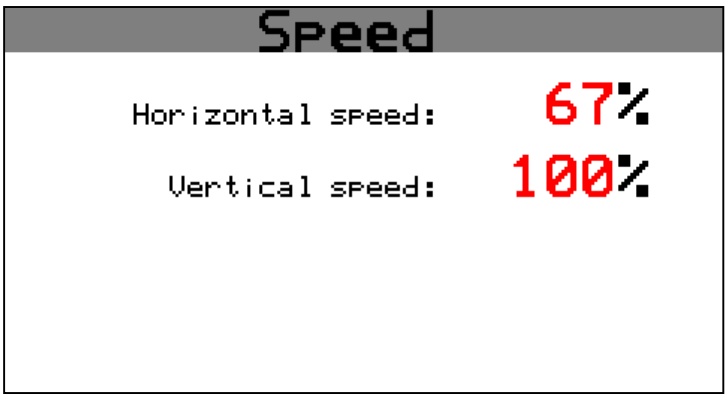
6.3.8 Setup of Travel Speed

The maximum travel speed for the extractor and lift can be defined, within the range of 10-100%.

This functionality can be necessary, e.g. for storage of sensitive parts, liquids, etc.

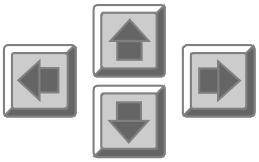
Setup of standard values for the horizontal and vertical speeds.

In chap. „Modify trays“ , these values can be individually adjusted for each tray.

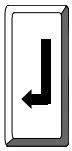


Input:

Enter values for
- Horizontal speed ➔ Extractor and
- Vertical speed ➔ Lift



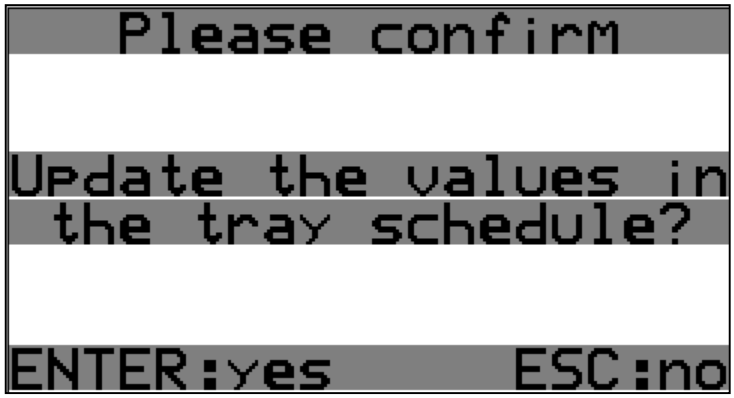
With these keys it is possible to switch back and forth between the entry fields with the CURSOR-keys.



Entries are taken over and saved.

The process has been aborted. The setups remain intact.

In case modifications were made regarding vertical or horizontal speed (or both), followed by pressing of the [ENTER] button, the following message is displayed:



When [ENTER] button is pressed again, all trays with old horizontal and vertical speed standard value allocations are updated to after-modification speed.

Example:

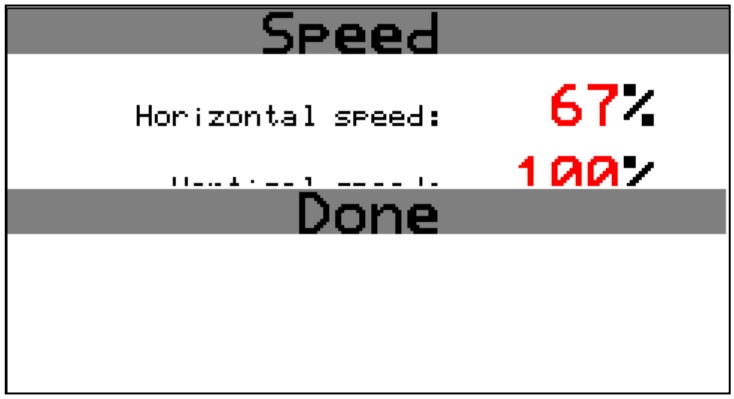
Modifications of standard values in mask "speed"

horizontal speed:	50% (old)	⇒	67% (new)
vertical speed:	70% (old)	⇒	100% (new)

Details tray table:

	before modification		after modification	
tray-number	old horizontal speed	new horizontal speed	old vertical speed	new vertical speed
1	50%	70%	67%	100%
2	50%	20%	67%	20%
3	20%	70%	20%	100%
4	80%	60%	80%	60%

After modifications to the tray table, the following message is displayed for a short time:

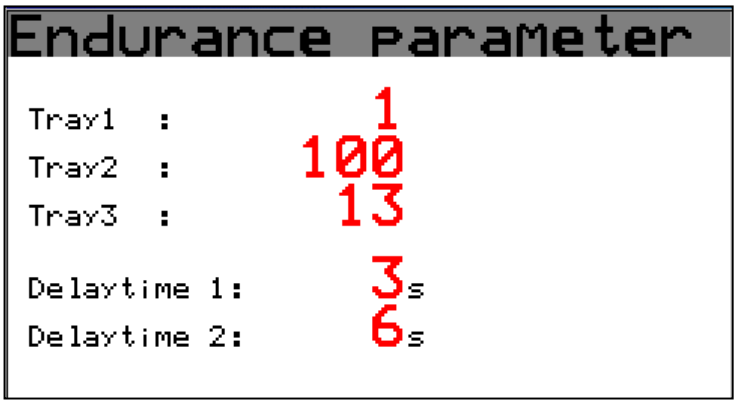


6.4 Endurance Run

For demonstrating and testing purposes there is an endurance run available, which is started in the menu "Endurance Run".

The menu "Endurance Run" is called up by pressing the function key reserved by  .
This menu is only accessible to authorized service technicians! Without authorization, the message "Access denied" is shown.

After selection of the function, the entry screen "Endurance parameter" is shown.




In this screen, values for the following parameters of the endurance run have to be entered:

- Definition of tray numbers for the max. 3 trays used by the endurance-run function.

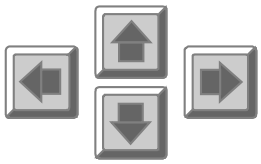
- Delay time 1: This is the time (in seconds), which the machine uses to pause before the (n+1)th retrieval. (n = 0, 2, 4, 6, ...)

- Delay time 2: This is the time (in seconds), which the machine uses to pause before the (n+2)th retrieval. (n = 0, 2, 4, 6, ...)

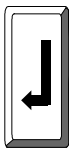
Abortion of function "endurance run". Possible only, if a tray is sitting in the access opening.

Input: Endurance Run (Parameters and Start)

The values of the endurance run parameters have to be entered by means of the numeric keys.



The switch from one input field to another is effected by means of the cursor keys.



The endurance run is started and carried out according to the set values.

During the endurance run the "Positioning Screen" is shown in the display of the operator panel.

ATTENTION!

While an endurance run is performed, the machine moves automatically, therefore it is especially important to assure that sufficient safety measures are taken. Persons or objects have to be prevented from entering the access area by appropriate barring and displaying of information signs. During the endurance run, the machine should not be without supervision.

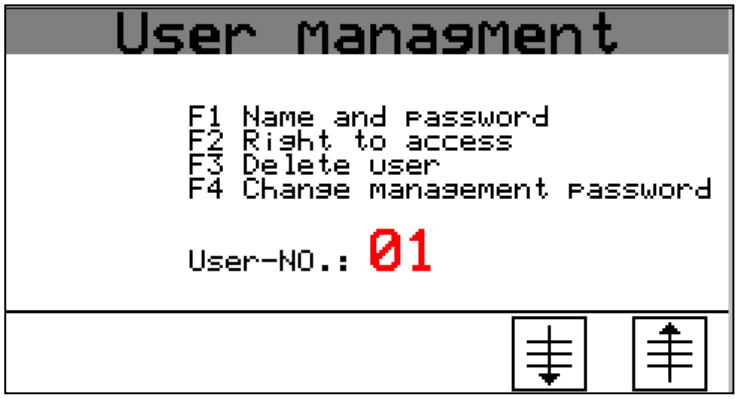
The endurance run can only be concluded, if a tray is located in the access opening.

The endurance run is aborted.

After the endurance run has been aborted, the screen "Endurance parameter" is shown again on the operator panel display.

6.5 User Administration

Ein Zugriff in die Benutzerverwaltung erfolgt nur durch den Verwalter oder dem Servicetechniker.
Siehe Anhang D „Benutzerverwaltung“



6.6 Save Service Date

The control C2000 stores the machine’s operational data with reference to the last initialization and the last service. These data can be shown in the menu "Information. In order to communicate to the control that a service has taken place, the function "Save Service Date” must be performed.

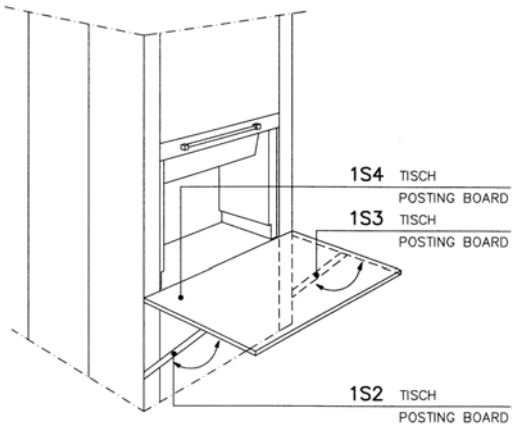
The function "Save Service Date" is selected by pressing the function key. 
This function is only accessible to an authorized service technician!

The function "Save Service Date" allows the service technician to leave the service mode without having to turn off the machine (log-in ID. is reset, the service mode is accessible only by re-entry of the password).

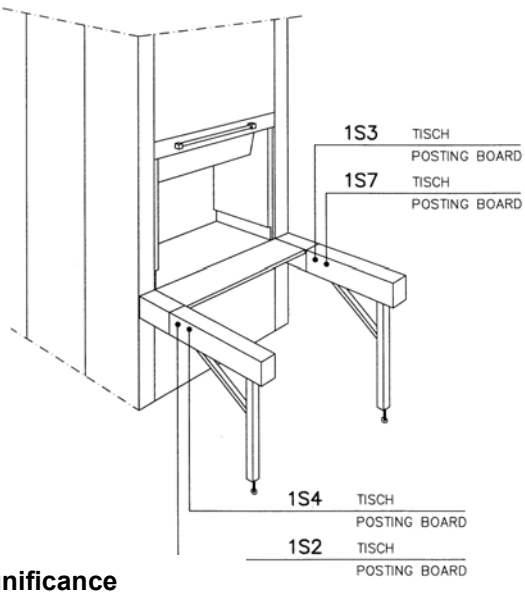
A General Information concerning option „Hinged Table“

The hinged table is mounted to the access opening. If the table is folded up and latched correctly and the table option on the operator panel has been released, the tray, which has already been transported to the access opening, will be unlatched.
The operator can then extract the tray from the access opening of the unit on to the table.

