

## **SALES BULLETIN**

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**FROM: John Parker – Product Manager**

**SUBJECT: Introduction: NC software 771851-01 for the TNC 320**

**DATE: June 24, 2014**

**BULLETIN #: SB - 0855**

#### **Introduction: NC software 771851-01 for the TNC 320**

For almost 10 years, the TNC 320 compact contouring control has proven itself in the field. Thanks to its analog nominal value interface to the drives, the TNC 320 is the optimal solution to equip existing machines with a modern HEIDENHAIN control.

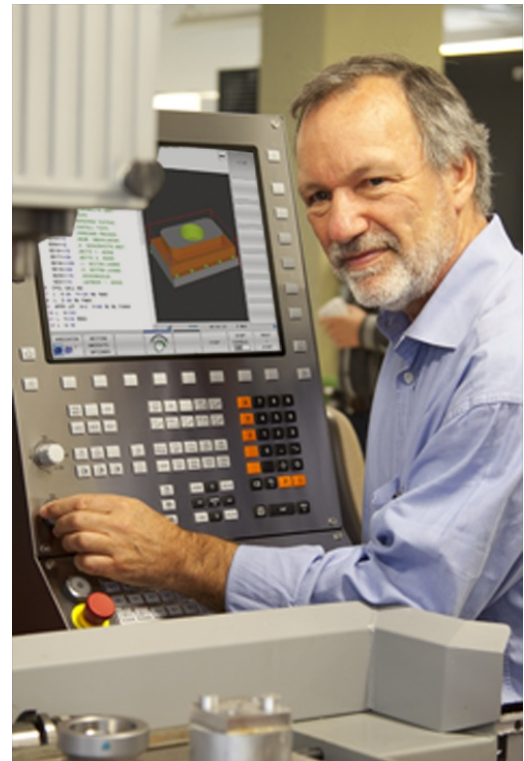
In this IIV we would like to inform you about major improvements concerning the TNC 320. The previous MC 320 main computers will be replaced by new powerful MC 321 main computers in stainless-steel design. Along with the modernized appearance, this also leads to a better performance for the user. The new MB 521 machine operating panel for the TNC 320 also comes in this modern stainless-steel design.

The new NC software 771851-01 is required for operation of the TNC 320 in stainless-steel design. Please note that the previous NC software version 340551-xx is not compatible with the new main computer.

We will continue to offer service packs for machines already shipped with the previous hardware components and NC software 340551-xx.

New functions and software updates will only be introduced for the new NC software 771851-xx in the future.

The most important novelties and benefits of the new generation of the TNC 320 are briefly summarized on the following pages.



## NC software 771851-01—New features for the end user:

(For details on the individual functions, please refer to the User's Manual, which will be available in German upon release of the software and, after translation, in various other languages.)

- **New, powerful 3-D graphic simulation:**

With the new finely detailed 3-D graphic simulation, you can exactly evaluate the results of milling or drilling processes even before the actual machining.

Advantages of the new 3-D graphic simulation:

- High resolution 3-D view
- Tool paths as 3-D line graphics
- Tool or workpiece transparency
- Tool-oriented coloring of the workpiece
- Accentuation of edges



- **New, modernized user interface:**

A new user interface is being introduced for the TNC 320 with NC software 771851-01. With its modernized appearance, the new user interface presents lightly rounded forms, color gradients and a homogeneous font for even better visual command of the TNC functions and status information.

The new user interface is already known from the TNC 640.

Advantages for the machine operator are, for example:

- New TNC font, color gradients, and operating mode symbols
- Simplified cycle selection with conversational guidance, special functions, and Q parameter functions with smartSelect
- Color syntax highlighting for a better overview when editing NC programs—value inputs, comments and syntax elements can be distinguished immediately.
- Improved navigation in the NC editor through scrollbars
- New, structured MOD menu for easier access to settings and OEM functions

- **Novelties concerning the machining cycles:**

The following new machining cycles are available with NC software 771851-01:

- Cycle 233: Face Milling
- Cycle 275: Trochoidal Milling

- **New M118 position display:**

The display of M118 (distance traversed with the handwheel) can now also be activated in the position display.

- **New cutting data calculator:**

The integrated calculator of the TNC 320 now also provides a cutting data calculator for calculation of the spindle speed, cutting speed and feed rate.

The cutting data calculator can also be called by soft key whenever a spindle speed or feed rate can be entered. If the cutting data calculator is activated within a TOOL CALL, the available data on the radius or number of teeth can be loaded by soft key from the tool table to the calculation.

## **NC software 771851-01—New features for the machine manufacturer:**

(For detailed information on the individual topics, please refer to the TNC 320 Technical Manual, which will be available in German upon release of the software and, after translation, also in English.)

