

# 实验室平板硫化机 LABORATORY PLATEN PRESS

## LP3000系列 LP3000 Series

孟泰科橡胶检测仪器有限公司  
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# EC 标准一致性声明

## EC Declaration of Conformity

根据机械要求98/37/EC Annex II A  
as defined by Machinery Directive 98/37/EC Annex II A

制造商: 孟泰科检测设备有限公司  
Manufacturer: MonTech Werkstoffprüfmaschinen GmbH  
Carl-Benz-Straße 11  
D – 74722 Buchen /Germany

我方特此声明: 下述特定的设备, 基于该结构、设计及由我方提供的相关版本, 均符合EC要求的基本安全性与健康标准。

We hereby declare that the unit designated below, based on its construction and design and with respect to the version supplied by us, is in compliance with the applicable basic safety and health standards of the EC Directives.

未经我方事先准许, 对设备的任何改动, 本声明将自动失效。

This Declaration shall become null and void upon any modification of the machine without our prior approval.

设备名称:	实验室平板硫化机
Designation of the Machine	LABORATORY PLATEN PRESS
设备型号:	LP3000
Machine Type	LP 3000
设备序号:	205 BG 561
Machine No.	

适用EC标准:

Applicable EC Directive:

EC机械标准89/37/EC  
EC Machinery Directive 89/37/EC

EC低电压标准2006/95/EC  
EC Low-Voltage Directive 2006/95/EC

EC电磁兼容性标准2004/108/EC  
EC Directive Electromagnetic Compatibility 2004/108/EC

适用校准标准:

Applied harmonized Standards:

EN 12100-1 and EN 12100-2  
EN 60 204-1  
EN 61000-6-2 and EN 61000-6-4

通知:

Notified to (art. 8/2c EC Machinery Directive):

Berufsgenossenschaft der chemischen Industrie  
Fachausschuss Chemie  
Heidenkampsweg 73  
D-20097 Hamburg

Buchen,

Signature: .....

P x0x XX

MonTech Werkstoffprüfmaschinen GmbH

# EG-Konformitätserklärung

im Sinne der EG-Maschinenrichtlinie 98/37/EG, Anhang II A

Hersteller: MonTech Werkstoffprüfmaschinen GmbH  
Carl-Benz-Straße 11  
D – 74722 Buchen /Germany

Wir erklären,

dass die nachfolgend bezeichnete Maschine aufgrund ihrer Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Richtlinien entspricht.

Bei einer nicht mit uns abgestimmten Änderung der Maschine verliert diese Erklärung ihre Gültigkeit.

Bezeichnung der Maschine: LABORATORY PLATEN PRESS  
Maschinen-Typ: LP 3000  
Maschinen-Nr. 205 BG 561

Einschlägige EG-Richtlinie:

EG-Maschinenrichtlinie – 98/37/EG  
EG-Niederspannungsrichtlinie 2006/95/EG  
EG-Richtlinie Elektromagnetische Verträglichkeit 2004/108/EG

Angewandte harmonisierte Normen:

EN 12100-1 und EN 12100-2  
EN 60 204-1  
EN 61000-6-2 and EN 61000-6-4

Gemeldete Stelle (Aufbewahrung der Unterlagen nach Art. 8/2c EG-Maschinenrichtlinie):

Berufsgenossenschaft der chemischen Industrie  
Fachausschuss Chemie  
Heidenkampsweg 73  
D-20097 Hamburg

Buchen,

Unterschrift: .....

# 实验室平板硫化机 LABORATORY PLATEN PRESS

## 操 作 指 南 Operating instructions

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勾消的章节不适用于本机器

**Crossed out chapters do not apply on the supplied machine**

# 1. 概述 GENERAL

## 1.1. 通用规则 General notes



本操作指南专为负责本设备人员阅读、理解与遵循而撰写。

These Operating Instructions have been prepared in order to be read, understood and complied within all respects by the persons responsible for the machine.

本操作指南包含正确安装、连接以及所需的操作和保养的所有规格、数据及指导。

They contain all specifications, data and instructions for the correct installation and connection of the machine as well as all instructions required for its operation and maintenance.

本操作指南为本设备的一部分，一旦售出，应该将本手册提交给下一个物主或用户。

These Operating Instructions are part of the machine and in case the machine will be sold, they have to be forwarded to the next owner or user.

特别重要的是在启动本设备前必须充分熟悉操作与控制各单元。

It is particularly important that you are familiar with all operating and control elements prior to the start-up of your machine.

只有熟知这些操作指南才能避免误操作、无故障保证才能起作用，因此，实际负责本设备的人员必须具备本操作指南中的所有知识。

Only if you are familiar with these Operating Instructions, faulty operation of your machine can be avoided and its trouble-free service warranted. It is therefore very important that the persons actually responsible for the machine have knowledge of these Operating Instructions.

孟泰科检测设备有限公司要求用户在启动本设备前仔细研究本操作指南，对由于违规操作造成的损坏或故障**不负任何责任！**

We recommend the careful study of these Operating Instructions prior to the start-up of the machine as we will **not assume any liability** for damage or malfunction resulting from their non-compliance!

遵照本操作指南的所有指导可以最大限度节省时间和减少麻烦，并且可以避免设备故障，使本设备最大限度地令用户满意。

Compliance with all instructions contained in these Operating Instructions will minimize time and trouble; additionally, damage can be avoided and the performance of your machine will always be to your almost satisfaction.