SHUTTLE 250



SHUTTLE 500



Switch	**Significance**
1S2 and 1S3	table folded up
1S4 or (1S4 and 1S7)	table folded down

Software Requirements

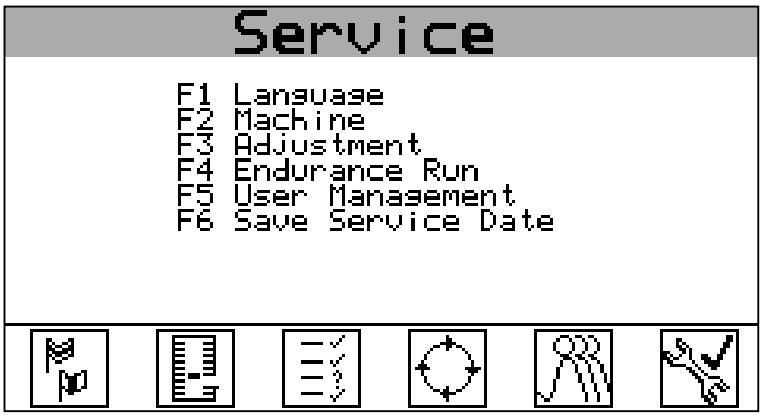
Activaton of the hinged table, requires the following software versions:

- CPU-Software C2S-01.03.01-00 or higher version
- OP-Software 1S08 or higher version

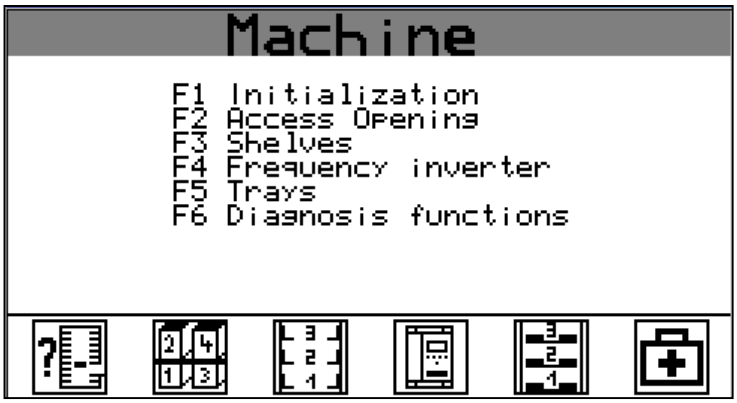
Release of Option *Hinged Table*

Activation of this option requires prior release. Release is effected via menu *Service, Unit, Retrieval*

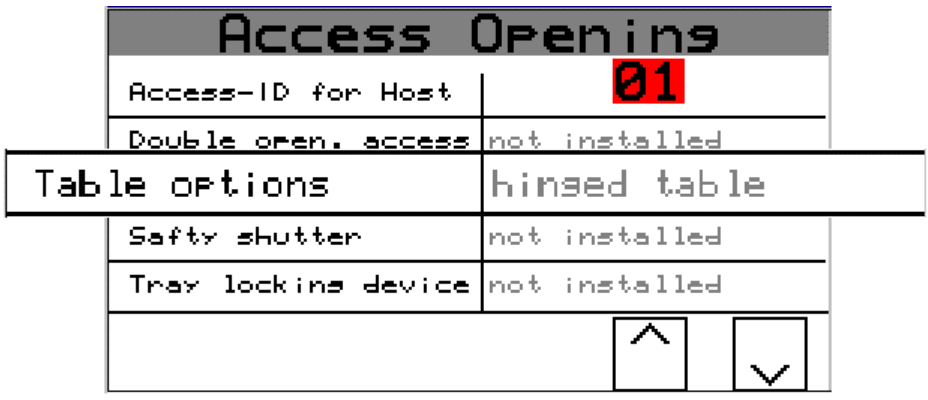
Press function key [F2].



Press function key [F2].



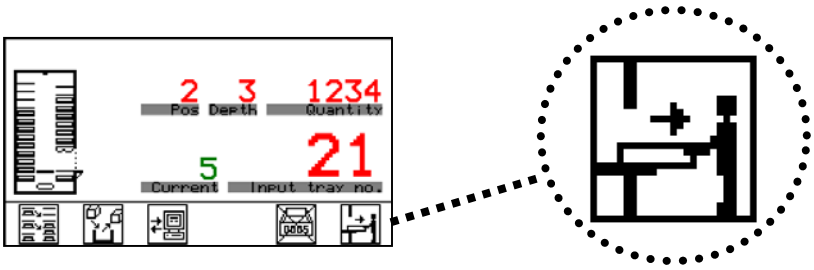
Move cursor towards menu item *Table Options* and press functions keys [F5] or [F6] to choose option *Hinged Table*. Confirm with [ENTER]-button.



Enter [ESC]-button three times to return to the Basic Menu.

Operational Modes

Table option *Hinged Table* has not been released or table is folded down
A try, which sits in the access opening can be manually unlatched by activation of function key [F6] in Manual Mode.



If this tray is then completely removed from the access opening, the current tray number is deleted from both tray table and display. The tray is therefore retrieved and has become invalid for the control system.
When restoring this tray, the number must be re-entered.

Table option *Hinged Table* has been released and table is correctly folded up
Immediately after the machine operator has ordered a tray into the access opening via the manual, host or data base menu, the current status of the table is evaluated by the control system.
If the table is properly locked, the tray is unlatched automatically and is ready to be transferred on to the table. The number assigned to this tray remains valid for the control system.
Should one of the errors listed below appear, the tray will remain locked

Options for unlatching a tray

In order to transfer a tray on to the table, the tray must have been previously unlocked

1. Option:
   A tray, which has been previously transferred into the access opening, is automatically unlocked via the manual, host or data base menu if the table is completely folded up, correctly latched and the table option in the display unit of the software has been released.
2. Option
   In hand mode a tray sitting in the access opening is unlatched manually, when function key [F6] is activated.

Restoring an unlatched tray

A tray can only be restored if it is positioned completely in the access opening. If the tray (or part thereof) is still on the table, the following message appears:

After a tray has been transported into the access opening, it will be restored when the [ENTER]-key is pressed.

Possible error conditions

When, in manual mode, a tray was supposed to be unlatched via activation of function key [F6], the following error codes can be displayed.

1. Error message:

```
Table not locked in
an endposition  1919
```

Cause:
Table is in intermediate position
Switches 1S2 and 1S3 were not activated or switches 1S4 o 1S4 / 1S7 are not occupied.
(see mechanical draft)

2. Error message:

```
Tableposition wrong
HARDWARE-ERROR  1934
```

Cause:
Table position not definded / switches defect
Switches 1S2 and 1S3 as well as switches 1S4 and/or 1S4 / 1S7 are switched.
(see mechanical draft)

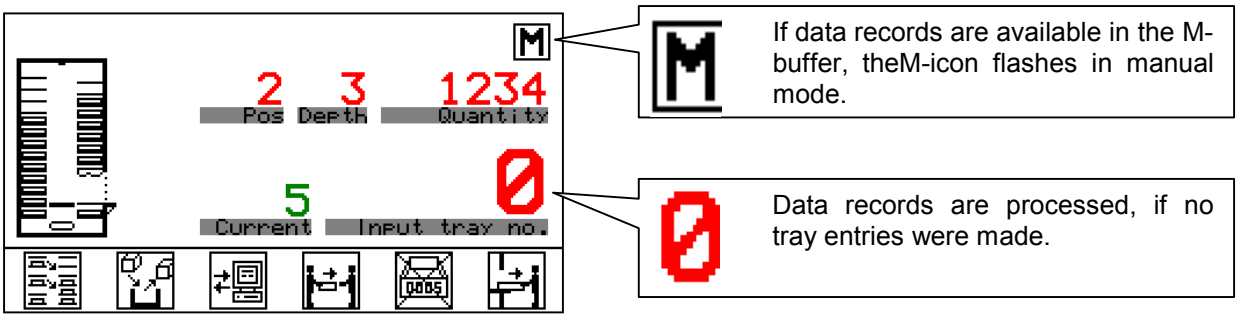
Remedy:
Check switches 1S2 und 1S3 as well as switches 1S4 and/or 1S4 / 1S7.
The switches 1S2 und 1S3 are connected in series and wired to IN 24.
The switches 1S4 und 1S7 are connected in series and wired to IN 25.
Die inputs IN24 und IN25 on the MIF GS201(Machine-Interface) must have the following conditions:

input **IN 25**	input **IN 24**	condition **IN 25**	condition **IN 25**	**meaning**
logical 0	logical 1	green LED an	green LED aus	table up
logical 1	logical 0	green LED aus	green LED ein	table down

B M-buffer function

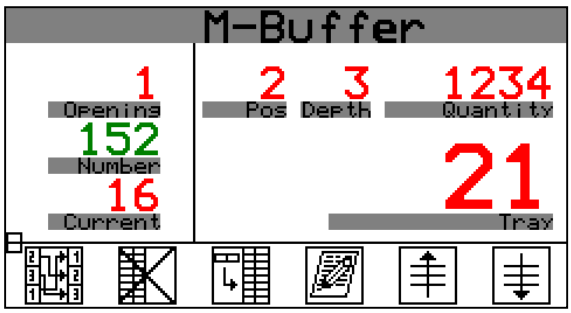
Available with firmware version 02.04.00-00

In **M**anual **buffer** as many as 200 location data lines can be stored. It is possible to scroll through the list and modify, attach or delete datalines.
In case there are data stored in the M-buffer, they can be executed sequentially in manual mode. A dataline is deleted from the M-buffer, when the destination is reached



How to activate the M-buffer menu

In manual mode an M-icon is displayed. Select this icon with the cursor keys and confirm with ENTER key to activate the M-buffer menu.

