

FINO Semiautomatic Stencil Printer

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Modification protocol

Version	Date	Modification
1.00	29.05.2012	Release
1.01	11.07.2012	Dimension Drawings changed



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1 System Overview

The programmable precision printer can be placed on a table, making it ideally suited for smaller, flexible production. Optionally, the printer is available mounted on a robust steel stand.

The following features differentiate Fino from other tabletop printers:

- A touch screen programming terminal
- Laser-guided vision alignment
- A pneumatic fast-fixation for screen and stencil tension frames.

Furthermore, all motions of the squeegee and the print table are motorized and, therefore, are both programmable and reproducible. Because of these features, Fino's setup and changeover is much quicker than other machines and the print quality is better.

The Fino prints on single- and double-sided PCBs, ceramics and foils – through the use of the vacuum tooling. It supports different PCB thickness from 0.1 up to 10.0 mm without changing basic machine parameters.

A specialty of the Fino is its capability to provide borderless printing on substrates up to 450 x 500 mm. Screen and stencil tension frames up to 23" can be mounted.



2 Mechanic Overview

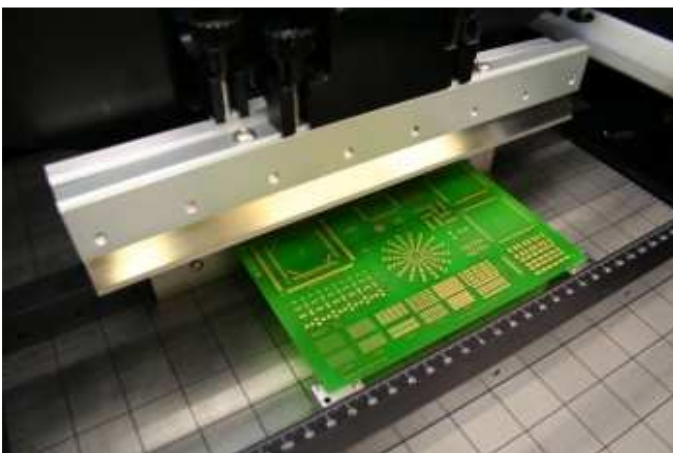


2.1 Structure

The stability of the FINO is based on a welded structure to isolate the mechanics from outside influences.

FINO can be used on a table or stand alone on a robust steel stand.

A small space saving footprint intelligently packed with all necessary options of a state-of-art semiautomatic printer.



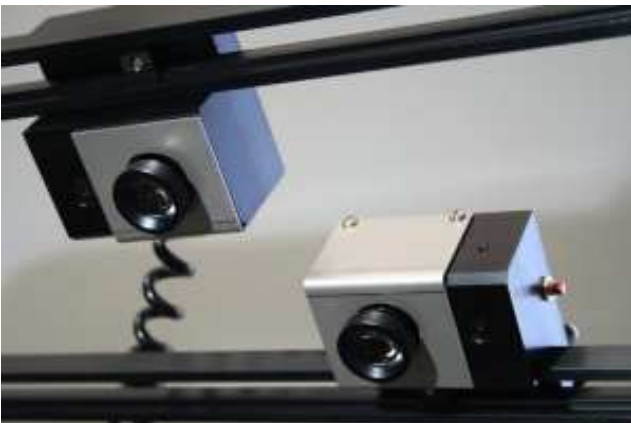
2.2 Table Mechanism

A servo motor lifting the table assures printing with excellent repeatability.



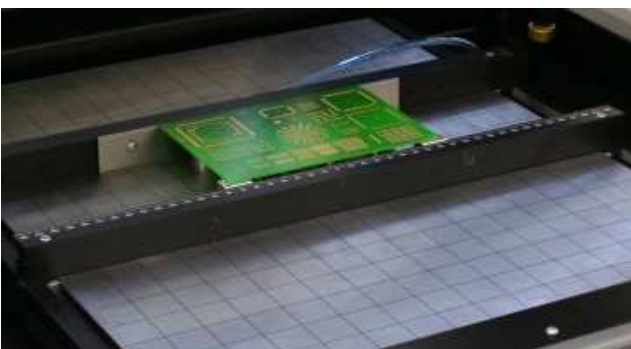
2.3 Stencil clamping system

For quick changeover, the automatic stencil clamping system is very helpful. The pneumatic clamps can be just controlled by a software button.