假如遇到任何困难，请立即与制造商或当地代表联系，寻求帮助。

Should you despite meet with any difficulties, do not hesitate to contact us or one of our representatives for assistance.

为满足用户的需求，本设备在持续改进与发展中。

Our machines are continuously being further developed and improved in order to meet all requirements made to them.

对于合同范围之外的应用，请事先与制造商或当地代表商量，寻求忠告，以免质量保证失效。

Seek our technical advice or consult with us or one of our representatives prior to any application of the machine outside the contractual field of application, as otherwise any warranty will be excluded.

本操作指南的版权归孟泰科检测设备有限公司所有。

The firm MonTech Werkstoffprüfmaschinen GmbH reserves the copyright to these Operating Instructions.

本操作指南专为负责本设备的安装、操作与监控人员的使用。

These Operating Instructions are intended for the personnel in charge of installation, operation and monitoring of the machine.

严禁以恶意竞争为目的的复制、转卖或未经允许的使用本设备与操作指南！严禁部分或全部向第三方泄露将本操作指南所含的技术规格和图纸。

The reproduction, distribution or unauthorized use for competitive purposes or the disclosure to any third parties of the technical specifications and drawings contained herein, whether in part or as a whole, is prohibited.

**衷心祝愿您成功使用本设备！**

**We wish you successful working with this machine!**



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### 1.2. 预期的应用 Application in accordance with the intended use

本设备根据国家规定的工艺设计与建造并符合安全法规。然而，使用本设备不当可能会产生严重甚至致命的人身伤害，或会损坏设备、厂房或材料。

This machine/equipment has been designed and constructed according to the state of the art and in compliance with the applicable safety regulations. Nevertheless, using the machine may pose a risk of serious or fatal personal injury for the operator or other people, or may impair the machine/plant or other material assets.

只有正确操作本设备且保持工况良好。可能的危及安全的隐患应立即消除（修复）！

Only operate the machine in good order and condition. Malfunctions which may impair safety are to be eliminated (get it repaired) immediately!

本平板硫化机用于生产由塑料、橡胶和/陶瓷制成的材料料。

Plate presses are used for the production of pressed articles made of plastics and/or rubber and /or ceramics.

遵守本操作指南、保养与维护规定，以及第二章“技术数据”中所列的各种参数也是预期应用的一部分。

Observing the Operating Instructions, the maintenance and service specifications, as well as the parameters listed in Chapter 2 "TECHNICAL DATA" is also part of the intended use.

任何不同的或超范围使用，例如在易爆气体范围内、或在相应特定的区域内操作本设备等，不能视为合乎规定的使用。孟泰科检测设备有限公司将对由于这种非预期的使用造成的损坏不负任何责任。用户应对此承担唯一的责任。

Any different or further reaching use, e.g. operating the machine in ranges where explosive fumes can arise or within accordingly indicated zones, etc., is not considered to be the designated use. The company MonTech Werkstoffprüfmaschinen GmbH will not be liable for any damage resulting from such non-intended use. The user bears sole responsibility in these circumstances.

### 1.3. 免责声明 Disclaimer

如果本实验室平板硫化机被不符合规定地使用或以非常规的方法使用或安装，包括用其他方式改变开关（如：急停开关、限位开关等）及其位置，孟泰科检测设备有限公司对任何形式的损坏或故障不承担任何责任。

If the laboratory platen press is not used as intended or is applied or installed in an uncommon way, as well as switches (Emergency-stop, limit switches, etc.) are changed or positioned in an other way, MonTech Werkstoffprüfmaschinen GmbH will not assume any liability for any type of damages or breakdowns.

如果操作人员修改元器件，特别是载压元器件，如：工具、工具接头、汽缸，孟泰科检测设备有限公司的质量保证与法律责任就此终结。

If the operator modifies components, especially pressure loaded components, e.g. tools, tool adaptors, cylinders, MonTech Werkstoffprüfmaschinen GmbH's warranty and legal liability will expire.



孟泰科检测设备有限公司对不符合本操作手册规定引起的人员伤害、建筑物或其他设施的损坏不承担任何责任。

The company MonTech Werkstoffprüfmaschinen will not assume any liability for personal injuries, damages on buildings or other facilities, as well as for breakdowns, that result from the non-compliance with these Operating Instructions.

## 2. 技术数据 TECHNICAL DATA

### 2.1. 概述 General

#### ① 型号代码 Type Number details / 平板硫化机配置数据 Press configuration data

技术数据 Technical data:

LP3000	= 系列号 Series
600	= 压力 (kN) Press force in kN
200	= 行程 (mm) stroke in mm
SH	= 标准液压 Standard Hydraulics
2	= 压板层数 daylight
4	= 被加热板数 heated plates
446	= 加热板宽度 (mm) heating plate size width in mm
446	= 加热板深度 (mm) heating plate size depth in mm
E	= 电加热 Electrical heating
A	= 高精度 Advanced precision ( $\pm 0.5^{\circ}\text{C}$ )
P	= PLC 控制器 PLC Controller
S	= 安全罩 Safety shield

#### ② 重要的运输须知 IMPORTANT Transportation Notes

只能用 2 吨以上的叉车移动本设备。切不能用绳索或吊钩起吊，只能用叉车提起本设备和控制柜的机架底部。

Only transport the press unit with a forklift of at least 2 tons lifting capacity. Do not lift the press unit with a rope or hook but only with a forklift underneath the bottom plate of the press frame and cabinet.

