Electrical Commissioning Protocol

Machine / Plant		**Examiner / qualified person**	
Machine Name	Laser Welder Trumpf	Name	Matheus Hagemann
Facility	502 North	Date (dd/mm/yy)	05/05/2021
ID Number	S2321M0136	Signature	
Type	TruLaser Cell 3000		

Reason for the examination			
☒ Initial Examination (Commissioning)	☐ Inspection / Check	☐	

Multimeter / Tools		
Tester: Fluke	Series-No.:325	Calibrated to:
Tester:	Series-No.:	Calibrated to:

Technical advice: The machine attend the good electrical practices / Standards. Machine is ready to be used.

Below the free translation from Trumpf Commissioning Protocol:

<u>Tätigkeitsbericht (Activity report): 16.04.2021</u>

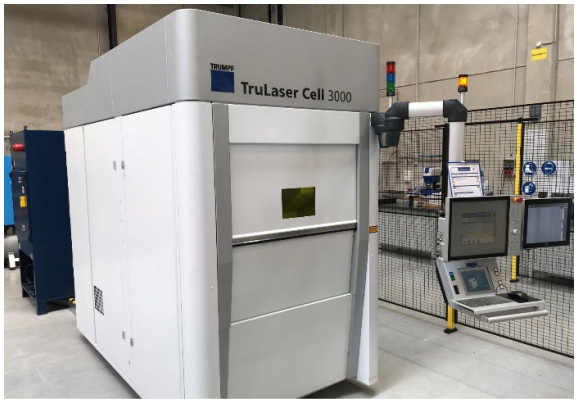
" - Relocation to a new location, assembly of the components and commissioning of the system.

- *System function OK*
- *Safety devices tested and ok*
- *The system runs without errors and can be used to its full extent"*

Inspection Label (expiration date): 05/2024

Equipment:


TRUMPF
TruLaser Cell 3000


TRUMPF
TruLaser Cell 3000


TruLaser Ce 3000

Visual inspection		OK	NOK	N/A	Comments
Documentation available (CE declaration, Manual, etc..)		☑	☐	☐	Photo 1, CE declaration.
Equipment marked with a CE mark		☑	☐	☐	
Operating instructions available (how to operate the machine?)		☑	☐	☐	
There is a warning sign for circuits that are not switched off by the power disconnector.		☑	☐	☐	Yes, in German. Advisable to provide in English as well. Photos 2
Equipment / machine free of recognizable external defects or damages		☑	☐	☐	
Equipment and cables suitable for the influences of the environment (external, internal, corrosive)		☑	☐	☐	
There are safety Identification / Labels in the equipment (electrical, mechanical, hot surface)		☑	☐	☐	Hazards identified at the spot and at the SOP of the machine. Photos 3
Power Supply input terminals marked with a flash arrow sign		☑	☐	☐	Photos 2
PE connection points marked with the grounding symbol		☑	☐	☐	
PE conductor fixed against self-loosening		☑	☐	☐	
Each PE point are installed until the main Busbar / Distribution (No serial jumps / looping)		☑	☐	☐	The full structure is grounded.
No connection between PE and N. They are not in the same circuit.		☑	☐	☐	No neutral
The low resistance measurement of the grounding protection is less than 0.5 ohm. (measurement between PE feed source and Main PE point in the machine)		☑	☐	☐	0.3 Ohms main distribution. Photo 4
Grounding points: Housing, base, structure, fence, Panel plate/structure/doors, each cabinet/panel		☑	☐	☐	Tested housing points; front, both sides, panel, doors, etc..
Inside panel: Connections, distribution, separation points, wires and cables in order		☑	☐	☐	
Spare wires placed in terminals/connections or with the ends isolated		☑	☐	☐	Most cables are on fieldbus / IO-Link box.
Sufficient connection space, and component rail space (Control cabinet >15%)		☐	☐	☒	Not applicable for serial machine, but there is additional space.
Cable colors, controls, and special circuits according to technical documentation		☑	☐	☐	OKm, but Interpretation of the "Hauptschalter Variante IEC" (Variants) must be taken in consideration.
Labeling and installation on cables, terminals, wires according to technical documentation		☐	☒	☐	There is no identification at the wires on the electrical panel.

