

EC-Declaration of Conformity

according to EC directive 2006/42/EC, Annex II A

Name and address of the manufacturer:

Printprocess AG
Sumpfstrasse 13
CH-6300 Zug

Herewith we declare, the automatic direct exposure machine for exposing printed circuit boards

type	APOLLON-DI-A11-4
serial number	14 07 825
Year of manufacture	2014

the automatic exposure maschine for exposing printed circuit boards:

2006/42/EC	Machinery Directive, 17.5.06
2006/95/EC	Low Voltage Directive, 12.12.06
2004/108/EC	Electromagnetic Compatibility (EMC), 15.12.04
2002/95/EC	Directive of certain hazardous substances in electrical and electronic equipment, 27.1.03
2002/96/EC	electrical and electronic equipment (WEEE), 27.1.03

Harmonised standards employed:

EN ISO 12100-1, -2	Safety of Machinery: Basic concepts and technical principles, 04/2004
EN 60204-1	Safety of Machinery: Electrical equipment of machines, 06/2007
EN 13849-1, -2	Safety of Machinery: Safety related parts of control systems, 07/2007
EN 294	Safety of Machinery: safety distances to prevent danger zones, 08/1992
EN 349	Safety of Machinery: Minimum gaps to avoid crushing of parts of the human body, 1993
EN 574	Safety of Machinery: Two-hand control devices , 12/2008
EN 61000-6-4	EMC – Generic standard: emission for industrial environments, 9/2007
EN 61000-6-2	EMC – Generic standard: Immunity for industrial environments, 3/2006

The person authorised to compile the relevant technical documentation:

Printprocess GmbH
Marktstrasse 97
D-46045 Oberhausen

Signature and identity of signatory:

Zug, August 08, 2014

Patrick Maurer, CEO


PRINTPROCESS AG
Sumpfstrasse 13
CH-6300 ZUG



PRINTPROCESS AG

Sumpfstr.13, 6300 Zug, Switzerland

Tel. ++41 41 749 80 80 Fax ++41 41 749 80 90

www.printprocess.com info@printprocess.com

QUALITY CERTIFICATE

Ref:

APOLLON-DI-A11-4, MACHINE NR. 14 07 825

We the supplier, hereby guarantee:

that the goods as per customer's purchasing order are corresponding to the developer of international technique as follows and are apt to the highest norms of this kind of goods in Switzerland.

Relevant regulations to which this machine conforms:

Guidelines 98/37/EU of 22.6.98, 93/68/EWG of 22.07.93, 91/263/EWG of 29.04.91, 92/31/EWG of 28.4.92, 93/68/EWG of 22.7.93 and 93/97/EWG of 29.10.93

Sources of harmonised standards:

EN ISO 12100-1, -2

EN 60204-1

EN 13849-1, -2

EN 294

EN 349

EN 574

EN 61000-6-4

EN 61000-6-2

Sources of national technical standards and specifications

VDE-O113 Part 1

That they are fabricated from the best quality of materials and with the first class workmanship and excellent completion.

That those articles before being shipped were examined and inspected by us, and were found strictly serviceable and according to the specifications, catalogues and specimens as laid down in this contract/order.

The quality, capacity and technical characteristics of the supplied equipment would meet the technical requirements specified in the contract and in the contract supplement as well as the requirements specified in the technical documentation attached to the equipment.

Guarantee period for all parts, mechanical and electrical, of the delivered equipment is valid for a period of 12 months from the date of shipment.

Damage or faults due to normal wear, inadequate maintenance or operation, failure to observe the operating instructions, excessive over wear, the use of unsuitable substances, the influence of chemical or electrolytic reaction, unsatisfactory building or installation work not undertaken by the manufacturer of his authorized agent or other reasons beyond the manufacturer's control are not covered by this Warranty.