危险警告告 DANGER:

起重时，必须清理起重区域无障碍且穿戴防护手套与安全鞋。

For lifting, please keep kinds and feet clear all the time from lifting area. Wear safety gloves and safety shoes.

#### ③ 尺寸 Sizes and dimensions

技术数据 Technical data

长 Length	= 1200mm
宽 Width	= 800mm
高 Height	= 1830mm
净重 Weight	= 约 about 1.000kg net (包括: 油 incl. Oil)

#### ④ 占地要求 Floor space requirements

技术数据 Technical data

长约 Length about	= 1600mm
宽约 Width about	= 1400mm
层高 Room height	= 2450mm
承重 Floor load	= 1.000kg / m <sup>2</sup>
地面要求	= 任何非易燃地面 any type of non-flammable floor
Floor requirements	建议 Recommended: 水泥或大理石 Concrete or ceramic
地基 Foundation	= 毋需地基或底脚螺栓固定 No foundation or bolts required
载荷分布 Load distrib.	= 4 个机罩可调底脚 4 adjustment feet for press cover 4 个机架 防震底脚 4 anti-vibration feet for press frame

### 2.2. 连接载荷 Connected loads

#### ① 能源供应 Supplies

电气 Electrical

相数 Number of phases	= 3
电压 Voltage	= 相位电压 Phase <> Phase = 380 ~ 420 Volts = 单相电压 Phase <> Neutral = 200 ~ 240 Volts
总电流 Total load	= 60 Amps (电源线配置 60 安培的延时保险丝) (Main supply line fused with 60 Amps time-lag)
需要接地 Ground required	= 是 YES
需要零线 Neutral required	= 是 YES
线缆尺寸 Cable dimensions	= 5 x 10mm <sup>2</sup> (最小 min.)
线缆颜色代码 Cable color code	= 棕色 Brown > 1 相 Phase 1 = 黑色 Black > 2 相 Phase 2 = 灰色 Grey > 3 相 Phase 3 = 蓝色 Blue > 0 线 Neutral = 绿色 Green/黄色 Yellow > 接地线 Ground (earth)

从本设备进线口所需线缆长度至少 2m  
Cable length from inlet of press unit required= 2 Meters

② 能源供应 Supplies

供水 *Process Water*

毋需供水 Water supply is not required.

③ 能源供应 Supplies

气动 *Pneumatics /压缩空气 Compressed air*

需要压缩空气 Compressed air supply required.

压缩空气必须无油、无水 Air must be free of oil and water.

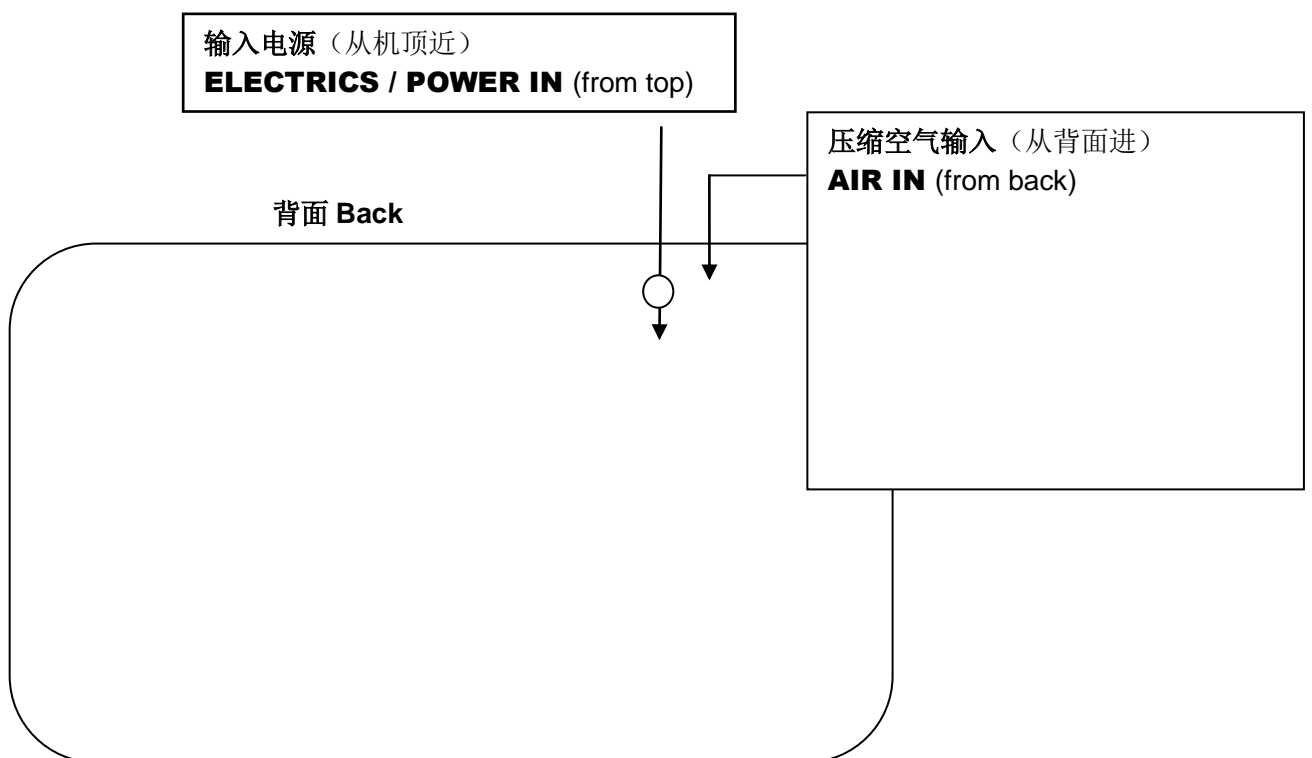
气管内径 Tube with internal dia. = 10mm

滤清器已包括在供货范围内 Air filtration unit is included in scope of supply.