There are protection / insulating of all live parts		☑	☐	☐	
Visual inspection		**OK**	**NOK**	**N/A**	**Comments**
Outside panel (in field): Cable ducts, distribution, cable gland, tidiness “tie cable”, laying of cables in order		☑	☐	☐	Physical protection above the cables laid on the ground.
Outside panel (in filed): only double isolation (PU) in field. No simple isolation wires. (Only grounding is allowed)		☑	☐	☐	
Panel:, cable entry, cable gland, electrical ducts or any panel cabling distribution do not reduce the degree of isolation		☑	☐	☐	
Electrical installations marked with the flash symbol (each cabinet)		☑	☐	☐	Photo 5
Overcurrent and fault protection devices (RCD) in order		☐	☐	☒	No external outlet
Motor circuit breaker properly wired		☑	☐	☐	
Function of the safety devices in order		☑	☐	☐	The supplier ran the protocols for commissioning and tests according to ISO 60204-1 (see Appendix: Trumpf Commissioning Protocol)
The safety devices meet the safety requirements (PL[1])		☐	☐	☒	Not informed the PL of the machine.
Emergency available at each control station		☑	☐	☐	
Emergency with red handle on yellow underlay		☑	☐	☐	Photo 6
Is there a resource to Lockout/Tagout the machine (e.g. Rotatory Disconnector Switch)		☑	☐	☐	Photo 7
Is it possible to open the electrical panel only with a dedicated key.		☑	☐	☐	Photo 8
The equipment contains a manufacturer plate with the main information of the machine: - Power supply voltage (AC voltage). - Power supply (KVA). - Control voltage (24 VDC, if applicable) - Serial number. (Code) - Company information (Address, phone, email, etc.)		☑	☐	☐	Photo 9
Lilium to provide, Is there a: - Risk Assessment (RA) & Standard Operating Procedure (SOP).		☑	☐	☐	On Quentic and in the machine folder.

		☐	☐	☐	

Photo 1

TRUMPF

EU Declaration of Conformity

in accordance with
EC Machinery Directive 2006/42/EC
Directive relating to electromagnetic compatibility 2014/30/EU
EU-RoHS-Direktive 2011/65/EU

We hereby declare that the following machine complies with all the relevant requirements of the EU directives listed above.

Machine type:	**TruMark Station 3000**
Machine designation:	Laser machine
Equipment No.	L0130E0001 - L0130E9999, L0131E0001 - L0131E9999, L0132E0001 - L0132E9999, L0133E0001 - L0133E9999, L1111E0001 - L1111E9999, L1150E0001 - L1150E9999, L2150E0001 - L2150E9999, S0C22E0001 - S0C22E9999
Applied harmonized standards, in particular:	EN 60825-1:2014, EN 60204-1:2006/A1:2009, EN ISO 11553-1:2008, EN 61000-6-2:2005, EN 61000-6-4:2007/A1:2011, EN ISO 13849-1:2015
Party authorized to compile the technical file:	Andreas Conzelmann

This declaration shall lose its validity if any changes are made to the machine without our authorization.