Signature and identity of signatory

Zug, August 08, 2014

Patrick Maurer
CEO

PRINTPROCESS AG
Sumpfstrasse 13
CH-6300 ZUG

MESSPROTOKOLL ELEKTRISCHE AUSRÜSTUNG / ELECTRICAL TEST CERTIFICATE

Apollon

Maschinen Serien-Nr. / Machine serial no.	14 07 825	Datum / Date	28.7.2014
Auftrags-Nr. / Order no.	0400/123100/004	Prüfer / Inspector	R. Sandhofer

Prüfung/Messung nach EN 60204 / Test/measurement according to EN 60204

1. Widerstand in der Schutzleiter-Strombahn / Resistor within the current path of the projective conductor
 Es muss geprüft werden, ob der Widerstand zwischen dem Schutzleiteranschluss und beliebigen Metallteilen der Maschinen, die gefährliche Berührungsspannungen annehmen können, 0,1 Ω nicht übersteigt.
 It has to be tested, that the resistor between the connection of the protective conductor and any metal parts of the machines, which can carry dangerous contact voltage, does not exceed 0,1 Ω.

Bezeichnung / Description	Ω	ja / yes	Nachbesserung / Additional Corrections Erledigung, Name, Datum / Carried out by ..., name, date
PE - Gestell Grundmaschine / machine frame	0,03	✓	
PE - Gestell Belichtungsmodul / Casing exposition module	0,03	✓	
PE - Schaltschrank „Klima“ / control cabinet „climate“	0,04	✓	
PE - Schaltschrank „PC“ / control cabinet „PC“	0,05	✓	
PE - Schaltkasten / control box „PLC“	0,03	✓	
PE - Vakuumtisch (Y-Achse) / Vakuumtable (Y-axis)	0,05	✓	
PE - X-Achse, Belichtungsköpfe / X-axis with exposition module	0,05	✓	
PE - Gestell Eingangsmodul / casing input module	0,03	✓	
PE - Gestell Ausgangsmodul / casing output module	0,04	✓	
PE - Wendemodul Eingang / drum input	0,05	✓	
PE - Wendemodul Ausgang / drum output	0,05	✓	
PE - Cleaner Eingang / cleaner input	0,04	✓	
PE - Cleaner Ausgang / cleaner output	0,05	✓	
PE - Operator Panel / operator panel	0,05	✓	

2. Messung des Isolationswiderstandes / Measurement of the insulating resistance

Der Isolationswiderstand gemessen mit 500 V Gleichspannung zwischen allen Leitern der Hauptstromkreise, den Einzelleitern der Hilfsstromkreise und dem mit dem Schutzleiter verbundenen Maschinenkörper darf nicht kleiner als 1 M Ω sein. Sind Hilfsstromkreise galvanisch von den Hauptstromkreisen getrennt, so müssen Prüfungen zwischen den Hauptstromkreisen und dem Maschinenkörper durchgeführt werden.

The allowed min. value of the insulating resistance is 1 M Ω measured with 500 V d.c. between all conductors of the main power circuit, the single conductors of the auxiliary circuit and the machine body connected with the protective conductor. In case the auxiliary circuits are separated galvanically from the main power circuit, it is necessary to carry out tests between the main power circuits and the machine body.

	Ω	ja / yes	Nachbesserung / Additional Corrections Erledigung, Name, Datum / Carried out by ..., name, date
Hauptstromkreis-Masch.Körper / Main power circuit – Machine body	> 99,9 Ω	✓	



PRINTPROCESS AG

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Certificate of Country of Origin