④ 能源供应 Supplies

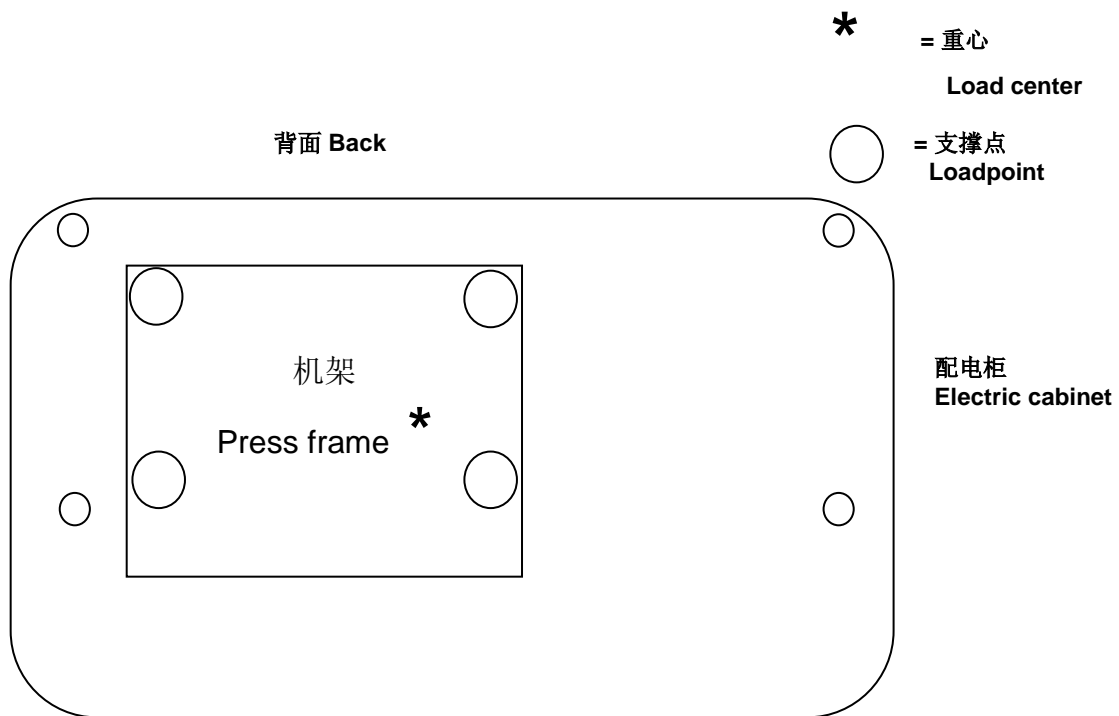
电源位置 *Location of supplies:*

平板硫化机 Press unit (俯视图 Top-View):



### 2.3. 验收协议 Acceptance protocol

## 2.4. 布局总图 General arrangement drawing



### 3. 安全须知 SAFETY

#### 3.1. 管理措施 Organisational measures

始终将本操作指南放在本设备边上的随手可及之处。

Always keep the Operating Instructions handy at an accessible place and within easy reach near the machine.

除本操作指南的规定外，遵循其他有关防止事故发生与环保的常规规定！

In addition to the Operating Instructions, observe the generally applicable and otherwise binding regulations on accident prevention and environmental protection!

开始工作前，指定负责本设备的人员必须阅读本操作指南，特别是第三章“安全须知”。工作时再读为时已晚。这一点尤其适用于那些不经常使用本设备的人员，如：更换、清洁或保养人员。

Before starting work, the personnel assigned to work with the machine must have read the Operating Instructions and especially the Chapter 3 "Safety". It will be too late to do that during work. This particularly applies to personnel who work at the machine only sometimes, e.g. changing-over, cleaning or maintenance.

操作人员不得留长发、穿宽松的衣服或佩带饰物，包括戒指，以减少人身伤害风险，如：被困住或拽入。

Staff is not allowed to wear long hair, loose clothing or jewellery, including rings. There is the risk of injuries, e.g. they can be trapped or drawn in.

至此，需要规定操作人员必须穿戴上个人防护用具！

So far it is necessary or required by the instructions the operator has to wear his and her personal protective equipment!

一旦本设备的安全装置出现变化或本设备动作有异常，立即关停本设备并向负责人报告故障。

If any safety-related changes occur on the machine or its operating behaviour, immediately switch off the machine and report the malfunction to the responsible person.