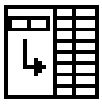


Access **Selecting an access opening**

Selecting an access opening in a unit with multiple access openings.
The M-buffer can be processed for each access opening individually.

Topical **Selecting a data record**

Displays the data record currently being processed. Use this field to select a data record.



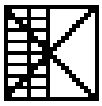
Inserting a data record

A data record is inserted before the data record currently on display in the M-buffer list

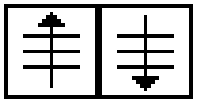
Modifying a data record

A currently displayed data record is modified.

Deleting a data record
The current data record is deleted in the M-buffer list



Deleting the M-buffer
All entries in the M-buffer list of the current access opening are deleted.



Scrolling the M-buffer
Scrolling in the M-buffer list of the current access opening

Sorting the M-buffer

- sorting tray numbers in ascending order
- sorting shelf numbers in ascending order

C Data Backup on PC-Flash-Card

Option ***PC-Card-Memory*** enables a data backup of DB2000-article –storage location -data.

The backup is done manually, this includes storing the data on ***PC-Card-Memory,*** „Backup**“**, as well as re-storing data back („Restore“) in case of loss of data in the control.

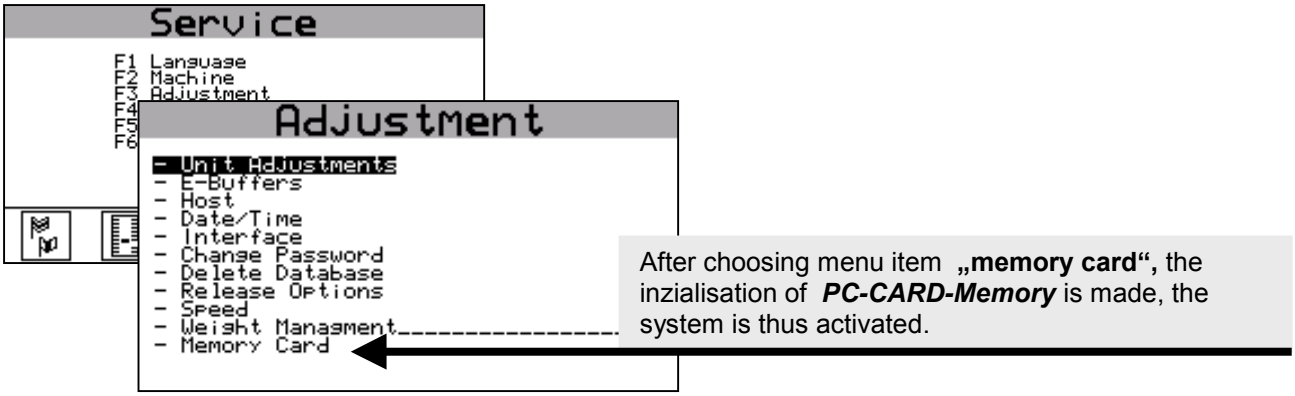
Automatic data backup is not possible with this option!

The PC-Flash-Card allows data storage of up to 5 units, and per unit, the creation of up to 5 backup generations.

Replaceable, flexible ***PC-Flash-Cards*** are used as storage medium.

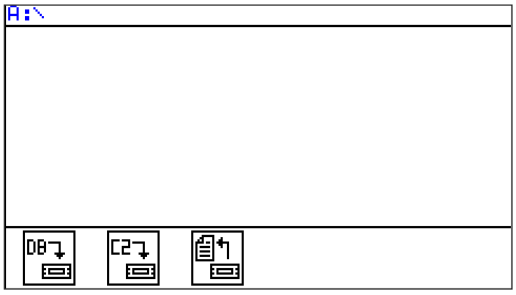
The ***PC-Card-Memory*** is connected via an adapter to the and can be activated in the relevant service menu of the OP2000 by an authorized service technician.

How to activate the backup editor



Once the PC-card editor is activated, the menu switches over to data-backup editor.

How to operate the back-up editor

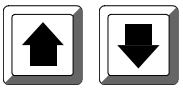


The mask shows no entry, i. e. data have not been stored on the Flash-Card!

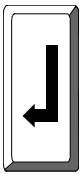
Restore data from the Flash-Card

Backup C2 – is not supported with this firmware version!!!

Backup DB – Backup of DB2000-data on Flash-Card



Select an entry in the editor



Change into selected (sub)-directory

Quit function, and change into superior directory

Backup of DB2000 data

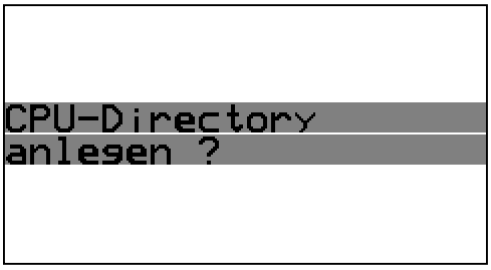
The DB2000-data structure is divided in 3 blocks (files) – these are stored.

ARTICLES.DB	article data
POSITION.DB	storage location data
SIZES.DB	location size

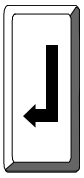
DB2000- Backup

Creating a file

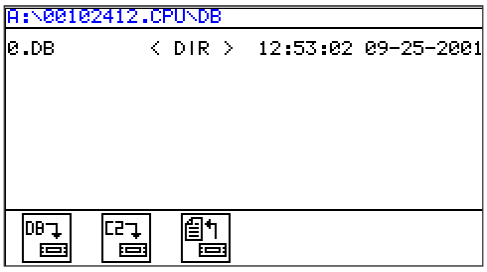
The structure on the Flash-Card is comparable with the PC-DOS- or Windows-file-structure on a hard disk or disk, i. e. files are stored in pre-defined directories. The name of directories results from the CPU-Number of the control.



Quit function, a directory has not been set up !



Confirmation, a directory is set up

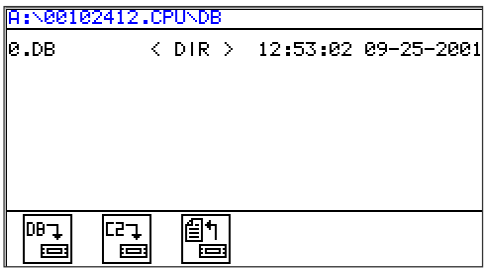


The following information is displayed:

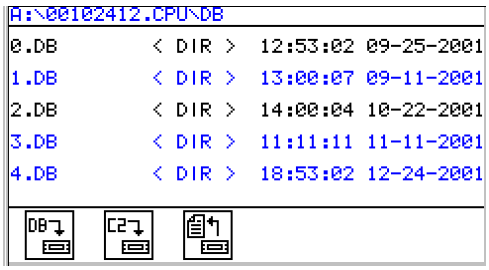
A:\00102412.CPU\DB	Directory
00102412	CPU number of unit with data backup
DB	sub directory, marks data backup
0.DB	Backup generation 0 (0...99999999) **.** DB2000 data
< DIR >	Directory (in case of a file, its size is indicated)
09-25-2001 12:53:02	date and time when directory was set up

How to create a Backup generation

Maximum 5 backup-generations of 5 units can be stored, beginning with generation 0 (file: 0.DB).
From the 6th backup-generation, the oldest generation is deleted automatically and the new one is stored according to the principle „Child-Father-Grandfather ...“



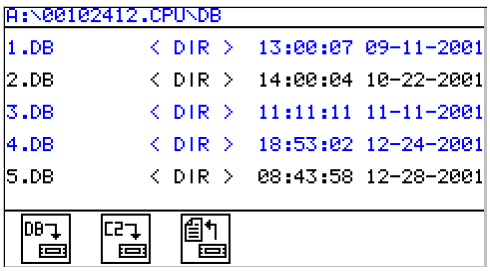
1. Data backup ➔ ***0.DB***



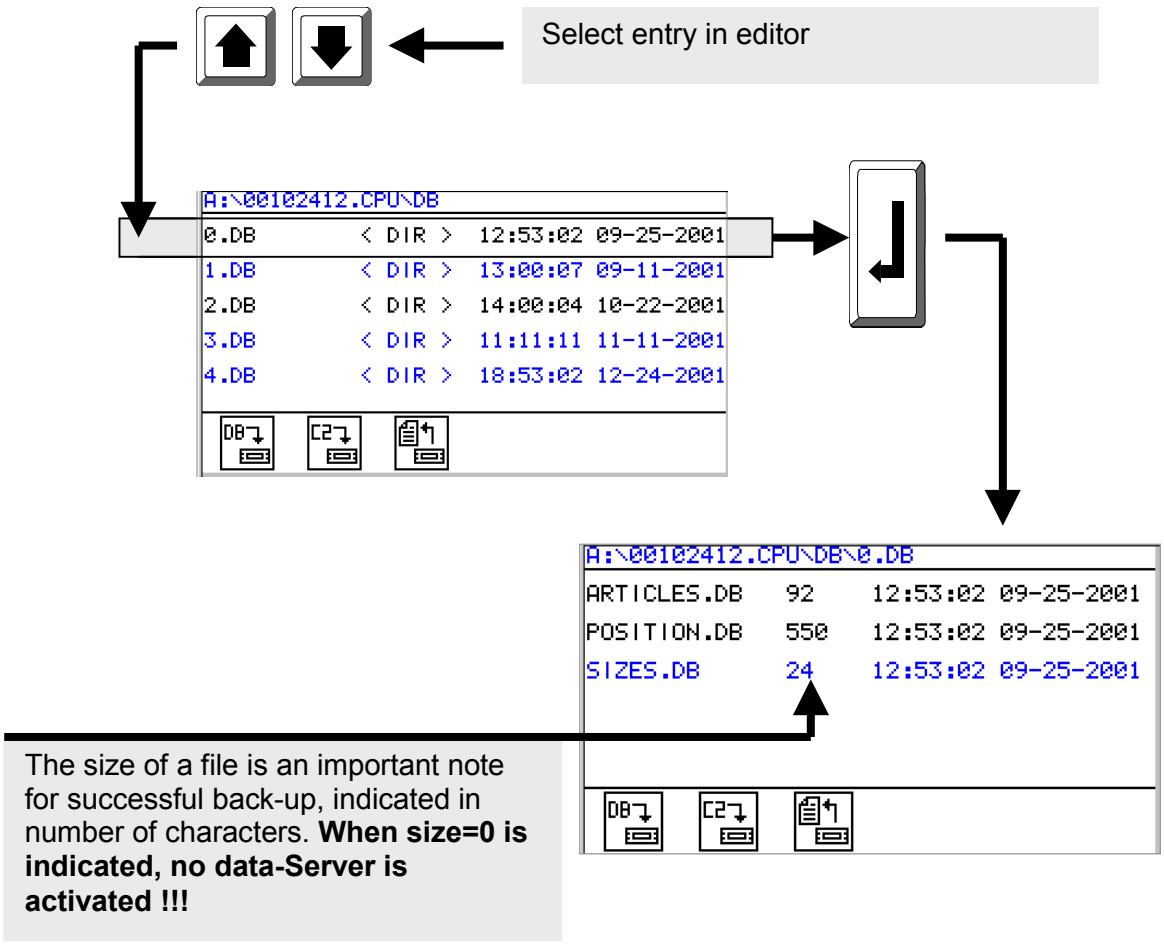
After the 5th data backup
➔ ***0.DB*** ***4.DB***

After the 6th backup

The 'oldest' backup ***0.DB***
is deleted, the 'new' backup ***5.DB*** is stored ➔ ***1.DB*** ***5.DB***



Select / mark a directory and press return key to display the stored files.