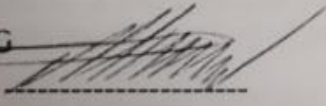
Machine Name : APOLLON-DI-A11-4

Model No. : 14 07 825

Country of Origin : Switzerland

Printprocess AG

PRINTPROCESS AG
Sumpfstrasse 13
CH-6300 ZUG

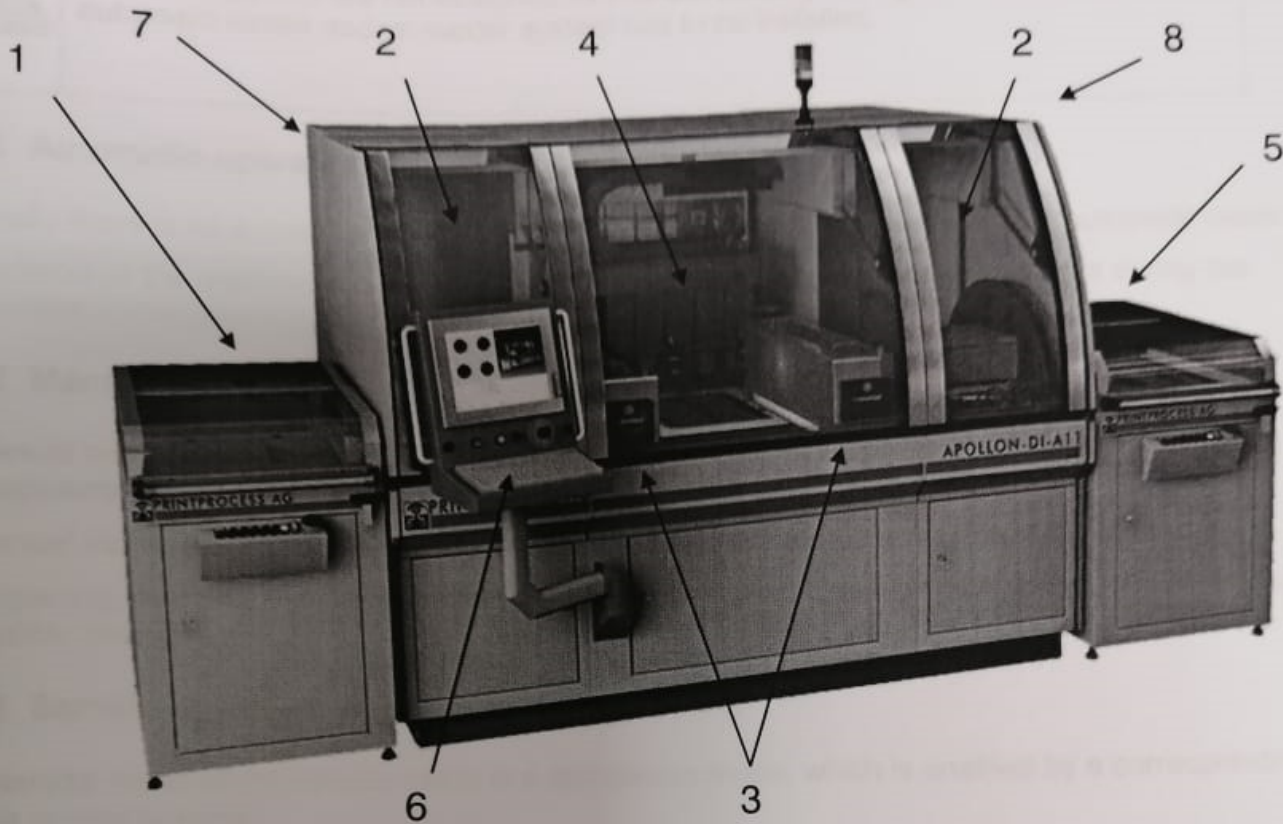

Patrick Maurer

ZUG, August 08, 2014



3 Machine description

3.1 Overview



- 1) Accessory
- 2) Rotation module
- 3) Cleaner-Module
- 4) Exposure-Module

- 5) Accessory
- 6) Operation Terminal with On/Off- and Emergency button
- 7) Cooling Cabinet
- 8) PC- Cabinet

What is Direct Imaging?

Direct Imaging- Systems expose the printed circuit board pattern directly on to the photo resist on a blank panel, without use of a mask.

CAD- respectively CAM- data are generally in GERBER format, this data is transferred directly to the DI system. The machine controller reads the data, converts them and transfers the image structure line by line on to the coated board.

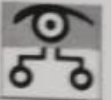
Direct Imaging- Systems eliminate all the steps for storage, preparation and handling of film material.