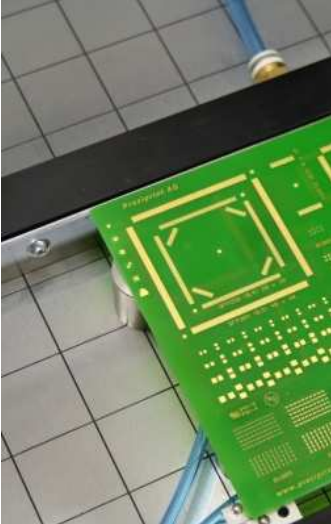
2.4 Twin Camera Vision System

FINO also features vision for Trans-Stencil alignment. In this way, FINO guarantees the highest printing quality and reliability for the complete series. Large pad areas, BGAs and the smallest 01005 pad sizes can be handled easily.



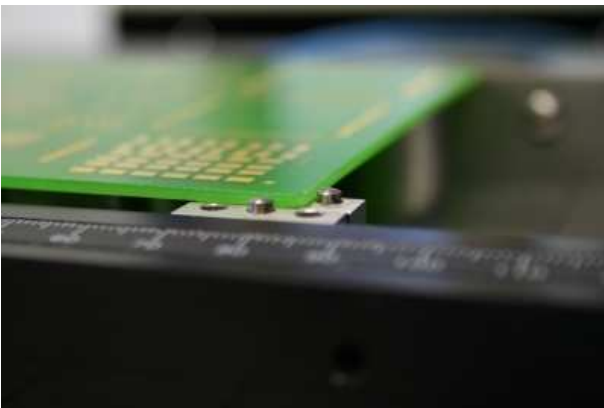
2.5 Print Table

The rigid Table is fitted with an extreme resistant and magnetic flat screen surface. Additionally the grid supports the operator during placement of the Tooling Pins.



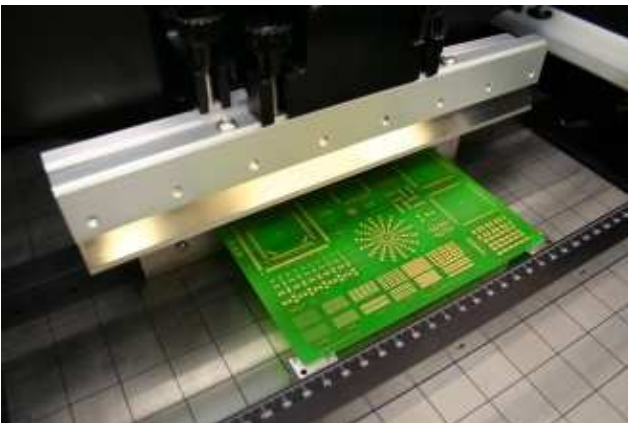
2.6 Manual Tooling Grid

For manual tooling, the FINO is equipped with a magnetic tooling grid. PCB Support Tooling can be placed accurately on the grid.



2.7 PCB Holder

The PCB holders are universal and do not need any tooling to change from one PCB size to another. The scales on the guiding rails allow a reproducible positioning of the product. The small and movable tooling pins are holding the PCB on both lower corners.