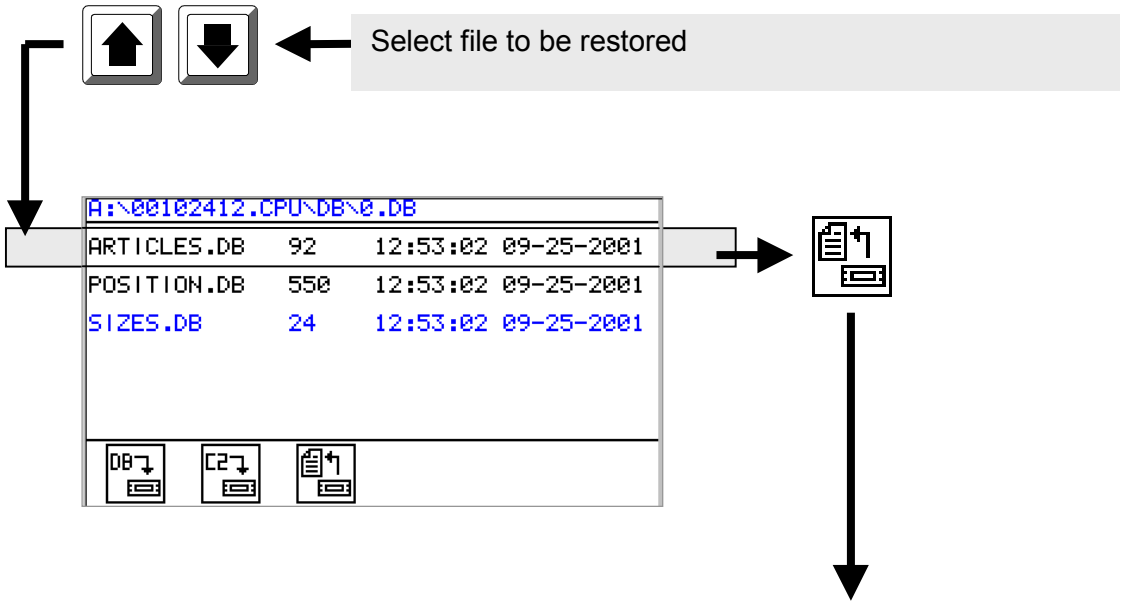


The size of a file is an important note for successful back-up, indicated in number of characters. **When size=0 is indicated, no data-Server is activated !!!**

Restore DB2000 data

DB2000 – Restore

The files can be individually restored into the memory of the C2000.



A marked file is restored into the control by the PC-CARD-data backup.
With successful restorage, the following message is displayed „***done***“.

Error-No.	Description::
100	File name has no correct extension
101	File name is illegal
102	File name contains illegal characters.
103	File name contains more than 8 characters
104	Path contains illegal characters
105	Drive name contains illegal characters
106	Drive name contains no back-slash \.
107	When testing the extension, an illegal character was recognised
108	When testing the extension, more than 3 characters were recognised
109	When extracting the path, no extension and no file name were recognised
110	File name has no correct extension
111	Logical path is incorrect
112	Maximum Backup files (99999999) reached REMEDY: 99999999 re-name to 4 99999998 re-name to 3, etc.
113	Target could not be opened on RAM-Disk (C2000)
114	Target could not be closed on RAM-Disk (C2000)
115	Old database backup could not be deleted
116	Old C2000 backup version could not be deleted (with next release)
117	Maximum number of backup files or paths was reached
118	An authorised attempt was made to re-store a file (either no *.dat extension or incorrect CPU-number).
119	It was recognised that a CPU number is not compatible with the machine..

D User management for SHUTTLE NT

User management determines and controls access to a unit, i.e. it authorises or denies access to individual users.

It is possible to administer a maximum of 30 users names.

Each user must once be made known to the control by the administrator. Via a special „administrator password," the administrator gains access to the initialisation area of the user management.

For each single user, the administrator can:

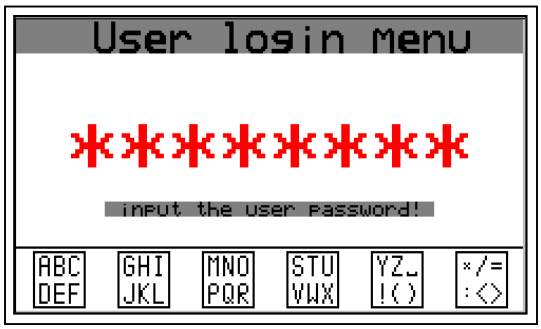
- release / deny an access opening
- release / deny access to a tray or part of a tray
- release / deny sub-menus „Host communication", „basic operation", „DB2000-data base".

Unit operation with active user management

A user is registered via a user password which has previously been determined by the administrator.

Registration can take place via:

- data entry into the OP2000 keyboard
- barcode reader and the respective barcode labels
- chip card reader and the respective chip cards

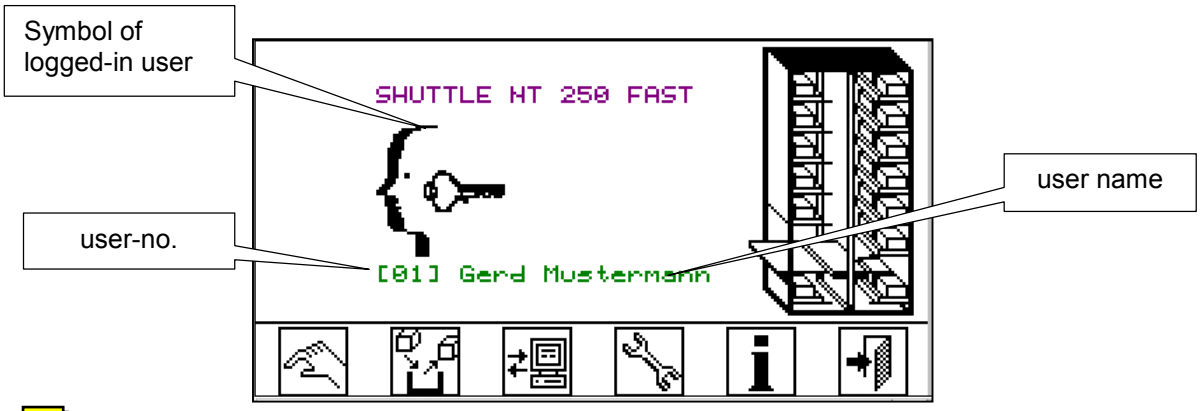


If the entered password is recognised by the control, the user enters the basic menu. In accordance with the user rights previously determined, the unit is now ready for further operation.

Main Menu Selection

From this menu, 5 main menus are selected.

The main-menu selection screen can be selected from every submenu by pressing (multiple times, if necessary) the ESC key.



Input: **Function key**

Branching into the main menus.
Note: Branching is possible only if the user has the respective access authorization.

Select **"Basic Operation"** (Manual Mode).

"Article-Storage-Administration – DB2000" (Option).

"Host Communication

"Service Mode

"Information system

User log-out
After log-out, the user log-in mask is displayed the operator panel, the unit is now ready for user log-in again.

Denying / releasing access rights to sub-menus

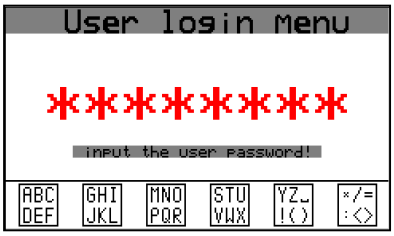
The administrator can deny /release access to the following sub-menus:

- Basic operation – manual mode
- Article–storage-administration
- Host communication

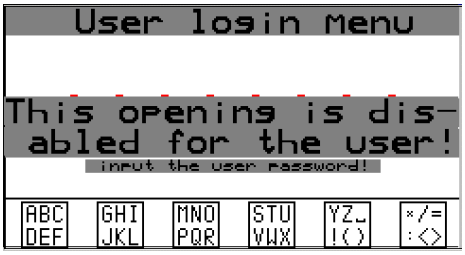
If access is denied to one of the above-mentioned sub-menus, the following message is displayed after pressing the respective function keys:

Denying access to individual users

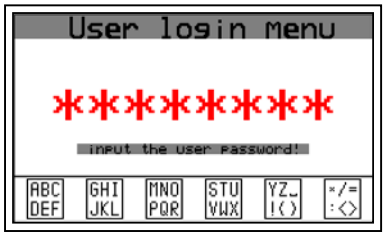
The administrator can deny access to any user.



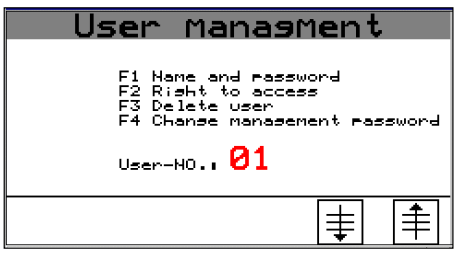
After entering the password and confirmation with the [ENTER]–button, the following message is displayed:



The administrator registers by entering his administrator password.