About the APOLLON- System

The APOLLON Direct Imaging- System is capable to process, large-size Inner- and Outer- layers as well Flex- boards with all kind of UV-sensitive dry or liquid photoresists.

The APOLLON System is operated in a clean room with yellow light. The machine is equipped with an over pressure air conditioning system.

The different integrated cleaning systems in the exposure area make a contamination of the PCB board during the exposure almost impossible.



3.2 Operating modes



Attention!

The A1x systems are not designed for manual loading through the side slot. A automatic loader and un-loader system has to be installed.

3.2.1 Automatic operation

Basically there is no access to the interior of the machine during the production in automatic mode. The interior of the machine is controlled through the security doors and safety covers during the production.

3.2.2 Manual operation

In manual mode, defective boards can be exposed by manually inserting them through the sliding door in the exposure module.

In manual mode, the safety devices have basically the same states as in automatic mode.

The opening, inserting the board and closing the sliding door on the exposure module is controlled by the safety device.

3.2.3 Service operation (repair and maintenance)

The service mode or the service menu is a standalone mode, which is enabled by a corresponding login on the control terminal.



Danger!

The service mode may only be operated by specially trained personnel.

The SERVICE mode can be activated via a login on the operating terminal. This login may only be used by trained personnel to resolve problems or for maintenance work.

After finishing maintenance work or solve the problems a logout at the operator terminal is necessarily.

This login must not be known by the other operators.

Before executing this operation, the system has to be secured against unauthorized approach by not maintenance people.



Attention!

In service operation all movements of the system can be triggered on the control terminal by selecting the appropriate buttons.

During the execution of the movements in service operation ensure visual contact or call contact if the point is not directly visible from the display terminal.



3.2.5 Processing Notes

Pre-Notes:

- Panel:
 - o Use etched pre treatment
- Job:
 - o Choose option „inner layers“
 - o Choose manual scaling
 - o Choose Targets which are far from each other
- Gerber file:
 - o Do not place structures near the targets which are more or less equal to the target
- Apollon:
 - o Calibrate at least Pre-Marker-LEDs and Origin
 - o For thin Layers choose "use Marker Press every time"
- Pre-Marker
 - o Choose pre-exposure time just as long that the Target will be found securely

Outer Layers

- Panel:
 - o Use etched pre treatment
- Job:
 - o Choose option „outer layers“
 - o Choose same scaling as Inner layers
- Gerber file:
 - o Do not place structures near the targets which are more or less equal to the target
- Apollon:
 - o For thin Layers choose "use Marker Press every time"

Solder mask

- Job:
 - o Choose option „solder mask“
 - o Choose same scaling as Inner layers, otherwise use automatic scaling
- Gerber file:
 - o Do not place structures near the targets which are more or less equal to the target
 - o Cut free around Target 15mm for using combined Target-light
- Apollon:
 - o For thin Layers choose "use Marker Press every time"



PRINTPROCESS AG

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OPERATING MANUAL



APOLLON

***D*irect *I*maging**

V2.5.1

EC-Declaration of Conformity

according to EC directive 2006/42/EC, Annex II A

Name and address of the manufacturer:

Printprocess AG
Sumpfstrasse 13
CH-6300 Zug

Herewith we declare, the automatic direct exposure machine for exposing printed circuit boards

type	APOLLON-DI-A11-4
serial number	14 07 826
Year of manufacture	2014

the automatic exposure machine for exposing printed circuit boards:

2006/42/EC	Machinery Directive, 17.5.06
2006/95/EC	Low Voltage Directive, 12.12.06
2004/108/EC	Electromagnetic Compatibility (EMC), 15.12.04
2002/95/EC	Directive of certain hazardous substances in electrical and electronic equipment, 27.1.03
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Harmonised standards employed:

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EN 13849-1, -2	Safety of Machinery: Safety related parts of control systems, 07/2007
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EN 349	Safety of Machinery: Minimum gaps to avoid crushing of parts of the human body, 1993
EN 574	Safety of Machinery: Two-hand control devices , 12/2008
EN 61000-6-4	EMC – Generic standard: emission for industrial environments, 9/2007
EN 61000-6-2	EMC – Generic standard: Immunity for industrial environments, 3/2006