- **Support of the new generation of MC 321 main computers:**

NC software 771851-01 for the TNC 320 required for operation of the new generation of MC 321 main computers. Due to the reduction in structural width to 22 nm, the new processors with Ivy Bridge architecture provide increased computing power and a significantly improved graphic performance while consuming less power. There are also sufficient performance reserves for future expansions of the TNC 320. Additional advantages of the new generation of main computers:

- USB 3.0 interface
- Gigabit Ethernet interface
- 8 GB CFR with CFast (SATA interface)

Please note that the new main computer is supplied with +24 V DC NC and not, like the previous MC 320 main computer (ID 511442-xx), with 85 V AC to 264 V AC.

- **New CFR memory card with fast CFast technology:**

The new CFR TNC (ID 1097497-51) is based on the CFast standard. Compared to the previous CFR memory card (ID 537067-53), the faster SATA protocol is used for the new mass storage device. The new cards have significantly shorter access times, which is convenient, for example, during TNC startup and handling of large NC programs. The connection of the new CFR with CFast technology is not compatible with the previous CFR memory card. The memory card can therefore be used exclusively in the new MC 321 main computer.

- **Enhancement of the PLC Programming mode of operation:**

The new I/O Force List function is now available in the PLC Programming mode of operation. The I/O Force List is a commissioning function that is used to permanently define the status of selected PLC inputs/outputs.

## **Important notes on the new NC software 771851-01**

Be sure to remember the following important information about the operation of the new MC 321 main computer:

The MC 321 main computer cannot be operated with the previous version of the NC software 340551-xx (on CFR, ID 537067-51). Due to the changeover to memory cards with CFast technology, the slot in the main computer is not compatible.

When ordering for the new MC 321 main computer, please pay attention to the correct ID of the CFR.

Please note the following overview of memory cards and the respective minimum requirements.

The new TNC 320 NC software, ID 771851-01, will be introduced as direct successor to the previous NC software. This means that in future there will only be service packs for the previous software version 340551-xx, and no more further developments. If a TNC 320 is to be upgraded to a newer NC software version, the main computer, the CFR, and the machine operating panel must also be exchanged.

## Overview of the CFR memory cards for the TNC 320:

8 GB CFR memory card—new	ID	Hardware compatibility
CFR for TNC 320 with NC software 771851-xx (no export license required)	1097497-51	MC 321 (ID 824012-01)
8 GB CFR memory card— current	ID	Hardware compatibility
CFR for TNC 320 with NC software 340551-xx (no export license required)	537067-53	MC 320 (ID 511442-xx)

## Introduction: Hardware components for the TNC 320:

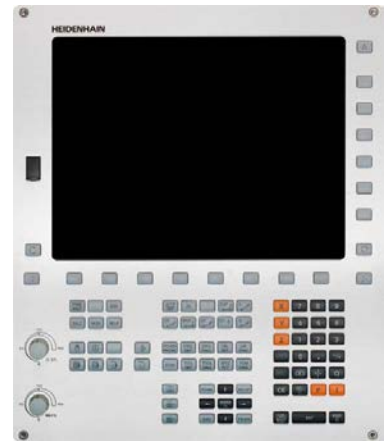
### MC 321 main computer, CFR memory card

**MC 321** Main computer for integration in the operating panel  
Integrated 15-inch screen and keyboard

#### ID 824012-01

#### Specifications:

- Intel Celeron 1047 CPU, 1.4 GHz, dual-core
- 2 GB RAM memory
- Supply voltage: +24 V DC NC
- Stainless-steel design
- Connections:
  - Position inputs 4 x 1 Vpp or EnDat  
2 slots for optional position inputs with encoder input board ID 554296-xx
  - 31 PLC inputs, 31 PLC outputs,  
expandable via PL 51x
  - 6 analog nominal-value outputs
  - 2 x USB 3.0 (rear side)
  - 1 x USB 2.0 (front)
  - 1 x Ethernet 1 Gbps
  - RS-232-C
  - Interface to handwheel and touch probes
  - Slot for CFR memory card
  - Slot for SIK
  - Slot for SPI module



Weight: approx. 8 kg

**CFR TNC** Memory card for the TNC 320  
(for MC 321)  
CFast technology (SATA)  
Memory size 8 GB (approx. 2 GB for end users)

**ID 1097497-51 (export version)**

NC software ID 771851-01 (export version)

**SIK** NC software license and enabling of control loops  
(No changes; same SIK as before with ID 533093-xx)

**MB 521** MB 521 machine operating panel

**ID 823882-01**

Specifications:

- Suitable for MC 321
- Stainless-steel design
- 30 exchangeable snap-on keys
- Operating elements: 12 axis keys, 18 function keys, NC start, NC stop, emergency stop button, control voltage ON, two bore holes for additional keys or keylock switches
- Additional connections  
Terminals for five vacant PLC outputs