在没有得到孟泰科检测设备有限公司同意，本设备不得修改、附加或挪作他用，由此可能损坏本设备安全性！此规定同样适用于安装与调试安全设施、阀门以及支撑部件的焊接。可编程控制系统的程序（软件）更改需得到孟泰科检测设备有限公司的同意。

Do not make any modifications, additions or conversions on the machine which may impair safety without Mon-Tech Werkstoffprüfmaschinen GmbH approval! This also applies to the installation and set-up of safety equipment and valves as well as to welding works at supporting parts. Program changes (software) on programmable control systems are to be approved by MonTech Werkstoffprüfmaschinen GmbH.

如有官方需要或要求，用户应对操作人员必须穿戴个人防护用具作强制规定，如：防护服、防护手套、安全鞋、耳罩，等等。

If it is necessary or required by national regulations, the operating company is to impose the obligation on the operating personnel to wear personal protective equipment, e.g. protective clothing, protective gloves, safety shoes, ear protection, etc..

工作场地必须确保有足够的光线。

The operating company has to make sure that the company building is lighted sufficiently.

相关组装、拆卸与再安装、启动、操作、再就位、调试、保养与维修必须遵循本操作指南的中断程序。

The disconnection procedures specified in the Operating Instructions are to be observed with respect to all works to be performed in connection with the assembly, dismounting and remounting, start-up, operation, relocation, adaptation, maintenance and repair.

为规范工作程序与安全措施，必须建立合适的操作规范并指导操作人员，遵循官方规定。

For company-specific working processes and safety-related activities, the operating company has to create appropriate operating instructions and to instruct the personnel. Observe national regulations.

为避免火灾，没有监控时，不得操作本设备。

To avoid fire hazard, do not operate the machine without supervision.

##### 3.1.1. 人员的选择与素养 Selection of personnel and qualification

本设备须由获准的专人操作、保养与维修，经培训指导后才能上岗，并被特别告知可能的伤害与风险。

The machine must be exclusively operated, maintained, and repaired by authorized, well-trained and instructed personnel that have been given special instructions on any risks and hazards that may occur.

经过授课、培训与指导的专职人员应在不间断的监控下操作本设备。未满18岁的年轻人员受训操作本设备须遵循有关法律最起码的规定。

People who are to be taught, trained, or instructed may only work on the machine under continuous supervision. Young people, younger than 18, may only work on the machine in the course of their vocational training. The minimum legal requirements have to be observed.

只有合格的电气技术人员或在电气技术人员的安全监督下经培训的人员才可允许实施电气系统安装，但仍须遵循有关规定。

Only qualified electricians or trained personnel, conducted and supervised by an electrician, who observe the applicable regulations for electrical installations are allowed to work on the electrical systems of the machine.

### 3.1.2. 日常操作的安全须知 **Safety instructions for normal operation**

切勿违反安全规程！

**Never do anything to jeopardize safety!**

只有在所有安全装置和与安全有关的元器件安装在正确的位置上且工况良好，如：放电保护装置、急停装置、拉线开关、排废装置，方可在本设备上！

Only operate the machine when all safety devices and safety-related components, e.g. releasable protective devices, EMERGENCY-STOP devices, pull-wire switches, exhaust devices, if necessary, are in place, in proper working order, and in protective position!

如遇设备动作异常，应立即报告负责人员，关停本设备并采取保护措施。

Immediately report any occurring changes of the operating behaviour of the machine to the responsible person. If necessary, immediately switch off the machine and secure it.

一旦遇到故障，立即关停本设备并采取保护措施！立即安排修复故障！

In case of malfunctions, immediately switch off the machine and secure it! Immediately get malfunctions repaired!

遵守开启与关停程序操作规程和控制指令。

Follow the switch on and off procedures and control indications according to the separate operating instructions.

由于存在辐射热，严禁在本设备周围放置易燃、易爆物料。

Do not place burning material and inflammable substances near the machine because there is radiant heat.

**在开启或启动本设备前，确保无人处在危险的境地！**

**Before switching on or starting up the machine, make sure that nobody can be endangered by the starting machine!**

### 3.1.3. 调试、清洁、保养、维修与故障诊断的安全须知

#### **Safety instructions for refitting, cleaning, maintenance, repair und trouble shooting**

遵循调试、保养、检查与日期的工作规程，包括按本操作指南规定更换零件或部分装备的日期。这些工作只能由专业人员实施。

Observe the activities for setting up, maintenance and inspection works and dates including the dates for replacing the parts/partial equipment specified in the Operating Instructions. This work is only allowed to be done by specialists.

任何所用的零备件都必须符合制造商列明的技术要求。使用孟泰科检测设备有限公司生产的原厂零备件是本设备的质量保证。

Any spare parts used must comply with the technical requirements laid down by the manufacturer.

This is always guaranteed when the original spare parts made by MonTech Werkstoffprüfmaschinen GmbH are used.

开始特殊工作或保养工作时，须通知操作人员！如果多人或多单位协作从事安装、拆装、起重等工作，必须指派监管人员。

Inform the operators before special and maintenance works are started! If several people or contractors, e.g. for assembly or disassembly works, lifting processes, etc., work together, assign a supervisor.

装配、拆卸、再安装、调试、操作及维修必须明确责任并予遵循。

The responsibilities for assembly, dismantling and remounting, commissioning, operation and repair must be clearly defined and complied with.

这些规定适用于须由专业人员实施的有关电气、气动与液压设备工作。

This particularly applies to all works to be performed on the electric, pneumatic and hydraulic equipment, which must only be done by experts.