The person authorised to compile the relevant technical documentation:

Printprocess GmbH
Marktstrasse 97
D-46045 Oberhausen

Signature and identity of signatory:

Zug, August 08, 2014

Patrick Maurer, CEO


PRINTPROCESS AG
Sumpfstrasse 13
CH-6300 ZUG



PRINTPROCESS AG

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www.printprocess.com info@printprocess.com

QUALITY CERTIFICATE

Ref: **APOLLON-DI-A11-4, MACHINE NR. 14 07 826**

We the supplier, hereby guarantee:

that the goods as per customer's purchasing order are corresponding to the developer of international technique as follows and are apt to the highest norms of this kind of goods in Switzerland.

Relevant regulations to which this machine conforms:

Guidelines 98/37/EU of 22.6.98, 93/68/EWG of 22.07.93, 91/263/EWG of 29.04.91,
92/31/EWG of 28.4.92, 93/68/EWG of 22.7.93 and 93/97/EWG of 29.10.93

Sources of harmonised standards:

EN ISO 12100-1, -2
EN 60204-1
EN 13849-1, -2
EN 294
EN 349
EN 574
EN 61000-6-4
EN 61000-6-2

Sources of national technical standards and specifications

VDE-O113 Part 1

That they are fabricated from the best quality of materials and with the first class workmanship and excellent completion.

That those articles before being shipped were examined and inspected by us, and were found strictly serviceable and according to the specifications, catalogues and specimens as laid down in this contract/order.

The quality, capacity and technical characteristics of the supplied equipment would meet the technical requirements specified in the contract and in the contract supplement as well as the requirements specified in the technical documentation attached to the equipment.

Guarantee period for all parts, mechanical and electrical, of the delivered equipment is valid for a period of 12 months from the date of shipment.

Damage or faults due to normal wear, inadequate maintenance or operation, failure to observe the operating instructions, excessive over wear, the use of unsuitable substances, the influence of chemical or electrolytic reaction, unsatisfactory building or installation work not undertaken by the manufacturer of his authorized agent or other reasons beyond the manufacturer's control are not covered by this Warranty.

Signature and identity of signatory

Zug, August 08, 2014

Patrick Maurer
CEO


PRINTPROCESS AG
Sumpfstrasse 13
CH-6300 ZUG

MESSPROTOKOLL ELEKTRISCHE AUSRÜSTUNG / ELECTRICAL TEST CERTIFICATE

Apollon

Maschinen Serien-Nr. / Machine serial no.	1407826	Datum / Date	24.07.14
Auftrags-Nr. / Order no.	AP0-D1-A11-SV12	Prüfer / Inspector	C Blum

Prüfung/Messung nach EN 60204 / Test/measurement according to EN 60204

1. Widerstand in der Schutzleiter-Strombahn / Resistor within the current path of the projective conductor

Es muss geprüft werden, ob der Widerstand zwischen dem Schutzleiteranschluss und beliebigen Metallteilen der Maschinen, die gefährliche Berührungsspannungen annehmen können, 0,1 Ω nicht übersteigt.

It has to be tested, that the resistor between the connection of the protective conductor and any metal parts of the machines, which can carry dangerous contact voltage, does not exceed 0,1 Ω .