Weight: approx. 1 kg



**Series introduction:** May 2014

**Documentation:**

TNC 320 OEM brochure (de/en) For AMB, September 2014

TNC 320 end user brochure For AMB, September 2014

TNC 320 User's Manual  
German Upon release of the software  
English Upon release of the software  
Further conversational languages  
available after translation

TNC 320 Technical Manual  
German Upon release of the software  
English After translation

# Dimensions of MC 321:

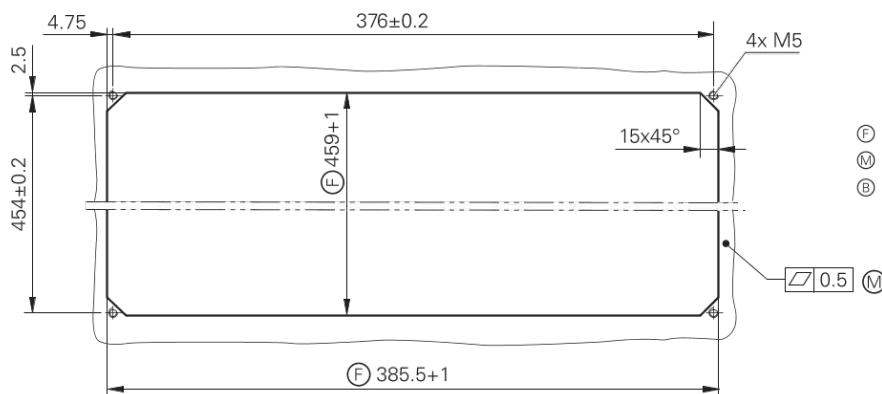
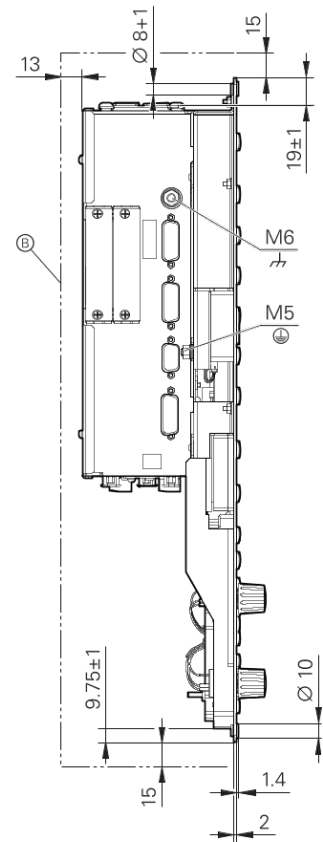
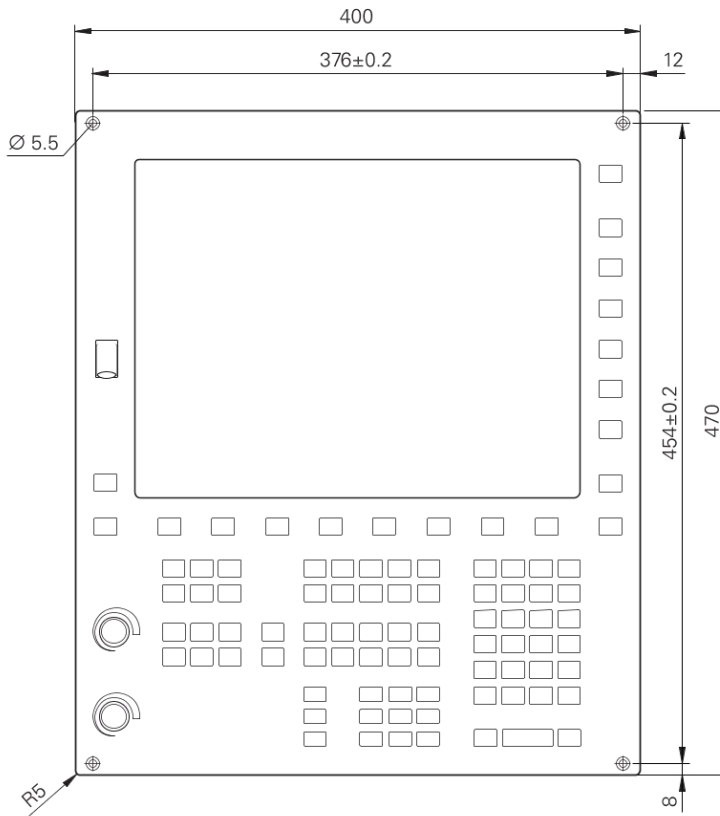
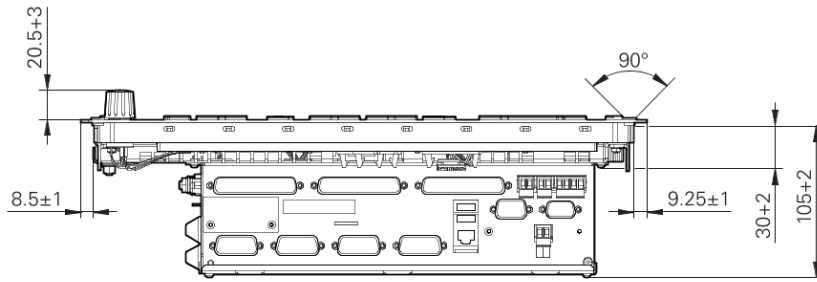
mm