Town / Date / Signature Grüsch, 07.01.2020

Andreas Conzelmann
President

TRUMPF Schweiz AG
TRUMPF Strasse 8
CH-7214 Grüsch

Phone +41 (0) 58 257 61 61
Fax +41 (0) 58 257 66 10

lasermarking@ch.trumpf.com
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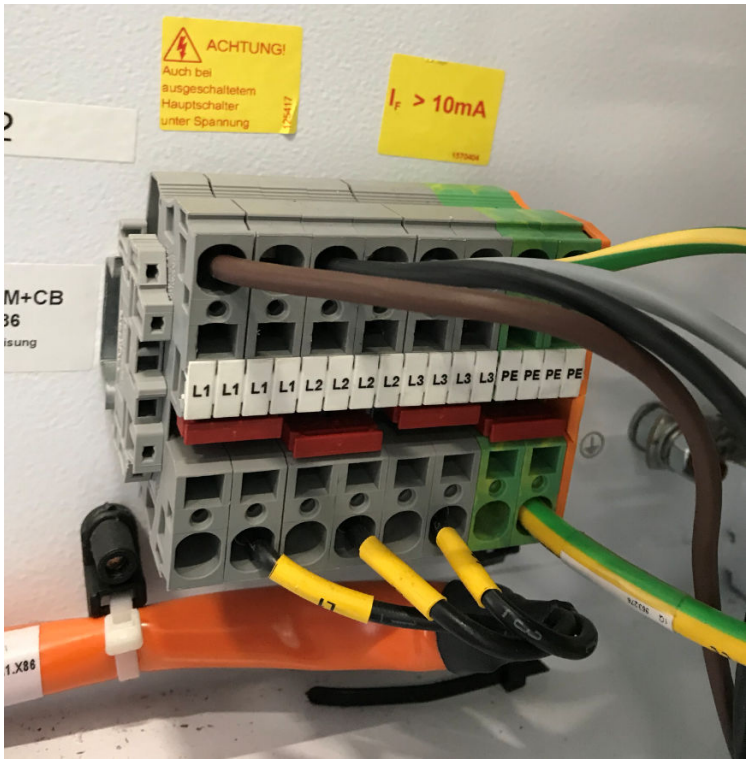
TCH711sk
V 2016 - 04

en

Photos 2


ACHTUNG!
Auch bei
ausgeschaltetem
Hauptschalter
unter Spannung
125417
I_F > 10mA
L1 L1 L1 L1 L2 L2 L2 L2 L3 L3 L3 L3 PE PE PE PE


ACHTUNG!
Auch bei
ausgeschaltetem
Hauptschalter
unter Spannung
125417

Photos 3


Hoher
Ableitstrom
19-01-06-06
WARNUNG
Bei der Bearbeitung können
gesundheitsschädliche Stäube,
Gase oder Aerosole entstehen.
Anlage nur mit aktiver Absaugung betreiben.
1352921-02
Bestrahlung vermeiden
Austritt von sichtbarer und
unsichtbarer Laserstrahlung
19-01-06-22
Warning
Hot surface
Contact may cause a burn.
Ensure the area is cool
before contacting.