2.8 Double Squeegee Print Head

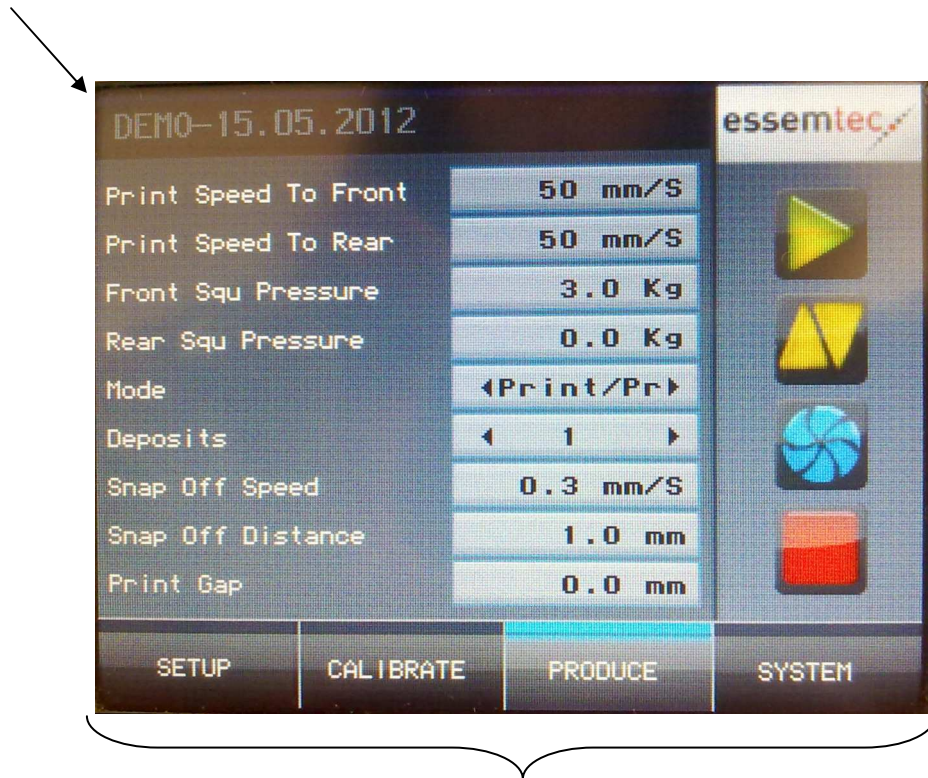
The fully programmable print head features

- Programmable print pressure using an accurate motion control in combination with calibrated springs
- Full programmable print speed in both directions
- Belt driven Print head for easy maintenance

3 GUIK

The FINO GUIK is designed for a fast product setup and changeover. The touch screen interface is quickly started up and easy to use.

Actually loaded product file



The main menu separated in four topics is accessible in all registers.

3.1 Product Setup



Three buttons for opening, saving and deleting of product files

In the Product Setup menu the print parameters can be adjusted. And also other product files can be opened, changes can be saved or the whole product file can be deleted. The number of different product files is not limited.

3.2 Calibrations



Three calibrations can be done within this menu:

- Table On-Contact position
- Squeegee Zero Pressure
- Print Stroke Limits

Production Menu



Start printing

Move Table to On-Contact position

Open cover

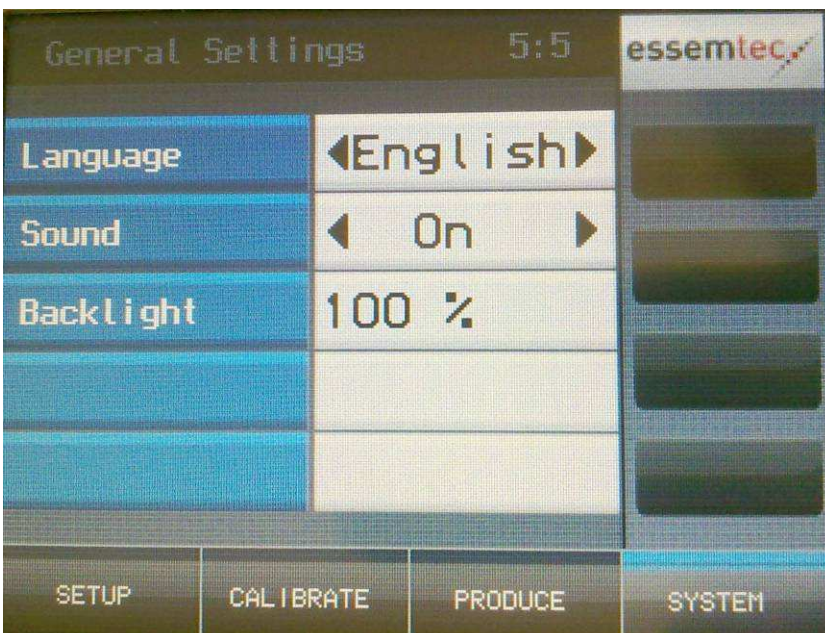
Stop Production

The production can be controlled by using the four buttons on the right.

All print parameters are visible for an easy check.

The Print Mode and the number of deposits can be changed here by pressing on the corresponding fields.

3.3 System



Within this menu the system can be checked and configured:

- Table Lift
- Print Carriage
- Squeegees
- Other
- General Settings

Options

3.4 FINO Types

The standard delivery includes

- Touch screen and operation software

Part. No.	Description
FINO	Fully semiautomatic stencil printer with software controlled print parameters and software operation by touch screen.