Bezeichnung / Description	Ω	ja / yes	Nachbesserung / Additional Corrections Erledigung, Name, Datum / Carried out by ..., name, date
PE - Gestell Grundmaschine / machine frame	0.03	✓	
PE - Gestell Belichtungsmodul / Casing exposition module	0.03	✓	
PE - Schaltschrank „Klima“ / control cabinet „climate“	0.04	✓	
PE - Schaltschrank „PC“ / control cabinet „PC“	0.05	✓	
PE - Schaltkasten / control box „PLC“	0.05	✓	
PE - Vakuumtisch (Y-Achse) / Vakuumtable (Y-axis)	0.04	✓	
PE - X-Achse, Belichtungsköpfe / X-axis with exposition module	0.07	✓	
PE - Gestell Eingangsmodul / casing input module	0.06	✓	
PE - Gestell Ausgangsmodul / casing output module	0.03	✓	
PE - Wendemodul Eingang / drum input	0.07	✓	
PE - Wendemodul Ausgang / drum output	0.06	✓	
PE - Cleaner Eingang / cleaner input	0.03	✓	
PE - Cleaner Ausgang / cleaner output	0.03	✓	
PE - Operator Panel / operator panel	0.06	✓	

2. Messung des Isolationswiderstandes / Measurement of the insulating resistance

Der Isolationswiderstand gemessen mit 500 V Gleichspannung zwischen allen Leitern der Hauptstromkreise, den Einzelleitern der Hilfsstromkreise und dem mit dem Schutzleiter verbundenen Maschinenkörper darf nicht kleiner als 1 M Ω sein.

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The allowed min. value of the insulating resistance is 1 M Ω measured with 500 V d.c. between all conductors of the main power circuit, the single conductors of the auxiliary circuit and the machine body connected with the protective conductor.

In case the auxiliary circuits are separated galvanically from the main power circuit, it is necessary to carry out tests between the main power circuits and the machine body.

	Ω	ja / yes	Nachbesserung / Additional Corrections Erledigung, Name, Datum / Carried out by ..., name, date
Hauptstromkreis-Masch.Körper / Main power circuit – Machine body	> 1 M Ω	Ja	



Certificate of Country of Origin

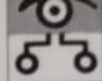
Machine Name : APOLLON-DI-A11-4
Model No. : 14 07 826
Country of Origin : Switzerland

Printprocess AG

PRINTPROCESS AG
Sumpfstrasse 13
CH-6300 ZUG

Patrick Maurer

ZUG, August 08, 2014



The following indicated machine-systems as well as the types we put on the market, conform to the state of technology and approved safety guidelines and standards.

2006/42/EG	2004/108/EG		
EN ISO 12100:2010	EN 60204-1:2006	EN ISO 13849-1:2008	EN 13857:2008
EN 349:1993+A1:2008	EN 574:1996+A1:2008	EN 61000-6-4	EN 61000-6-2

 PRINTPROCESS	
Printprocess AG Sumpfstrasse 13 CH-6300 Zug	
Tel. : +41 (41) 749 80 80 Fax. : +41 (41) 749 80 90 Switzerland	
machine type Maschinentyp	Apollon DI-
serial number Maschinennummer	
Year of construction Baujahr	
mains voltage Betriebsspannung	400 VAC 3/N/PE
frequency Frequenz	50 Hz
power consumption Leistungsaufnahme	
weight Gewicht	
	Made in Switzerland 

For questions or technical support please contact us.

PRINTPROCESS AG

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CH- 6300 Zug
Switzerland

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www.printprocess.com

Important Notice to Users of this manual

The supplied machine of the APOLLON series type A- or M- is for technical reasons also called plant in the following documentation.

Some pictures or drawings in description or instructions serve to explain the plant. Details can differ in colours from the actual components.

Technical modifications and additions to the description / instructions are reserved.

For the content no liability is taken, in particular for damages caused by existing, non-existent or missing information.