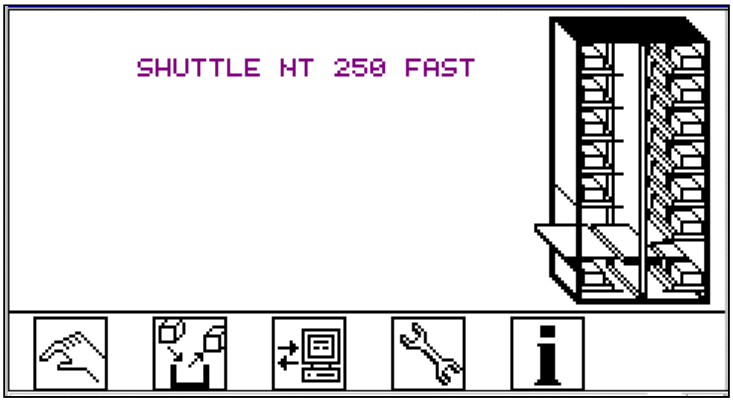


If the entered password is recognised by the control, the administrator directly enters the user administration area. Here, he can assign/define user and access rights, introduce new users to the control and delete existing ones.

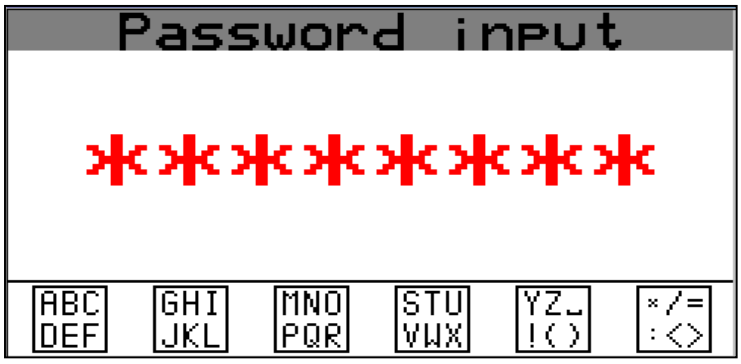


Administrator Rights

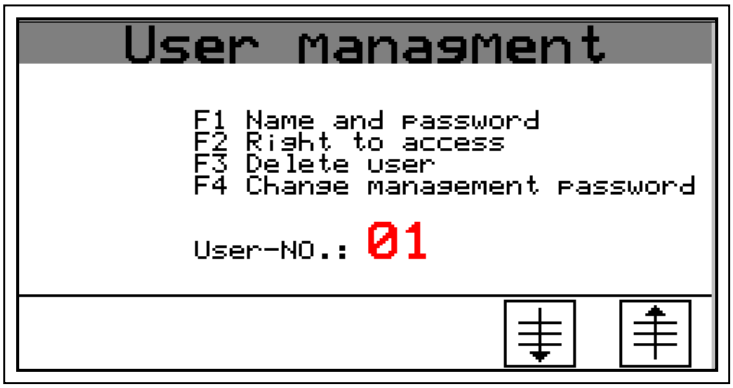
First it is necessary to authorise a person as administrator. The administrator cannot operate the unit with his password. He can only use his password to enter, modify of delete user names.
If user names have not been entered, the basic menu is displayed directly.



The administrator presses function key [F4] to call up **Service-Mode**.



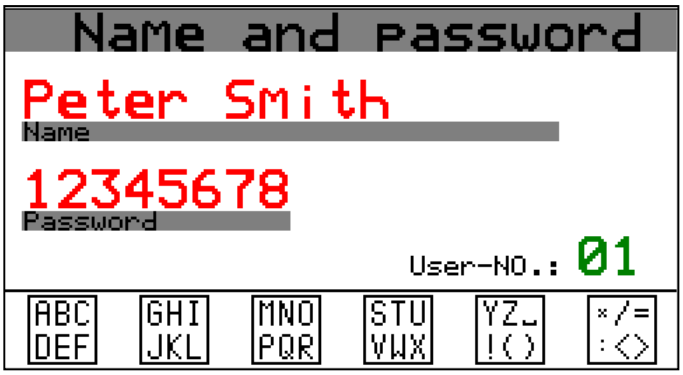
Enter user administration password **007** to activate User management.



If this menu is activated, the administrator can reach other menus by pressing the respective function keys. He chooses the respective users by pressing function keys [F5] and [F6] or by entering a number between 1 and 30.

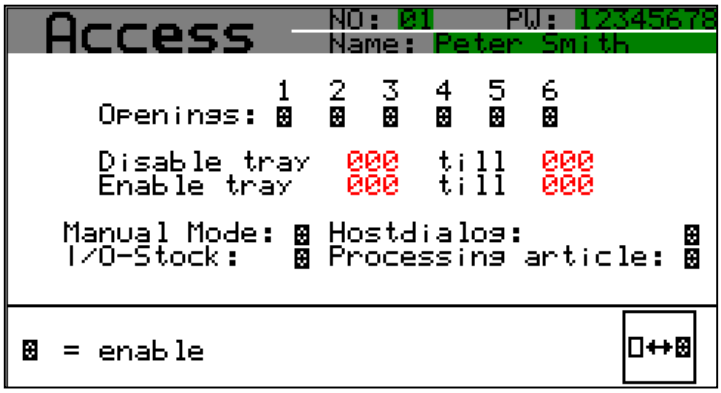
Enter new user name

In order to enter a new user name, enter a number between 1 and 30 and press the [ENTER]-button.
Then press function key [F1] and enter a user name and password.



The name can consist of maximum 16 alphanumeric digits (optional).
The password must consist of minimum 3 alphanumeric digits and can consist of maximum 8 digits.

Enter a new user name and press the [ENTER]-button. The menu for the assignment of access rights is displayed.



When this menu appears for the first time, the following settings have already been determined for the selected user:

- Release of all access openings.
  User can log in all 6 access openings
- Release of Manual Mode
  In Manual Mode, a user can retrieve and restore individual trays
- Release of Host Dialogue
  Host dialogue is accessible from basic menu.
- Release of functions of the Database option
  It is possible to retrieve, restore and administer articles
- **all trays are blocked !**

In order to release trays for the selected user, move the cursor to menu item *Release trays*.
Use numeric keys to enter beginning of the area , move cursor to the right and enter end of the area.

After moving the cursor to the relevant position, it is possible to lock/release retrievals and different modes by pressing function key [F6].

Press the [ENTER]-key to store modifications. To escape this menu, press the [ESC]-button.

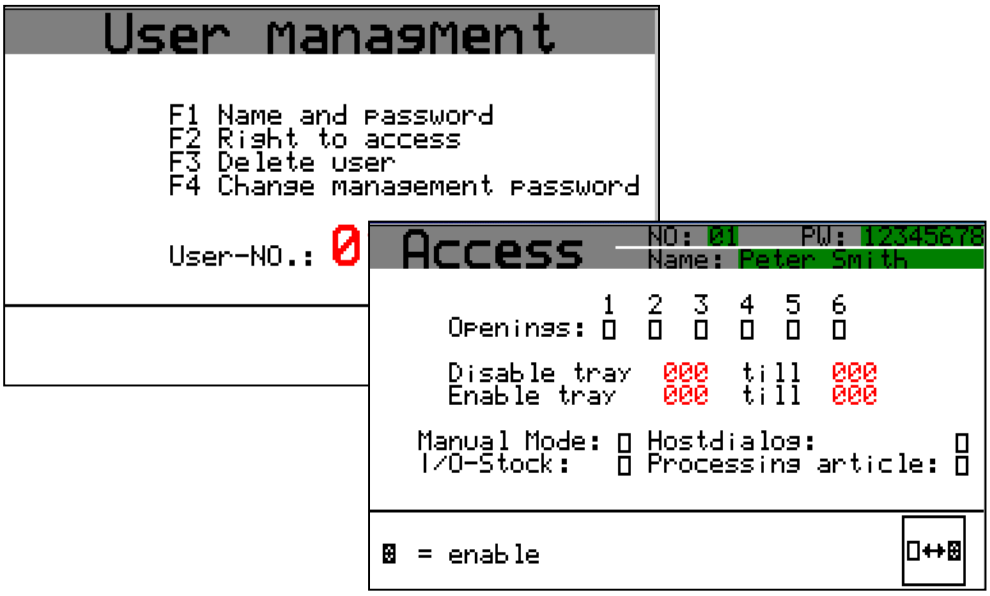
Change User Name and/or Password

Press function key [F1] to activate the menu in which it is possible to change a user name and/or password.

Press the [ENTER]-button to store all modifications.
Press the [ESC]-button to return to menu 'User management'.

Change Access Rights

Select user.
Press function key [F2] to activate the menu in which it is possible to change the access rights.



By pressing function key [F6]. it is possible to release/lock all functions mentioned, with the exception of tray release/ tray lock (disable tray / enable tray) 'Release' ('enable') is marked with a cross.

Release or Block Access Area

A user can only log on in an access area which has been released to him.
Example:
Access areas 2 to 6 have been released, access area 1 is blocked. If a user tries to log on in access area 1, the following message is displayed:
Access denied to user!

Block Tray

To block a selected range of trays, it is necessary to enter the numbers of the first and the last tray.
Example:
Enter selected range *Block Trays 1 to 10*

To block one tray only, entry of one value only is sufficient
Example:
Enter *Block trays 1 to 0*

If a user tries to retrieve a blocked tray into the access opening, the following message is displayed:
Tray denied to user!

Release Tray

To release a selected range, enter numbers of the first and the last tray.
Example:
Enter selected range *Release trays 5 to 15*

To release one tray only, entry of one value only is sufficient
Example
Enter *Release trays 1 to 0*

Release or lock Manual Mode

If this mode is released, the user can perform basic operations.

Release or lock Host Dialogue

If this dialogue is released, the operator can receive and process information from a supervisory computer system via host communication.

Release or lock Storage and Retrieval

If this option is released, the operator can store and retrieve articles in the Article Storage Location Administration.
This option is in preparation!

Process articles

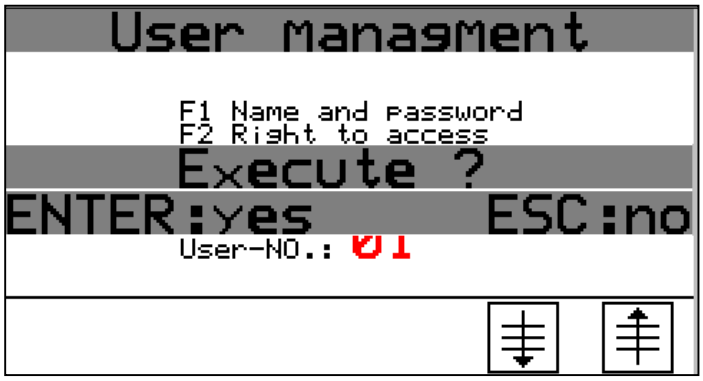
If this option is released, the operator can process articles in the Article Storage Location Administration.
This option is in preparation!