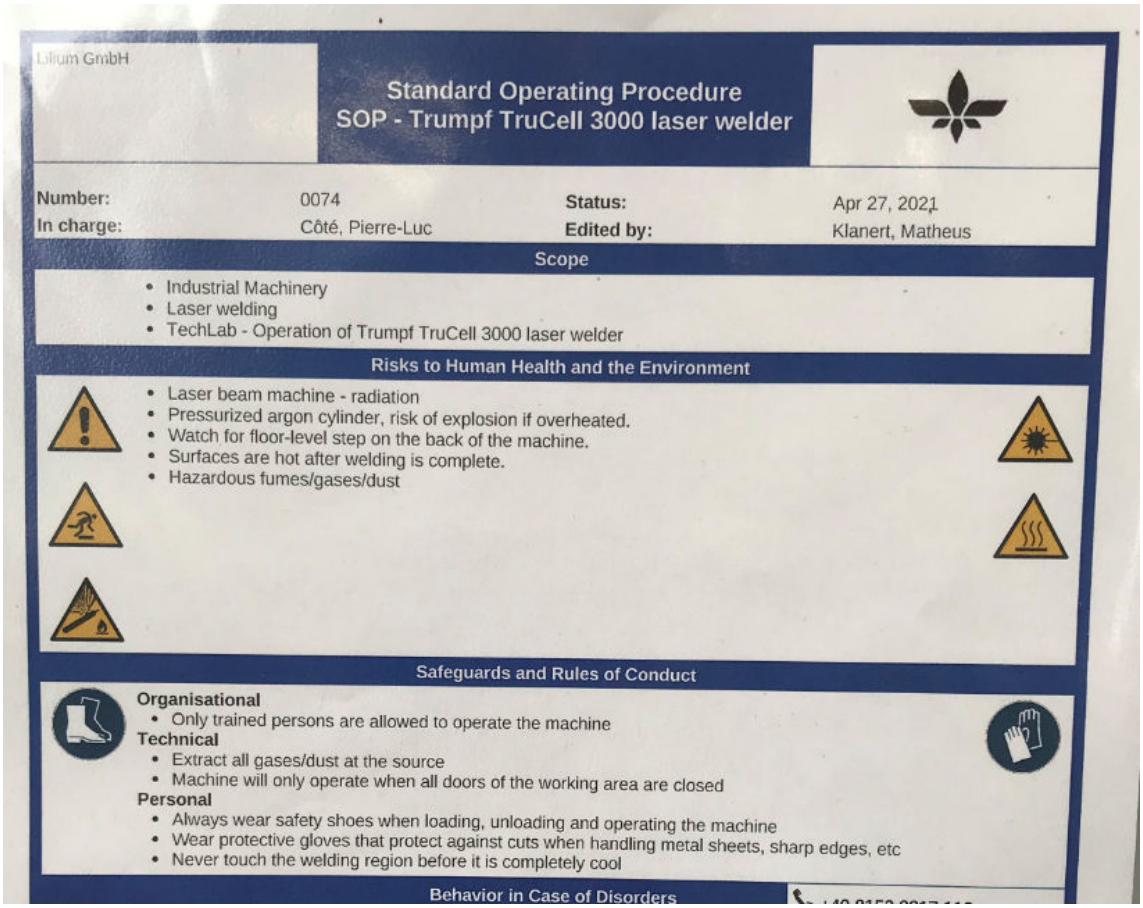

Lilium GmbH
Standard Operating Procedure
SOP - Trumpf TruCell 3000 laser welder
Number: 0074
Status: Apr 27, 2021
In charge: Côté, Pierre-Luc
Edited by: Klanert, Matheus
Scope
Industrial Machinery
Laser welding
TechLab - Operation of Trumpf TruCell 3000 laser welder
Risks to Human Health and the Environment
Laser beam machine - radiation
Pressurized argon cylinder, risk of explosion if overheated.
Watch for floor-level step on the back of the machine.
Surfaces are hot after welding is complete.
Hazardous fumes/gases/dust
Safeguards and Rules of Conduct
Organisational
Only trained persons are allowed to operate the machine
Technical
Extract all gases/dust at the source
Machine will only operate when all doors of the working area are closed
Personal
Always wear safety shoes when loading, unloading and operating the machine
Wear protective gloves that protect against cuts when handling metal sheets, sharp edges, etc
Never touch the welding region before it is completely cool
Behavior in Case of Disorders