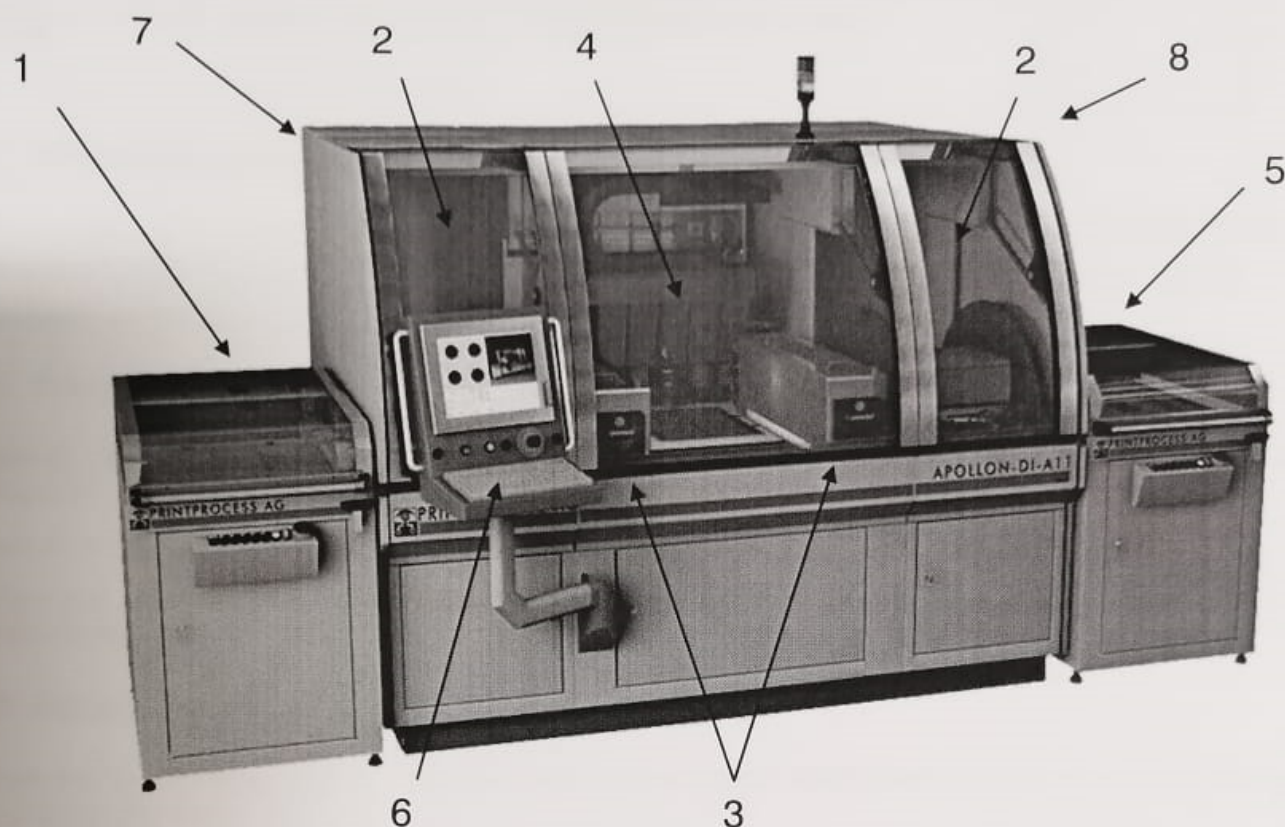
Passing on or appendices of this description / operating instructions is not permitted unless it is approved by PRINTPROCESS AG.

3

4

3 Machine description

3.1 Overview



- | | |
|--------------------|--|
| 1) Accessory | 5) Accessory |
| 2) Rotation module | 6) Operation Terminal with On/Off- and
Emergency button |
| 3) Cleaner-Module | 7) Cooling Cabinet |
| 4) Exposure-Module | 8) PC- Cabinet |

What is Direct Imaging?

Direct Imaging- Systems expose the printed circuit board pattern directly on to the photo resist on a blank panel, without use of a mask.

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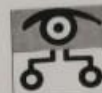
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The different integrated cleaning systems in the exposure area make a contamination of the PCB board during the exposure almost impossible.



3.2 Operating modes



Attention!

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3.2.1 Automatic operation

Basically there is no access to the interior of the machine during the production in automatic mode.

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In manual mode, defective boards can be exposed by manually inserting them through the sliding door in the exposure module.

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The opening, inserting the board and closing the sliding door on the exposure module is controlled by the safety device.

3.2.3 Service operation (repair and maintenance)

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Attention!