3.5 FINO Definition Options

The following options define your specific requirements regarding power.

Part. No.	Description	Application
SPA-DEF-VUS	Supply voltage 110V/60Hz, US power cable	USA and Canada
SPA-DEF-VEU	Supply voltage 230V/50Hz, European cable	EU
SPA-DEF-VCH	Supply voltage 230V/50Hz, Swiss power cable	Switzerland

3.6 Additional Accessories

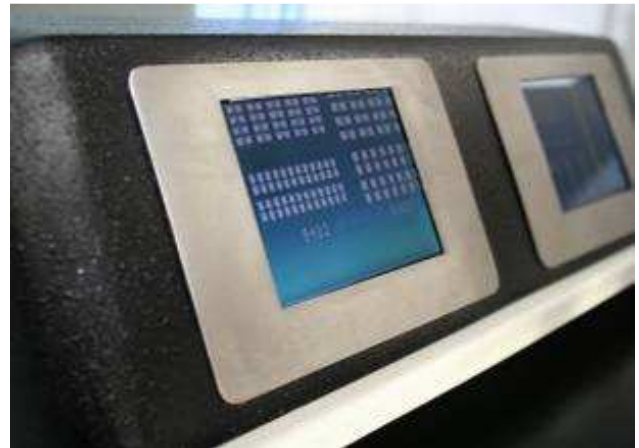
3.6.1 Trans-Stencil Vision System

Two freely adjustable cameras with included laser pointers and one display for each attached on top of the printer support the operator during the set-up and alignment.

FINO-VIS



Two cameras with included laser pointers which can be activated by pressing the red button.



The camera pictures are showed on two displays mounted on top of the FINO printer.

Part. No.	Description
FINO-VIS	FINO Vision with Trans-Stencil Vision System including two cameras, two displays and two laser pointers

3.6.1 Mylar Frame

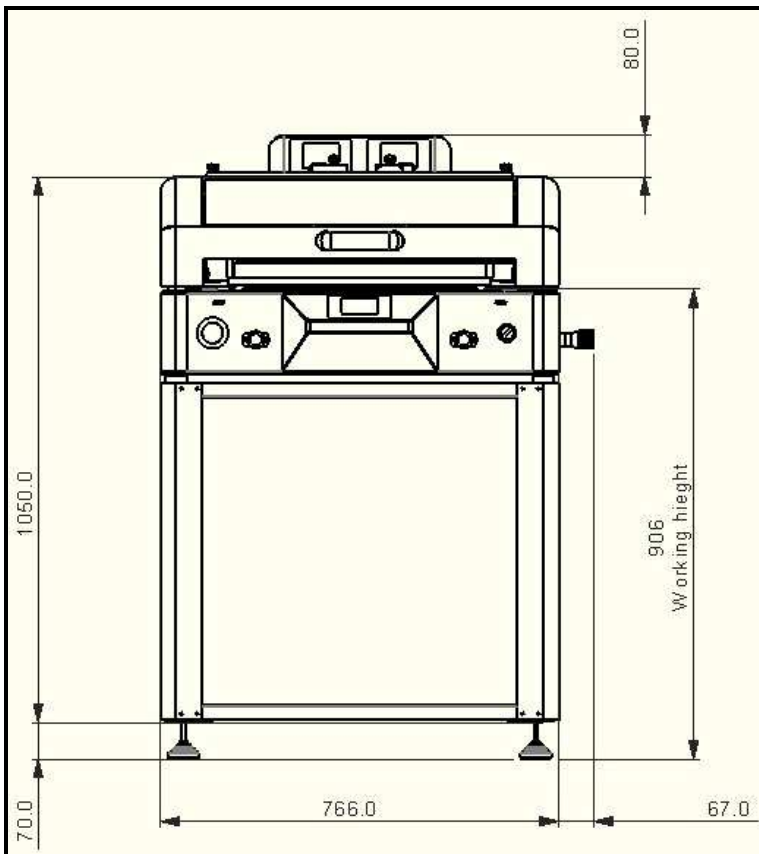
The transparent FINO Mylar frame is a perfect aid to set up a precise alignment of all products. After accomplishing a test print on the Mylar frame, which is attached on top of the table, the board can be precisely aligned to the printed image on the Mylar foil.