Photo 4

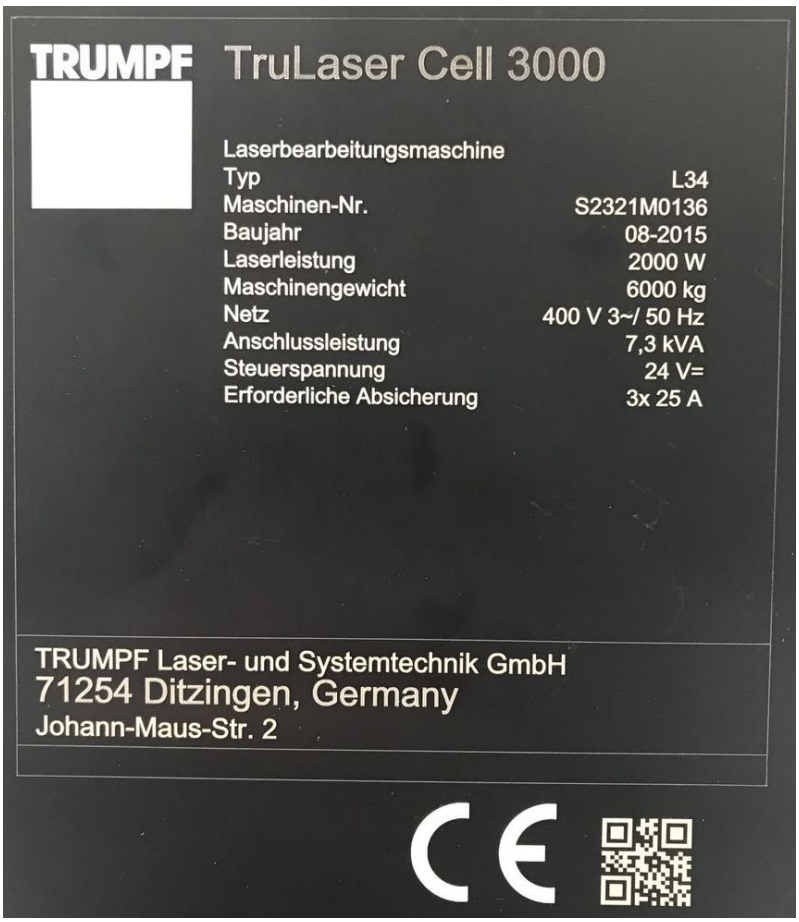
Photos 5

Photos 6

Photos 7

Photos 8

Photos 9


TRUMPF
TruLaser Cell 3000
Laserbearbeitungsmaschine
Typ L34
Maschinen-Nr. S2321M0136
Baujahr 08-2015
Laserleistung 2000 W
Maschinengewicht 6000 kg
Netz 400 V 3~/ 50 Hz
Anschlussleistung 7,3 kVA
Steuerspannung 24 V=
Erforderliche Absicherung 3x 25 A
TRUMPF Laser- und Systemtechnik GmbH
71254 Ditzingen, Germany
Johann-Maus-Str. 2
CE

Appendix: Trumpf Commissioning Protocol

TRUMPF	Tätigkeitsbericht			TRUMPF Laser- und Systemtechnik GmbH Johann-Maus-Str. 2 71254 Ditzingen Telefon (07156) 303-36444/30844 Telefax (07156) 303-31291		
Werk TLD	Gruppe NSC	Techniker ROETZER		Einsatz-Nr.: 3867033	Fall-Nr.: 6558333	Seite: 1/2

Maschine	Nummer S2321M0136		Typ TruLaser Cell 3000 (L34)	
Kunde	Firma Lilium eAircraft GmbH			Kundennummer: 264107
	Straße: Claude-Dornier-Str. 1	PLZ: 82234	Ort: Wessling	Land: DE
Auftragsdaten	Kunden-Nr.:	SAP Service-Nr.:	SAP Konsi-Nr.:	SAP Ersatzteil-Nr.:
Kontakt	Gesprächspartner: Armin Ader		Telefon:	
Reisekosten	Reisebeleg ():	Übernachtungen:	à ():	Verpflegung
	PKW Anreise ():	Rückreise ():		
Betriebsstunden	Datum: 15.04.2021	NC: 2528	Resonator / HD-Pumpe 1: 80	Strahl ein / HD-Pumpe 2: 58
Sicherheitsmängel				
Anmerkung Kunde				

Zeiten

Datum	Anfang Reisezeit	Arbeitszeit von	Arbeitszeit bis	Ende Reisezeit	Dauer	Pausen	Einsatz-Nr.	passive Reisezeit
13.04.2021	17:15			18:15	01:00	00:00	3867033	
14.04.2021	07:00	09:00	17:00	17:15	09:30	00:45	3867033	
15.04.2021	07:15	07:30	17:45	18:00	10:00	00:45	3867033	
16.04.2021	07:30	07:45	08:00		00:30	00:00	3867033	
16.04.2021		11:15	14:00		02:15	00:30	3867033	