In service operation all movements of the system can be triggered on the control terminal by selecting the appropriate buttons.

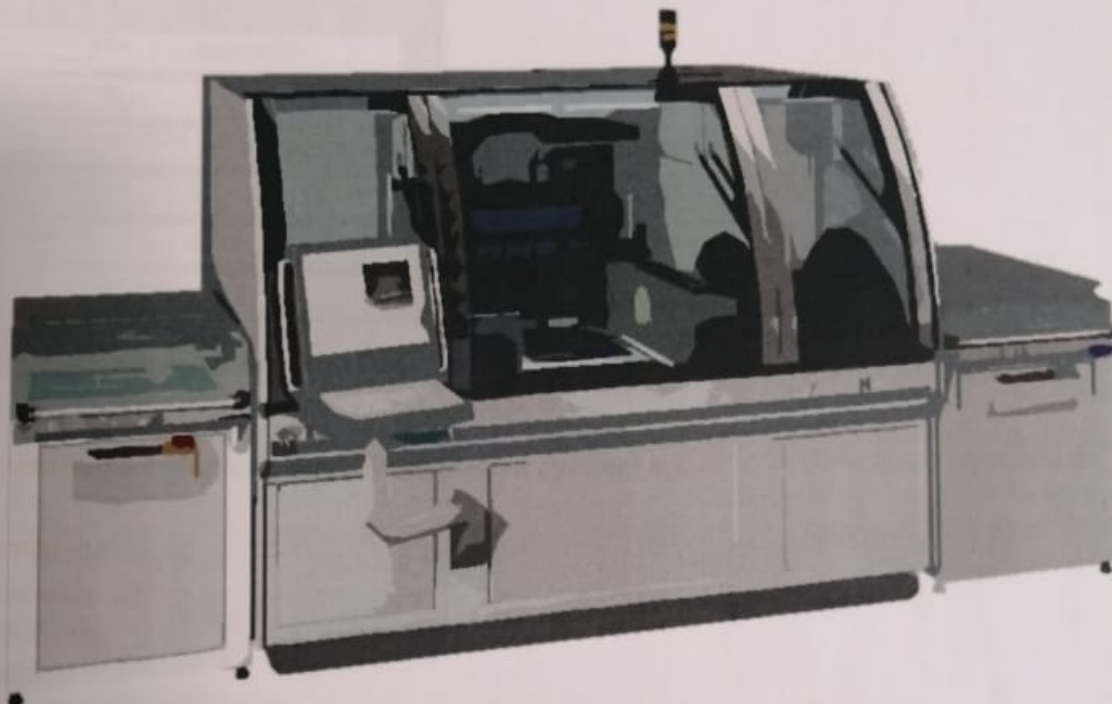
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OPERATING MANUAL



APOLLON

Direct Imaging

V2.5.1

3.2.5 Processing Notes

Pre-Notes:

- Panel:
 - o Use etched pre treatment
- Job:
 - o Choose option „inner layers“
 - o Choose manual scaling
 - o Choose Targets which are far from each other
- Gerber file:
 - o Do not place structures near the targets which are more or less equal to the target
- Apollon:
 - o Calibrate at least Pre-Marker-LEDs and Origin
 - o For thin Layers choose "use Marker Press every time"
- Pre-Marker
 - o Choose pre-exposure time just as long that the Target will be found securely

Outer Layers

- Panel:
 - o Use etched pre treatment
- Job:
 - o Choose option „outer layers“
 - o Choose same scaling as Inner layers
- Gerber file:
 - o Do not place structures near the targets which are more or less equal to the target
- Apollon:
 - o For thin Layers choose "use Marker Press every time"

Solder mask

- Job:
 - o Choose option „solder mask“
 - o Choose same scaling as Inner layers, otherwise use automatic scaling
- Gerber file:
 - o Do not place structures near the targets which are more or less equal to the target
 - o Cut free around Target 15mm for using combined Target-light
- Apollon:
 - o For thin Layers choose "use Marker Press every time"