在操作本设备、更换或安装本设备的安全装置和与安全有关的装置、以及检查、保养和维修时，始终遵循本操作指南与安装手册中的开启或关停的程序。

Always observe the Operating Instructions and the Installation Instructions for the procedures of switching ON/OFF for all works referring to the operation, the changing-over or the setting-up of the machine and its safety-related devices, as well as the inspection, maintenance and repair.

必要时，要隔离服务区域。

Protect the service area as far as necessary.

如果本设备因维修或保养已处于完全停机状态，执行下列程序确保不致意外开机：

If the machine has been switched off completely for maintenance and repair, it has to be secured against accidental switching on:

- 断开主电源开关并确保不会意外合上，和/或  
Switch the main switch off and secure it against accidental switching on, and /or
- 主电源开关上放置警示标志  
Place a warning sign on the main switch.
- 切断压缩空气或任何其他能源供应，如：热水。  
Turn off the connection for compressed air or any other energy supplies, e.g. hot water.



主电网断电后电子元器件（如：变频器、电容等）仍会放电约15分钟。处理电子元器件前，必须首先检测其电压。

Electronic components (e.g. frequency converter, capacitors, etc.) can be live for about 15 minutes, also after disconnecting from the mains network. Before all works on electronic components, always measure the voltage first.

当更换单独的元器件和动作部件时，确保固定牢靠不致在移动时引起任何危险。同时，确保起重装置有足够的起重能力与工况条件良好。

When replacing individual components and heavier subassemblies, ensure that they are correctly fixed to suitable lifting devices so that they are secured that way that they cannot cause any danger. Ensure that all lifting devices are suitable and in perfect working order and of adequate lifting capacity.



严禁在悬吊物下逗留！  
Do not step under suspended loads!



一旦必须在上方进行装配工作，使用所提供的工具或其他安全梯子与工装平台。不得将机器部分作为梯子使用！  
In case assembly work has to be done overhead, use the provided aids or other safe ladders and service platforms. Do not use machine parts as climbing aids!

保持所有工装设备，如：平台、梯子清洁且无障碍！

Keep all machine accesses, e.g. platforms, ladders, free from dirt and objects!

维护、保养工作完成后，确保将所有松开连接的螺栓拧紧。

Always retighten and secure loose screw connections after service and maintenance work.

如要拆卸安全装置去加工、保养与维修，在完成保养与维修后应立即安装并检查这些安全装置。

If it is required to disassemble safety devices for tooling, maintenance and repair works, it will be indispensable to install and check the safety devices immediately after completing the maintenance and repair works.

请使用安全和环保的方法处置耗材与更换的零部件！

Provide for safe and environment-friendly disposal of the supplies and the replaced parts!

定期检查所有管路、管接头和螺栓连接，确认有否泄漏和其他可见的破损！如有破损，立即修复！

Check all pipes, hoses and screw fittings regularly for leaks and other externally visible damage! Repair the damage immediately!

在启动本设备前，确保所有系统和压力管路（压缩空气）都已开启且承载相应的压力。


Before starting the maintenance works, make sure that all system sections and pressurized lines (pressurized air) that have to be opened, have been depressurised accordingly.

合理布置与安装气动管路！不得接驳连接！接头的配件、长度及质量须符合要求。

Lay and install all pneumatic lines properly! Do not interchange the connections! Fittings, length and quality of the hoses must comply with the requirements.


在处理油、油脂和其他化学物质，必须遵循本设备的安全规程。

When handling with oil, grease and other chemical substances, observe the applicable safety regulations for the product.

	在处理热源时，必须给出特别警示（失火与烫伤风险）！ Special caution is required when working with hot supplies (risk of burning or scalding)!
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### 3.2 标识与须知描述 Description of symbols and notes

#### 3.2.1. 安全生产标识 Symbol for on-the-job safety

	<p>在操作指南中随处可以看到有关安全生产的标识以免危及生命与人身。 In these Operating Instructions you will find this symbol in all notes regarding on-the-job safety in all cases of danger to life and limb.</p> <p>必须严格遵守安全规程并特别注意给出的警示。向其他使用者提供这些信息。除本操作指南所提外，还必须遵守防止意外事故的常规安全须知、条例及规定。 All safety instructions must be strictly complied with and particular caution in these cases has to be paid. Pass all information about on-the-job safety also on to other users. In addition to the safety rules contained in these Operating Instructions, the generally applicable safety regulations and the rules and regulations for the prevention of accidents must be complied with.</p>
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#### 3.2.2. 注意提示 ATTENTION hint

##### 注意 ATTENTION!

本操作指南出现的**注意**提示须予以特别遵守，其指导、规定、规格、提示及正确的工作程序可以以避免出现危险与损坏设备或其零部件。

This **ATTENTION** hint appears in those parts of the Operating Instructions whose observation is particularly important for compliance with the directives, regulations, specifications, hints and the correct sequence of work as well as for the avoidance of damage to and the destruction of the machine and/or other parts of the equipment.

#### 3.2.3. 标识 Symbols

最重要的标识及其含义罗列如下：


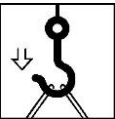


The most important symbols and their meanings are listed below:

有些标识同时用出现在本操作指南中与粘贴在设备上。

Some of these symbols are used both in these Operating Instructions and as symbols sticking on the machine.