Tolerancing ISO 8015


ISO 2768 - m H

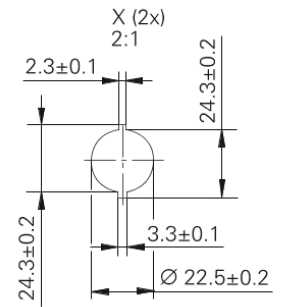
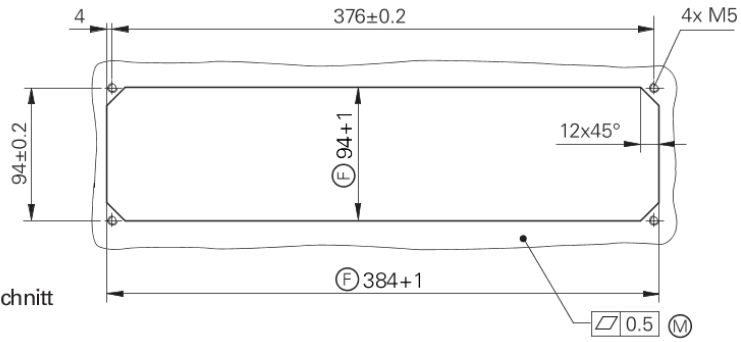
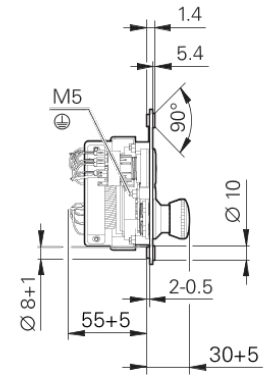
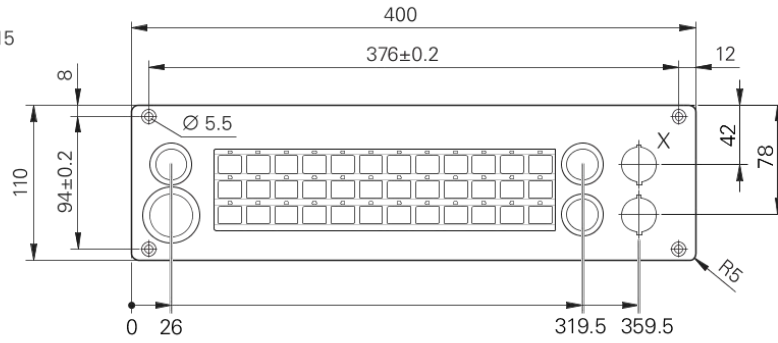
< 6 mm: ±0.2 mm



- ⓕ = Frontplattenausschnitt
- Ⓜ = Montagefläche
- ⓑ = Freiraum für Luftzirkulation

# Dimensions of MB 521:

mm  
  
 Tolerancing ISO 8015  
 ISO 2768 - m H  
 < 6 mm: ±0.2 mm



⊕ = Frontplattenausschnitt  
 ⊗ = Montagefläche

**MC 321 main computer for TNC 320**

With integral 15-inch TFT display  
 Without SIK, without **CF** memory card  
 Position inputs 4 x 1 Vpp or EnDat  
 31 PLC inputs, 31 PLC outputs,  
 Expandable via PL 51x  
 6 analog nominal-value outputs



**MC 321**

ID 824012-xx

QUANTITIES			
20	10	5	1
7868.45	8331.30	8794.15	9257.00

**CFR CompactFlash memory card**

**8 GB**

For TNC 320 for installation in MC 321

**CFR TNC \*)**

ID 1097497-51

QUANTITIES			
20	10	5	1
594.15	629.10	664.05	699.00



**MB 521**

Machine operating panel for MC 321



- Emergency stop
- NC start
- NC stop
- Control voltage ON
- PLC inputs/outputs

Exchangeable key symbols, factory-fitted with

IV+	Z+	Y+	V+	VI+					FN 1		
X-	~	X+	▶	⌚					FN 2		
Y-	Z-	IV-	V-	VI-					FN 3		

QUANTITIES			
20	10	5	1
888.25	940.50	992.75	1045.00

ID 823882-xx