Tätigkeiten für die Inbetriebnahme

IB-Code	Dauer	Text
6300-1	10:00	Aufstellung
6500-1	08:45	Inbetriebnahme

Sonstige Tätigkeiten

Pos	Schadensbild	Objektgruppe	Objektteil	Einsatzcode	Produktfehler		i.O. J/N	Stunden
1							Ja	00:30
	Problem Fertigstellung Umzug und Inbetriebnahme				Ursache ---			
	Behebung Umzug auf neuen Standplatz, Aufbau der Komponenten und Inbetriebnahme der Anlage. Funktion Anlage i.O. Leistungsmessung 2005W nach PFO Fleckbild i.O. Sicherheitseinrichtungen getestet und i.O. Anlage läuft fehlerfrei und kann in vollem Umfang verwendet werden							

TRUMPF	Tätigkeitsbericht			TRUMPF Laser- und Systemtechnik GmbH Johann-Maus-Str. 2 71254 Ditzingen Telefon (07156) 303-36444/30844 Telefax (07156) 303-31291		
Werk TLD	Gruppe NSC	Techniker ROETZER		Einsatz-Nr.: 4036516	Fall-Nr.: 6356915	Seite: 1/1

Maschine	Nummer S2321M0136		Typ TruLaser Cell 3000 (L34)	
Kunde	Firma Lilium eAircraft GmbH			Kundennummer: 264107
	Straße: Claude-Dornier-Str. 1	PLZ: 82234	Ort: Wessling	Land: DE
Auftragsdaten	Kunden-Nr.:	SAP Service-Nr.:	SAP Konsi-Nr.:	SAP Ersatzteil-Nr.:
Kontakt	Gesprächspartner: Armin Ader		Telefon:	
Reisekosten	Reisebeleg ():	Übernachtungen: 0	à ():	Verpflegung
	PKW Anreise (km): 0	Rückreise (km): 0		
Betriebsstunden	Datum: 16.04.2021	NC: 2529	Resonator / HD-Pumpe 1: 81	Strahl ein / HD-Pumpe 2: 59
Sicherheitsmängel				
Anmerkung Kunde				

Zeiten

Datum	Anfang Reisezeit	Arbeitszeit von	Arbeitszeit bis	Ende Reisezeit	Dauer	Pausen	Einsatz-Nr.	passive Reisezeit
16.04.2021		08:00	11:15		03:00	00:15	4036516	

Tätigkeiten

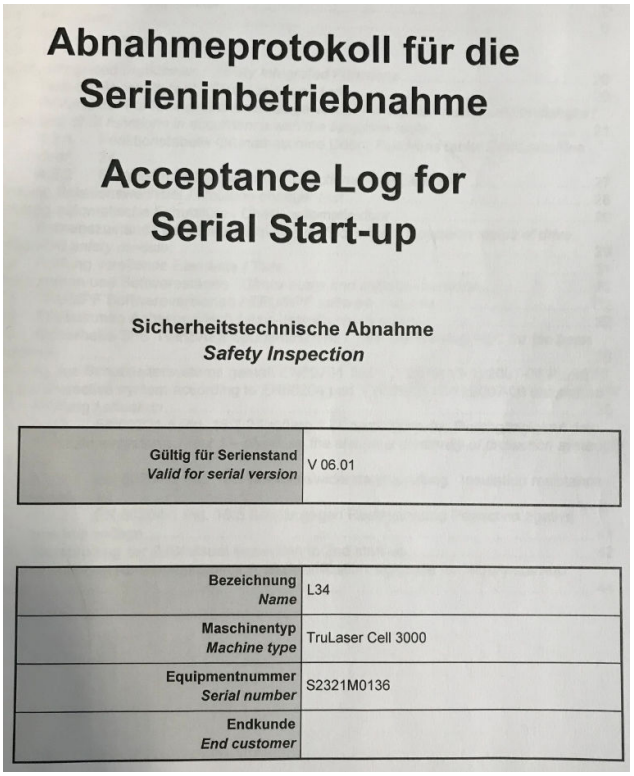
Pos	Schadensbild	Objektgruppe	Objektteil	Einsatzcode	Produktfehler		i.O. J/N	Stunden
1							Ja	03:00
	Problem Restarbeiten nach IB im letzten November offen				Ursache ---			
	Behebung Folgende Restarbeiten durchgeführt. - PanelPC am Bedienpult ausgetauscht und eingerichtet damit beim Start TruControl angezeigt wird - Schlauch für Schutzgas Vorrichtung (Formiergas) von Ventil bis in Arbeitsraum verlegt (Mediendurchführung unten links) - Kabeldurchführung Netzanschluss i.O. - Dritte, kurze Basisbrücke montiert - Halterung VisionLine PFO angebracht und PanelPC montiert							