NOTE:

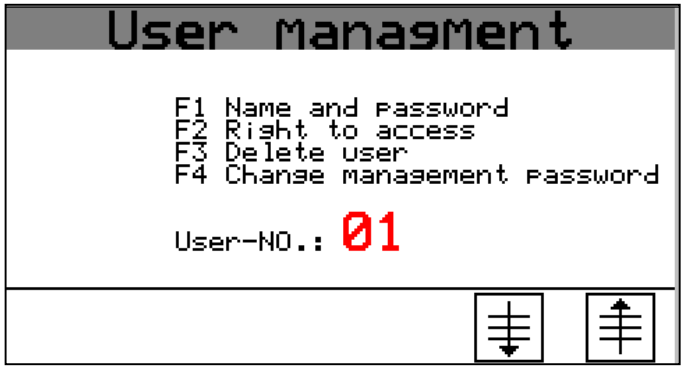
Press [ENTER]-button to store all modifications.
Press the [ESC]-button to enter User management.

Delete User

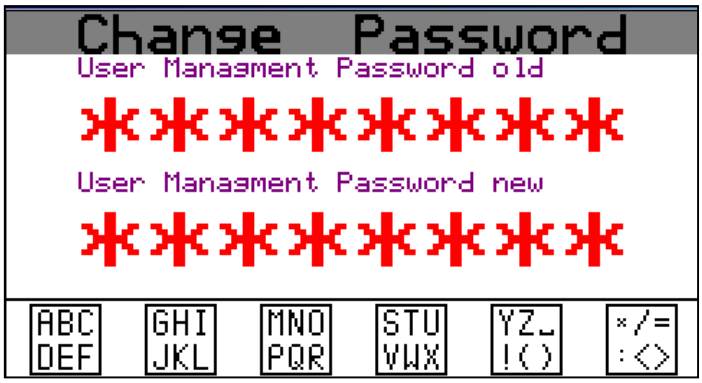
Select user. After pressing function key [F3] the following message is displayed
ENTER: yes ESC: no.
Press the [ENTER]-button to delete the current user.



Change User Administrator Password



Press function key [F4] to change to Change Password menu



To change the User Management password, the old password and the new password must be entered into the corresponding fields. Data are entered with hidden letters and can be alphanumeric.
Press [ENTER]-button to return to menu 'User Management'.

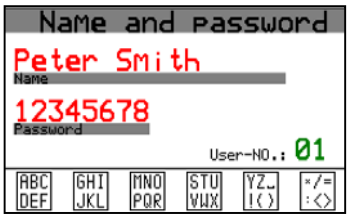
User management with external periphery

Apart from entering data directly into OP2000, user registration is also possible via a barcode or chip card reader.

The input devices are connected to control C2000 via serial interface RS232. Each required interface channel must be initialised before first application of the reading devices.

Barcode reader

When storing, modifying and registering a user, it is possible enter the user password via barcode reader,



Chip card reader

A user can register at a unit via chip card or, as the standard feature, by entering his password into the operator panel log-on mask.

This option is available with firmware version

➔ Shuttle **02.04.00**

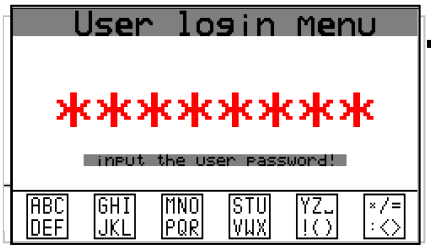
User name and an individually assigned user password are stored on the chip card. During log-on, these data are transmitted to the user administration.

These identity cards are equipped with an integrated chip, comparable with telephone, insurance or company cards or similar means of identification.

Reading a chip card – User registration

A user has activated the log-on mask in 'User Management'.

(for testing purposes: Quit ' User Management' and, in menu 'Service', press function key F6 – „Save *Service Data*“)



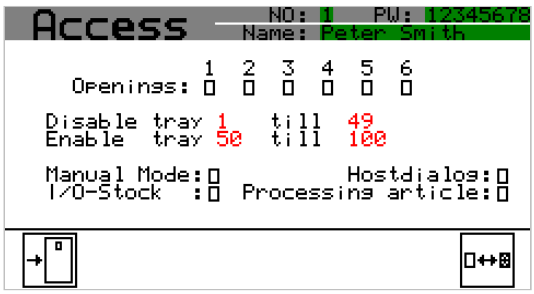
If the recorded chip card is correctly inserted into the chip card reader,

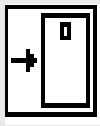
the basic menu is displayed along with the user name.

Recording a chip card

In menu „*Service- User Management“,* sub-menu *„Name and password“* is activated
Here, all user-relevant data (user name and password) are assigned.

Press „ENTER“ to change over to menu „*Access“.*

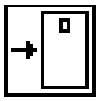




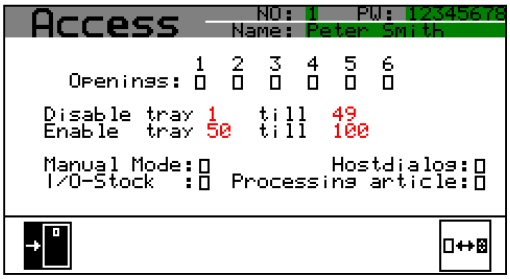
After correct connection and configuration of the chip card reader, the symbol of a chip card is displayed..

	If the chip card symbol is not available, activate menu „*Service- Adjustment- Interface- Serial- set Parameter“* and check the configuration.

Recording procedure

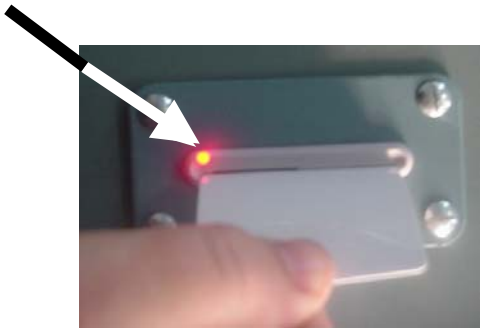


Press function key-
All relevant data are prepared to be recorded on to the chip card.
The symbol of the chip card is reversed and flashes.



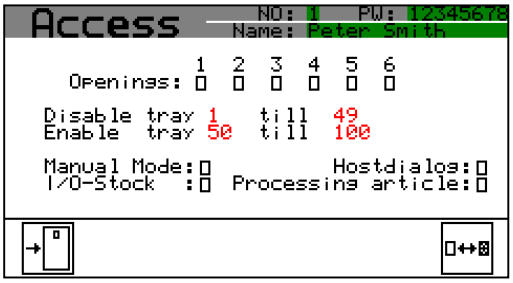
The symbol of the chip card is reversed and flashes.

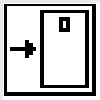
The chip card is inserted into the card reader, towards the LED.
If it is inserted correctly, the user password and name are stored on it. The LED is activated during the recording procedure.



The recording procedure lasts about one second. After recording has been completed, the LED is deactivated.
Remove the chip card from the chip card reader.

The user data are now stored on the chip card.





After the writing process has been completed, the chip card symbol returns to its normal state.

E Weight Management

Available with firmware version 02.04.00-00

Integrated weight management allows the operator to have both single tray load and total load of a unit displayed.
At the moment, it is possible to select between the following units of weight for load display: kilogram or pound.

Option 'Weight Management' can only be activated in units equipped with one single standard tray type: type 1, 2 or 3. It is not suitable for operations with different tray types!

Tray load and unit total load are determined when a tray is being stored / re-stored.
If tray load and unit total load are within the admissible limits, the tray is stored.

Option 'Weight Management' prevents a tray or the total unit from being overloaded.
In case of tray/unit overload, the tray is not re-stored and a message is displayed on the operator panel.

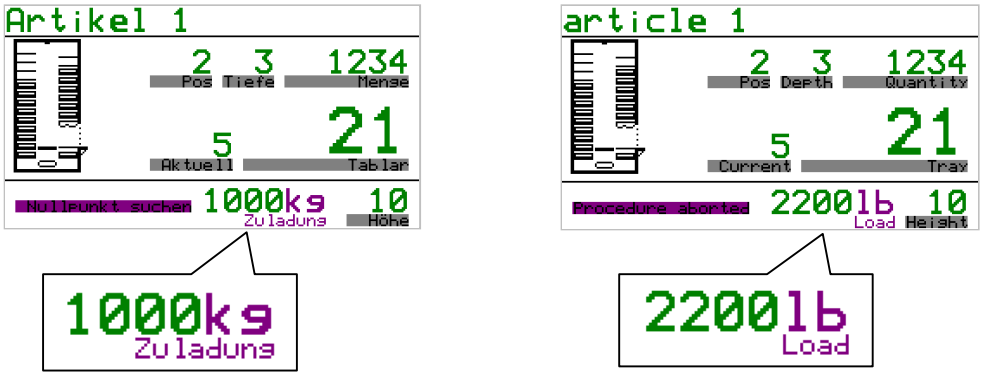
This functionality applies to the following operational sequences:

- when a tray is re-stored in ***Manual mode.***
- when a tray is re-stored during ***Host communication***
- during ***tray transfer*** between different access openings
- when a tray is re-stored in ***Article storage administration – DB 2000***
- when a tray is re-stored in sequence „***Learn tray“*** in height-optimized mode.

Weight display

Load weight is indicated on the OP 2000 display after the test run, during the re-storing process.