##### ① 本文所使用的标识 Symbols used in the text



标识的含义 Symbol Meaning:

	<b>Allgemeiner Hinweis im Text</b> 文本中供一般参考 General reference in the text
	<b>Hinweis auf Angriffspunkt beim Transport</b> 包装箱移动时的挂钩点 Reference to points of attack in the case of transport
	<b>Hinweis auf besondere Wartung</b> 特定保养点 Reference on special maintenance
	<b>Hinweis auf besondere Reinigung</b> 特定清洁处 Reference on special cleaning



② 警示标识 Warning signs  
标识含义 Symbol Meaning

	<b>Warnung vor einer Gefahrenstelle</b> 一般性危险 <i>Generaldanger</i>
	<b>Warnung vor Einzugsgefahr</b> 谨防缠绕（移动器件） <i>Entanglement (Beware of moving components)</i>
	<b>Warnung vor Quetschgefahr an rotierenden Walzen</b> 小心碰伤、夹伤警示 <i>Danger of crushing, pinch</i>
	<b>Warnung vor Handverletzungen</b> 小心伤手警示 <i>Crushing of fingers</i>
	<b>Warnung vor gefährlicher, elektrischer Spannung</b> 小心触电警示 <i>Danger electricity</i>
	<b>Warnung vor heißer Oberfläche</b> 表面高温警示 <i>Hot surface</i>
	<b>Warnung vor Stolpergefahr</b> 小心绊倒警示 <i>Obstacles</i>
	<b>Warnung vor schwebenden Lasten</b> 吊装警示 <i>Warning against hanging load</i>
	<b>Warnung vor explosionsgefährlichen Stoffen</b> 易爆材料警示 <i>Explosive material</i>
	<b>Warnung vor Biogefährdung</b> 生物风险警示 <i>Biological risk</i>
	<b>Warnung vor feuergefährlichen Stoffen</b> 易燃材料或高温警示 <i>Flammable material or high temperature</i>

	<b>Warnung vor gesundheitsschädlichen oder reizenden Stoffen</b> 有害或刺激性材料警示 <i>Harmful or irritant material</i>
	<b>Warnung vor giftigen Stoffen</b> 有毒材料警示 <i>Toxic material</i>

③ 严禁警示标识 **Prohibition signs**  
标识含义 **Symbol Meaning**

	<b>Verbotszeichen</b> 一般禁止标识 <i>General prohibition sign</i>
	<b>Besteigen für Unbefugte verboten</b> 禁止攀爬机架 <i>No climbing onto racks</i>
	<b>Bedienung mit Krawatte verboten</b> 养护或使用严禁带领带 <i>Service / Uses prohibited with tie</i>
	<b>Bedienung mit langen Haaren verboten</b> 养护或使用严禁留长发 <i>Service / Uses prohibited with long hair</i>
	<b>Rauchen verboten</b> 禁止抽烟 <i>No smoking</i>
	<b>Essen und Trinken verboten</b> 禁止吃喝 <i>No eating and drinking</i>
	<b>Feuer, offenes Licht und Rauchen verboten</b> 禁止烟火 <i>No smoking and naked flames prohibited</i>
	<b>Verbot für Personen mit Herzschrittmacher</b> 佩带心脏起搏器人员不得入内 <i>No access for persons with pacemaker</i>

④ 强制规定标识 **Mandatory signs**  
标识的含义 **Symbol Meaning**

	<b>Allgemeines Gebotszeichen</b> 一般强制规定标识 <i>General mandatory sign</i>
	<b>Gebrauchsanweisung beachten</b> 按操作指南规定执行 <i>Operating instruction consider</i>
	<b>Fußschutz benutzen</b> 必须穿安全靴 <i>Safety boots must be worn</i>
	<b>Gesichtsschutz benutzen</b> 必须戴防护面罩 <i>Face protection must be worn</i>
	<b>Handschutz benutzen</b> 必须戴防护手套 <i>Safety gloves must be worn</i>
	<b>Augenschutz benutzen</b> 必须戴护目镜 <i>Eye protection must be worn</i>
	<b>Gehörschutz benutzen</b> 必须戴防护耳罩 <i>Ear protection must be worn</i>
	<b>Schutzkleidung benutzen</b> 必须穿着安全防护服 <i>Safety overalls must be worn</i>
	<b>Schutzhelm, Gehörschutz und Augenschutz tragen</b> 必须戴安全头盔及眼-耳护具 <i>Safety helm, ear- and-eye protection must be worn</i>

### 3.3. 个人防护用具 **Personal Protective Equipment**

在此向使用本设备的人员推荐如下个人防护用具：

For working with the machine the following protection equipment are recommended:

- 隔热防护手套；  
Heat resistant protective gloves;
- 安全鞋（参照DIN EN ISO 20346标准的“个人防护用具之鞋类”）；  
Safety shoes (also refer to DIN EN ISO 20346 "Personal protective equipment protective footwear");

- 高纯度羊毛工作服;  
Work coat with high percentage of wool;
- 防护面罩（开机用）;  
Protection for face (for starting up);

如果车间声音超过85 dB(A)，要使用耳罩。

If the total sound level exceeds 85 dB(A) in the workroom: Ear protection

使用单位必须向操作人员提供个人防护用具并命令其穿戴。

The operating company has to command the operator to wear personal protective equipment when working on the machine and has to provide it.

### 3.4. 特别安全防护指令 Special safety instructions

#### 3.4.1. 辐射 Radiation

本设备不会产生任何辐射影响其他设备与装备的使用或危害人员健康。

The machine does not cause any radiation which could affect other machines and equipment or people's health.