16.04.2021
Datum

Unterschrift des Technikers

Unterschrift des Kunden

Name Kunde
KLANERT



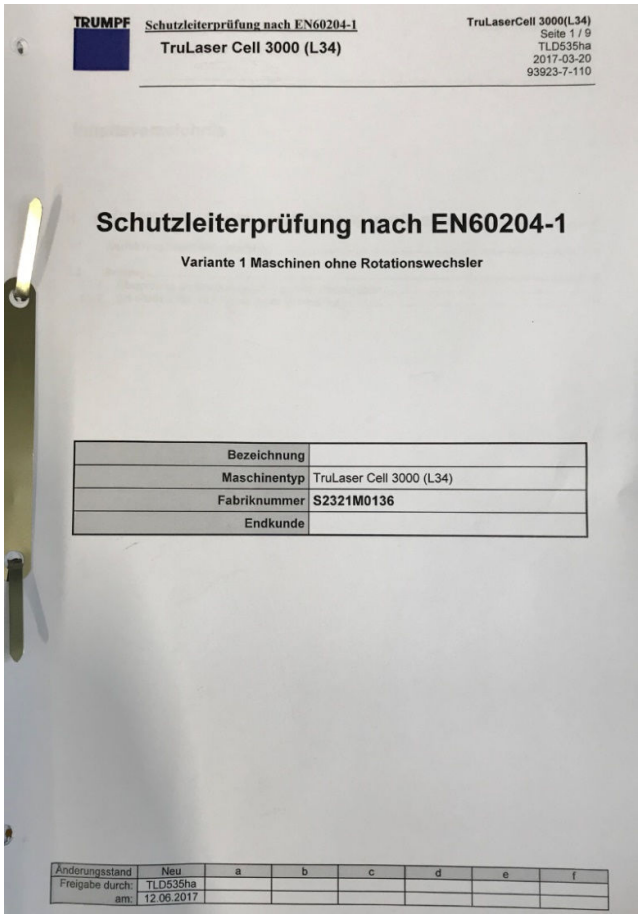
Abnahmeprotokoll für die Serieninbetriebnahme

Acceptance Log for Serial Start-up

Sicherheitstechnische Abnahme
Safety Inspection

Gültig für Serienstand *Valid for serial version*	V 06.01

Bezeichnung *Name*	L34
Maschinentyp *Machine type*	TruLaser Cell 3000
Equipmentnummer *Serial number*	S2321M0136
Endkunde *End customer*	



TRUMPF

Schutzleiterprüfung nach EN60204-1
TruLaser Cell 3000 (L34)

TruLaserCell 3000(L34)
Seite 1 / 9
TLD535ha
2017-03-20
93923-7-110

Schutzleiterprüfung nach EN60204-1

Variante 1 Maschinen ohne Rotationswechsler

Bezeichnung	
Maschinentyp	TruLaser Cell 3000 (L34)
Fabriknummer	**S2321M0136**
Endkunde	

Änderungsstand	Neu	a	b	c	d	e	f
Freigabe durch:	TLD535ha						
am:	12.06.2017						