The operator can select a unit of weight - kilogram (kg) or pound (lb) - in menu *Service, Adjustment, Weight Management.*



Overload display

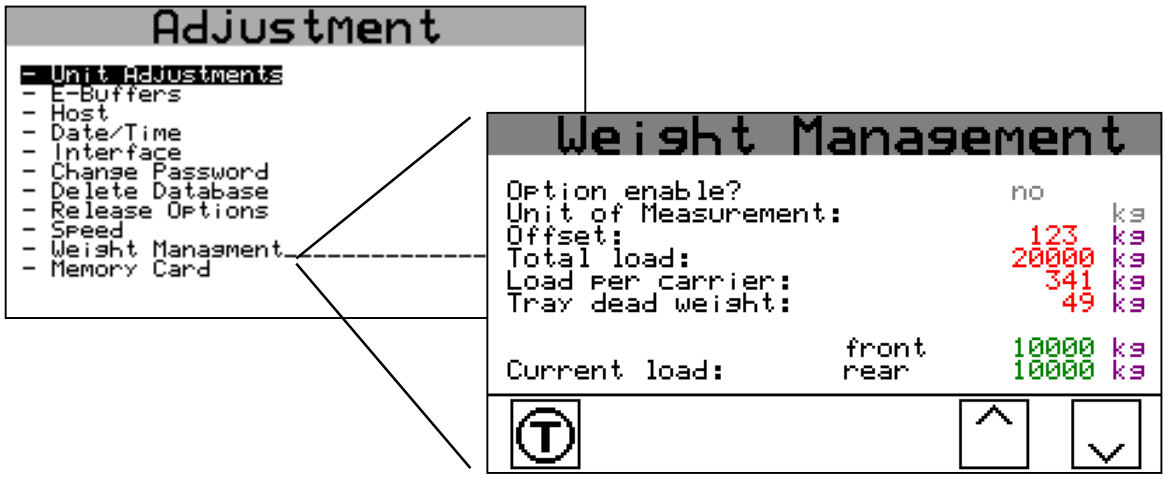
If the admissible tray load or the total admissible load capacity are exceeded, the tray is transported back into the access opening and the following error message is displayed:

Load per tray exceeded 1816	Tray load exceeds admissible tray load. Decrease tray load.
Total Load exceeded 1826	Total load of all tray exceeds admissible total load.

Activate / deactivate option 'Weight Management'

For some applications, active ' Weight Management' can be a disturbing element. In the following section, please find a description of how to activate / deactivate 'Weight Management'.

ATTENTION – With deactivated option „*Weight Management*“, there is NO control / monitoring of tray load or total unit !!



Select option „aktiv / not aktiv“.

Confirm selected entry in list.
Entry is valid

ESC

Quit function or change into superior directory.
Entry is not valid

The individual parameters have the following significance:

When entering the „Customer-Service password“, it is possible for the operator to define / alter these parameters .

Option enable (active) ?	Activate / deactivate option 'Weight Management'
Unit of weight	Unit of weight in load display: kilogram **kg** or pound **lb**

These parameters can only be defined / altered by an authorised service technician!

Offset	This parameter is automatically defined by the TARE-function. **Entry not required!**
Total load	The total load is the sum total of all admissible tray loads.. **This parameter must comply with the details on the type identification label. ENTRY REQUIRED!**
Admissible load per carrier	The load per carrier is the maximum average load per tray, which can be evenly distributed on the tray surface. **For trays with standard depths and widths, this parameter is automatically calculated!** **For trays with non-standard dimensions, this value must be entered manually, in compliance with the data sheet attached to the unit documentation**
Tray dead weight	To calculate the tray load, the tray dead weight is subtracted from the measured values. For trays with standard depths and widths, this parameter is automatically calculated! **For trays with non-standard dimensions, this value must be entered manually,** **in compliance with the data sheet attached to the unit documentation.**
current load front	This parameter is used to display the total load at the front side of the unit.
current load rear	This parameter is used to display the total load at the rear side of the unit.

F DB2000 - Guideline

The Guideline for DB2000 (database program for article and storage location management) is a product of GSS (see following page); GSS is therefore responsible for its contents and presentation.

KARDEX
ONE FOR ALL.
REMSTAR

DB 2000

Version 5

Guideline

Global Software Solutions GmbH

Im Bruch 2

D- 76744 Wörth/Rhein

DB2000LF_ENG_501

1 General Information

DB 2000 is a database program, which is responsible for **Article and Storage Management** with sophisticated mechanism for article storage.
DB 2000 stores the database information on the internal memory of the machine and may be used as a stand-alone system.
A comprehensive user management and two different operation modes ensure a high standard on functionality and security. Controlling the manual movement of the machine, a minimum quantity warning and the level partition are very important features in an interactive process. Working on the handy operation panel with integrated LCD display, you may manage static rags as well.

TCP/IP Networking is available to handle multiple DB2000 clients for a centralized database, either as several openings or as several shelves and units.

2 Routine

Control and operation is basically the same for all program screens. You'll find editable fields in red letters and non-editable fields in green letters.
In the standard hardware there is no alphanumerical keyboard and you'll insert the letters and signs with the help of the 6 function keys (F1 to F6) on the operator panel. The software controls the softkey´s function, which are explained by pictographs shown at the bottom edge of the display.

STARTING THE PROGRAM

If you'll start DB2000 the first time, system will ask you for Release Code.

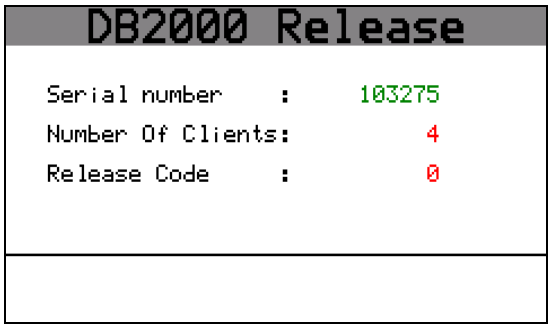


Figure 1: Release Code

DB2000 will be released on the DB2000 server. The **serial number** of the CPU of server machine will be displayed automatically on the mask (green letters signalizes: not editable).
Number of clients, determine the maximum number of DB2000 clients, which can work simultaneously.
The default value for standard license is 4. Insert the Release Code and press Enter key.
(Release Codes 0 and 99 are Demo Release Codes).

SETTINGS

In the settings dialog the technicians will confirm the operation mode.
- **„EASY"** for simple use or
- **„FULL"** for individual demands

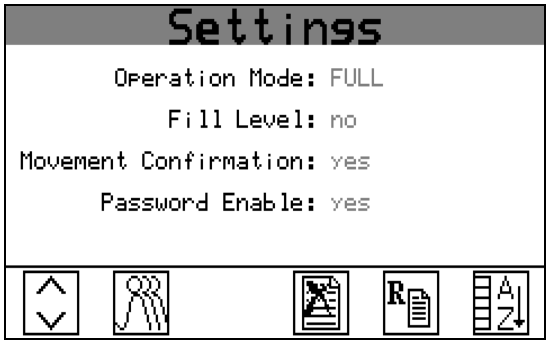


Figure 2: Settings dialog

F1 toggles the options. F2- will bring you to the user management.
F4- deletes database but keeps the setting's information. Pressing F5 function key, you can change release option.
Pressing the F6 function key on the settings dialog will Re-index the database.

Operating on **Easy Mode** and the fill level is „**yes**“ the manual input of storage location is required. The system will show you a location; you may select another multi-location by using F6 key. If there is no convenient location the value of Level/Pos/Depth will be filled with 0. If the ‘Fill Level’ is “**no**”; system first tries to find a proper location, and if there is one location, system moves to the location and waits for quantity.
If the Movement Confirmation setting is **‘yes’** system shows the proper location but machine will not move. User can choose another location or press Enter key to confirm.

USER MANAGEMENT.

The password has to be defined in one of the levels for users (OPERATOR, SUPERVISOR or SERVICE), 8 alphanumerical signs are possible (standard is 2000/operator and 752/Supervisor).

Figure 3: User Management

The operator only has access to input data and output data and lists while he cannot delete locations in the ‘Storage List’.

Figure 4: Starting screen with input field for the user name

DB2000 needs at least one User with ‘SUPERVISOR’ authority. Use F-5 and F-6 key to scroll the user’s list up or down. To remove a password please select the authority “None” and press the Enter key. If the User ID you type in is correct, the program will display the Main Menu with a list of functions.

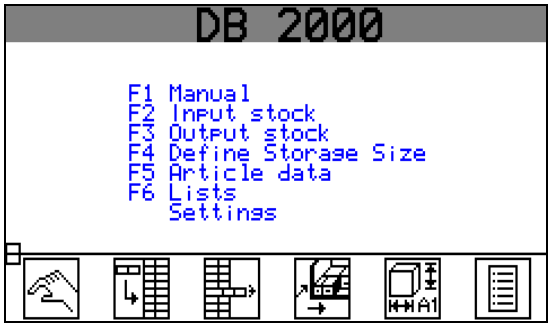


Figure 5: Main menu and its functions

Select the function via function key or arrow keys and consider that differing in operation mode and level of user different criteria are available. e.g. Storage size, Article Data and settings can only be defined with supervisor’s authority and for example storage size can not be defined in Easy Mode.

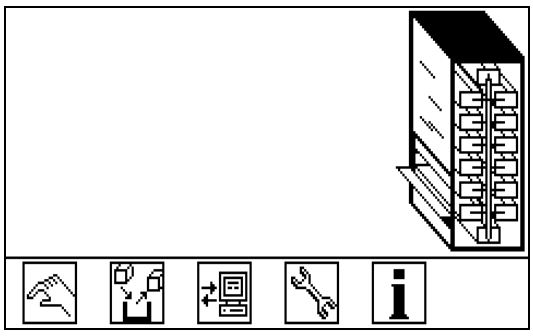


Figure 6: Main menu of the manual operation mode

Usually when you switch on an automatic stock unit with its **DB2000** option enabled, the system automatically displays the screen you were working on before switching off, e.g. the internal **DB2000** article storage location management screen. However, in case the main menu of the manual operation mode appears by pressing F2 the internal article storage location management starts.

Functions- **starting point: Main Menu**

F1 	**Manual:** Move shelves manually Use the up/ down key to move levels up/down or (semi-automatically) type in the number of the target carrier and press the enter key to confirm
F2 	**Input Stock** **DB2000** supports six different methods of choosing a storage input location, depending on mode and settings: 1.Accept the suggested storage location of the system 2.Type in the coordinates and choose the storage location yourself 3.Choose a storage location from the list of locations 4.Search for other free storage locations 5.Search for multi-locations 6.Search for storage locations of a special size
F3 	**Stock output** **DB2000** supports four alternative methods, depending on mode and settings: 1.Specify the article number and accept the storage location suggested by the system 2.Specify the article number and search for a multi-location 3.Specify the article number and choose storage location from the list of locations 4.Search list of articles for article with unknown number
F4 	**Level Partition** F4 on the Main Menu displays the level partition screen. In Full Mode you have the possibility to divide the level into storage locations. It is possible to establish storage locations of different sizes on the same level (their dimensions must be well planned to achieve the best possible use of storage space on each level). The locations are created automatically in Easy Mode.
F5 	**Article master data supports Create, Edit and Delete .** A lot of automatically supports in Easy Mode.
F6 	The display of lists and reports, supporting hardcopies . The **storage list** shows all filled and empty storage locations, sort by number of unit, level, position and depth. The **Article list** delivers all articles (Article master data), sort by article number. The **Location list** shows all locations filled with articles, sort by article, level, position and depth. .
	Settings

INPUT STOCK.