Part. No.	Description
FINO-MF	The transparent FINO Mylar frame.

3.6.1 FINO Stand

The FINO printer can be ordered with its appropriate stand.

FINO-ST



Part. No.	Description
FINO-ST	FINO Stand

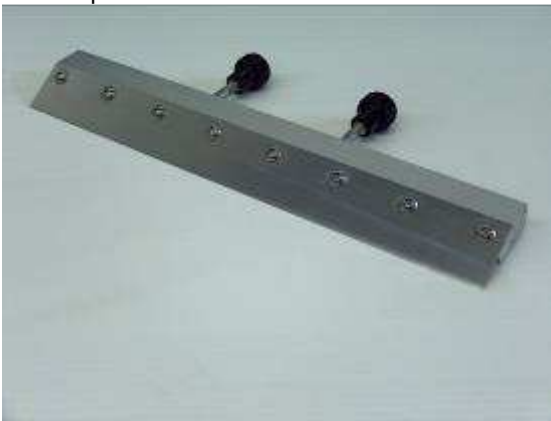
3.7 FINO Squeegees

3.7.1 FINO Metal Squeegee Assemblies (SPA-AxxxM)

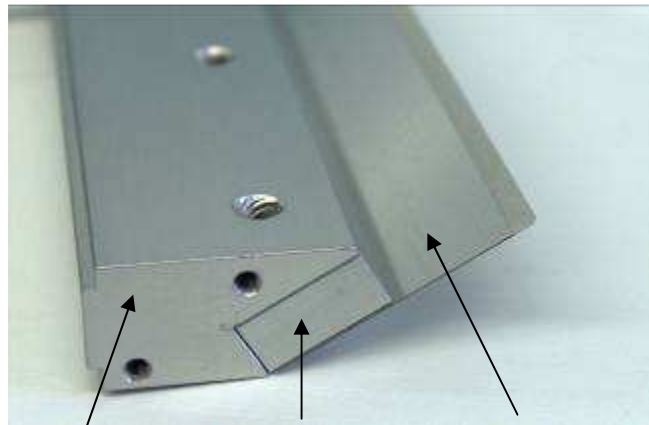
The metal squeegee assemblies provide a highly accurate stencil printing. They are available in different width from 150 to 460 mm (5.9-18.1"). A metal squeegee assembly consists of

- Metal squeegee blade
- Squeegee spacer
- Trailing edge clamp plate

One printer requires 2 squeegee assemblies, one for the print stroke from front to back, the other one for the print stroke back to front.



Metal squeegee assembly



Trailing edge clamp Spacer
Metal blade

Squeegee angle: 60°

Part No.	Description
SPA-AXXXM	XXXmm Metal Squeegee Assembly
SPA-PD	Paste retention (set of 2 pcs.)

3.7.3 FINO Flood Squeegee Assemblies (SPA-AxxxF)

Flood squeegee assemblies are available in different length from 150 to 460mm (5.9-18.1"). One printer requires 2 squeegee assemblies, one for the print stroke from front to back, the other one for the print stroke back to front.



Part No.	Description
SPA-AXXXF	XXXmm Flood Blade Assembly

3.8 FINO Tooling

3.8.1 FINO Manual Tooling Options

All manual tooling pins are magnetic. They can be freely repositioned without the use of tools.



SPM-MTS-KIT



SPM-MTS-001



SPM-MTS-002



SPM-MTS-003

Part. No.	Description
SPM-MTS-KIT	Flat top manual magnetic tooling support kit (10 Pcs), diameter 20 mm (0.79"), height 25mm
SPM-MTS-001	Flat top manual magnetic tooling support, diameter 20 mm (0.79") , height 25mm
SPM-MTS-002	Flat top manual magnetic tooling supports, diameter 4 mm (0.16") , height 25mm
SPM-MTS-003	Conical manual magnetic tooling supports, diameter 4 mm (0.16") , height 25mm