Press F2-Softkey in the Main Menu to reach **Input Stock**.
For all individual demands the Full Mode is recommended, please read all about it in the User's Manual.
Easy mode is created for uncomplicated and faster use, following some descriptions: The first step in input stock is to enter the Article Number or choose an Article from Article list. The Storage Size (Ss:) is non-editable.
Using the F1-Softkey you'll reach the location list, which DB2000 creates automatically. Based on "Fill Level"-option and 'Confirm on Movement' field selected in the settings dialog, system will search a location and react. The Level Partition is not available in Easy Mode.
Locations are created automatically by DB 2000. For this reason default values exist for storage seize "00000" with width and depth "1 " All related fields in every dialog will be non-editable.

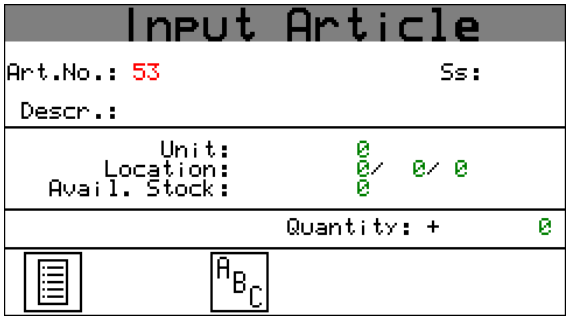


Figure 7 Stock Input

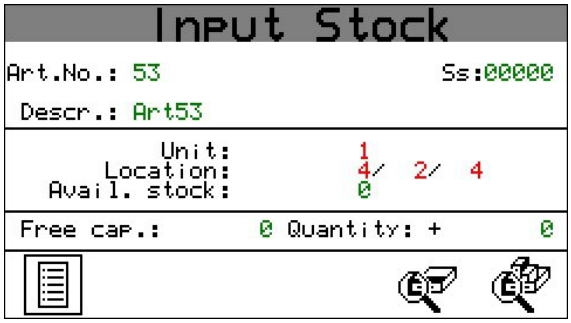


Figure 8: Input stock in Easy Mode

Entering the quantity value is the final step in Input stock and will apply only for articles with quantity management. If one article is non-quantity management the quantity field will not be editable and by pressing the Enter the default value "0" will be displayed.

ARTICLE MASTER DATA

Article master data offers a wide range of predicted properties for every Article. The main functions like Create, Edit and Delete for Articles are supported. F5-key of the Main Manu will display the Article Data mask. Please pay attention to differences between Easy and Full Mode.

In the field "Location type" you may specify temporary or permanent; FIFO will be fixed with yes or no. The Minimum stock value will effect a message in output stock if the minimum quantity will fall bellow the Minimum stock. Maximum stock / loc. defines the quantity which can be stocked to the selected location.
The field "Avail.stock" remains at zero. It is not accessible. How many times an article was stocked out you can see in the field "Accesses".
The Field **QTY** (Y/N) is for switching on and off the quantity management for this article . The addition of a new article will be terminated with pushing the enter key.

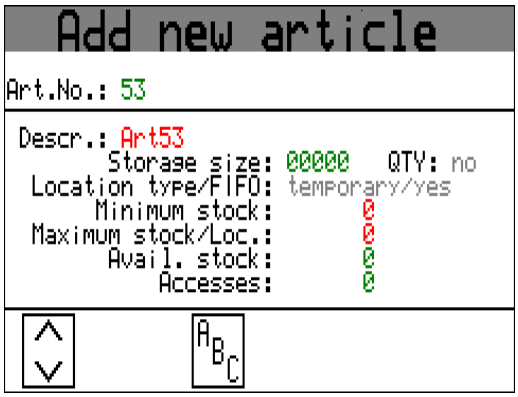
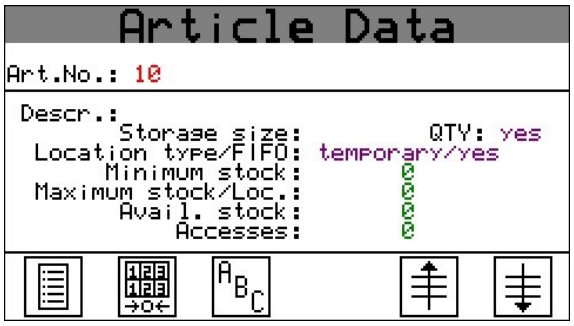


Figure 9: new Article / Easy Mode

To add a new article the cursor automatically moves forward to the next field.



Figures 10: Modifying article master data

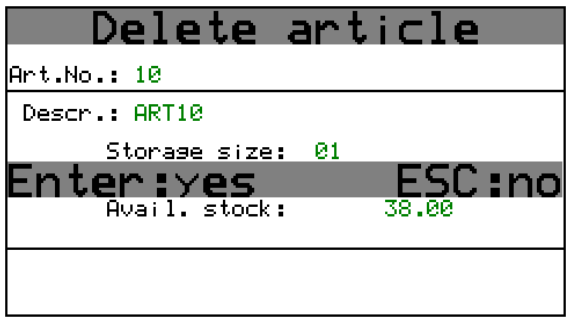


Figure 11: Delete article

You cannot delete articles that are still in stock

Please insert the article number (max. 20 characters) alphanumerically in the mask for Article Data F1 key will display the list of articles. Pressing the F2 function key in the Article master Data dialog will reset all Accesses for all Articles. If the article doesn't exist the display changes to **Add new article. Storage seize** automatically is "0000". If the article already exists, the display changes to **Modify article.**

OUTPUT STOCK

F3-key in the main menu will display the Output stock mask.

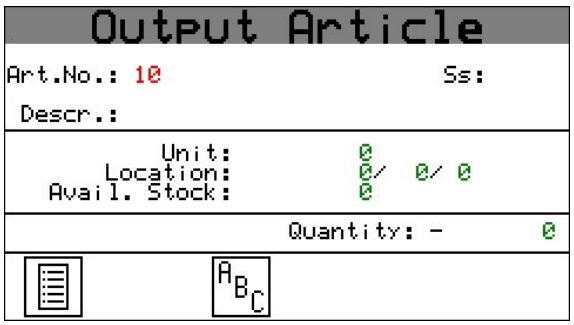


Figure 12 Stock output by typing in the article number

The location size is irrelevant for stock output.
If the article is non quantity, nor for input stock neither for output stock you have to insert a value. The "*" signifies the default value.

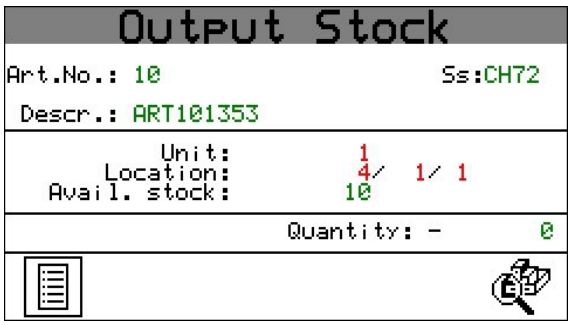


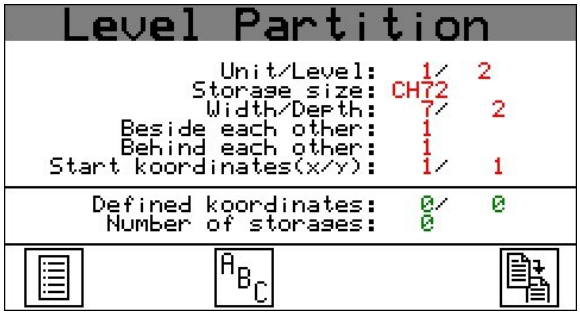
Figure 13 Stock output, searching for another storage location

Choose a location from the storage location list, which DB2000 creates automatically by F1.
If the program finds more than one multi-location for that article, press F6 again to display the next location in the list.

EXIT PROGRAM with the Escape key on the Main Menu (quits screens at all program locations).
To branch to the other **C2000** functions, please press F1 in main manu.
After exiting the program, the unit may be switched off by turning the main switch to position "0". The unit should not be switched off without exiting the program properly.

3 Over and above that .....

In the previous descriptions we concentrated on Easy mode and the essentials. Of course you may manage external static rags as well. The unit numbers are divided in two groups, unit 1 to 32 is used for shelves and unit 33 to 64 is used for static shelves.
Full Mode offers a wide range of detailed functions:
You may work with **level partition…**



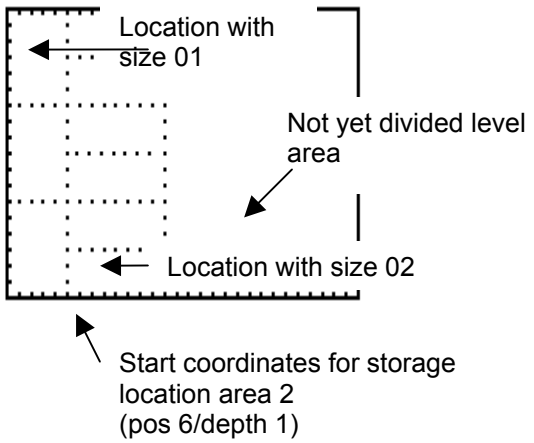


Figure 14: Level partition

……or **copy a tray**

User can copy trays of any location to any other location. The copy tray function is only available in Full Mode by pressing the F6 key in the 'Define Storage Size' dialog. User must enter the source and destination location.

We'd like to invite you to learn all about the various possibilities of lists like storage location, details of storage location, article list, details of the articles, location list and all specific operations. Please refer to the **comprehensive User´s Manual DB 2000 on CD, which is a part of the DB2000 software package. If there are furthermore any questions, please don't hesitate to contact your authorized Service Partner. He probably helps you along.**