3.8.2 FINO Vacuum Tooling Options

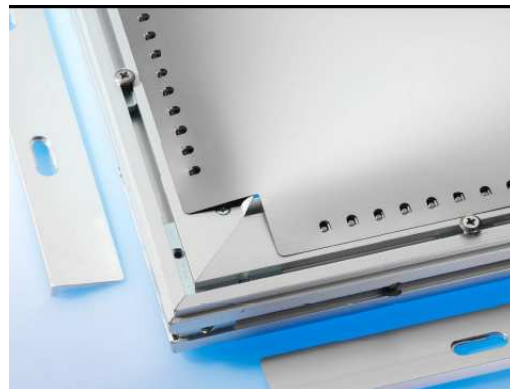
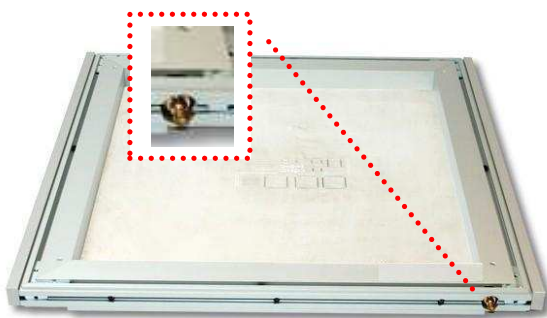


FINO-VTS-KIT

Part. No.	Description
FINO-VTS-KIT	Vacuum magnetic tooling support kit (4 Pcs), diameter 20 mm (0.79"), height 25mm, including connection tool.

3.9 FINO Stencil Tension Frames

The SPGEN14L is a 4-sided pneumatic stencil tension frame for equal tension all over the stencil surface. The pneumatic tension allows a quick changeover of stencils. The frame is filled with air for tensioning. The air connection can then be released; the frame will keep its tension. For stencil release, the air pressure inside the frame is released.



Frame complete with mounted stencil and air tube.

Stencil fixation detail. Layout Gerber data are available from ESSEMTEC.

Specification	SPM-14L	
Outer dimensions	23 x 22"	(584 x 558mm)
Inner dimensions	18 x 18"	(458 x 458mm)
Foil dimension	20.5 x 20.5" *	(520 x 520mm)*
Max. printing area	20.3x20.3"	(516x516 mm)
Max. squeegee width	17.2"	(438 mm)
M6 thread	20.9 x 20.9"	(532.6 x 532.6mm)
Clamping adapter height	1.5"	40mm
Air tube	included, tube outer diameter 6 mm, quick connection to frame	
Air pressure	Max. 6 bar (87 psi) for stencils >150 µm (>6 mil) Max. 4 bar (58 psi) for stencils 100-150 µm (4-6 mil)	

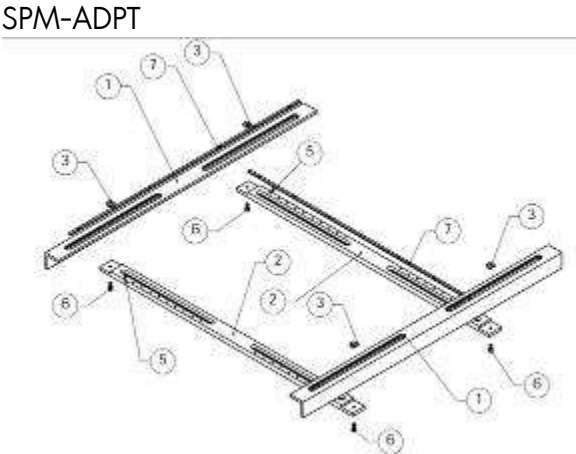
*Not all stencil suppliers support this stencil size.

Part. No.	Description
SPM-14L	4-sided, pneumatic stencil tension frame 636x636mm (including adapter 29x29")
SPM-14L-DR	Distance Ring for Stencils with edge protection

3.10 FINO Frame Adapter

3.10.1 SPM-ADPT

The first is to use our Multi-Purpose Frame adaptor SPM-ADPT. The frame would need 6mm or 1/4" threaded holes in the top corners of the frame to connect to the adaptor.



Adapter for stencil frames smaller than 23x23". The frames are fixed on the X bars (2). The Y bars (1) fit into the standard frame clamping system of the FINO printer.

Specification	Value
Maximum frame height without SPM-ADPT	25 mm

Part No.	Description
SPM-ADPT	Adjustable Frame Adaptor for different frame sizes. Outer dimension 23x23"

3.11 Training

Part. No.	Description
TC-FINO-B	FINO Operator and Programmer Training for end users. Duration 1 days excl. travel, accommodation and expenses

4 Dimensions and Workspace