#### 3.4.2. 震动 Vibration

本设备有轻微震动，但低于法律所允许的限度。

This machine causes only low vibrations and they are clearly below the legally permissible limits.

#### 3.4.3. 防爆 措施 Explosion protection

使用单位必须确保所加工的物质或材料不会导致任何危险和潜在的易爆风险。

The operating company has to ensure that the processed substances and material do not cause any dangerous and potentially explosive atmosphere.

在加工这些物质前，使用单位负责人必须确定其爆燃的风险。

Before applying such substances, the responsible technical personnel of the operating company have to determine the risk of explosion.

#### 3.4.4. 防火措施 Fire fighting measures

如果某些产品的加工温度过高，产品或设备可能着火。

If the process temperature of certain products is exceeded, the product or the machine can burn.

此外，当存放的易燃物质过于靠近本设备的加热面，如忽视应保持的距离，有失火的风险。

Furthermore, there is the risk of fire when combustible and easily flammable substances are stored too near to hot surfaces of the machine disregarding the minimum distances.

使用单位有责任遵循法律规定的防火规定。

The operating company of the machine is responsible for keeping the legal regulations for fire protection.



如果设备使用现场没有配备灭火器，使用单位同样有责任配备。

The operating company is also responsible for providing the appropriate fire extinguishers, if they do not exist.

#### 3.4.5. 使用中的特别警示标识 Special codes of practice


建议使用如下特别代码：

The following codes of practice are recommended:


	<p><b>Bedienung mit Krawatte verboten</b> 使用或养护时禁止带领带 <i>Service / Uses prohibited with tie</i></p>
	<p><b>Bedienung mit langen Haaren verboten</b> 使用或养护时禁止留长发 <i>Service / Uses prohibited with long hair</i></p>

	<b>Rauchen verboten</b> 禁止吸烟 <i>No smoking</i>
	<b>Essen und Trinken verboten</b> 禁止吃喝 <i>No eating and drinking</i>
	<b>Feuer, offenes Licht und Rauchen verboten</b> 禁止烟火 <i>No smoking and naked flames prohibited</i>

### 3.5. 安全装置 Safety devices

	仔细阅读本章节，其中关乎您的安全 Carefully read this chapter. Information provided here serves for your safety.
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#### 3.5.1 安全装备的检查 Checking of the safety equipment

	<p>为确保操作人员的安全，必须经常检查本设备的安全设施。          To ensure the operator's safety it is required to check the safety equipment of the machine regularly.</p> <p>开启设备前必须检查安全设施。如存在任何异常，立即向主管报告。          Check the safety equipment before starting work. If there are any irregularities during the safety check, immediately report it to your superior.</p> <p>安全设施损坏或缺失时，不得使用本设备！          It is not allowed to operate machines with damaged or missing safety equipment!</p> <p>用原产备件更换或维修损坏的安全设施。          Replace damaged parts of the safety equipment by original spare parts or repair them.</p>
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#### 3.5.2. 固定式安全设施 Stationary safety equipment

固定式安全设施（如：防护网、面板、机罩、防护栏等）防止人员进入个别零部件的危险区域或以防掉落。固定式安全设施为本设备的一部分用螺栓固定。

Stationary safety equipment (e.g. protective grids, panels, coverings, guard rails, etc.) constantly protect people from accessing into individual machine parts in the dangerous area or from falling down. The stationary safety equipment is part of the machine and fixed to it by screws.

	<p>本设备运转时，固定式安全装备必须一直安装在本设备上，只有在维护保养时才可以拆卸。          Stationary safety equipment must always be mounted on the machine during operation. It is only allowed to disassemble it for maintenance and repair works.</p> <p>保养或维修工作完成后，负责人员必须检查安全设施是否安装牢固。          After finishing these works, the responsible supervisors have to check the correct fastening of the protective equipment.</p> <p>本设备只有在安全防护设施齐全时才能运转。          The machine is only allowed to be run with all provided protective equipment.</p>
---	---

通常，固定式安全设施会在本操作指南中予以特别描述。如果因重新安装、调试、保养与维修需要拆卸，请参阅在相关章节的详细描述。

Generally, stationary safety equipment is especially described in the Operating Instructions. If it has to be disassembled for refitting, setting-up, maintenance and repair works, this will be described in detail in the respective chapter.

### 3.5.3. 主开关 Main switch

控制单元由主开关启动。

The control unit is activated by switching on the main switch.

在“O”位时，所有驱动装置的电极都是断电的。

In position "0", all poles of the drives are disconnected from the power supply.


主开关可以用挂锁锁住以防意外上电。

The main switch can be secured against accidental switching on using a padlock.

使用单位必须对主开关的操作作出特别规定，如：制定工作程序。

The operating company shall specify special codes of practice referring the operation of the main switch, e.g. by specifying a work procedure.

### 3.5.4. 急停按钮 Emergency-stop push-button

	急停按钮用于保护人员与设备，仅当出现危及人员或设备的情况时才使用。 Emergency-stop push-buttons serve for protecting people and machines. They are only allowed to be actuated in case there is a risk of danger for people or machine.
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#### 急停按钮概述 Overview Emergency-Stop push-button

急停按钮的位置如图箭头所示。

The position of the emergency-stop push-button is shown in an outline drawing with arrow.

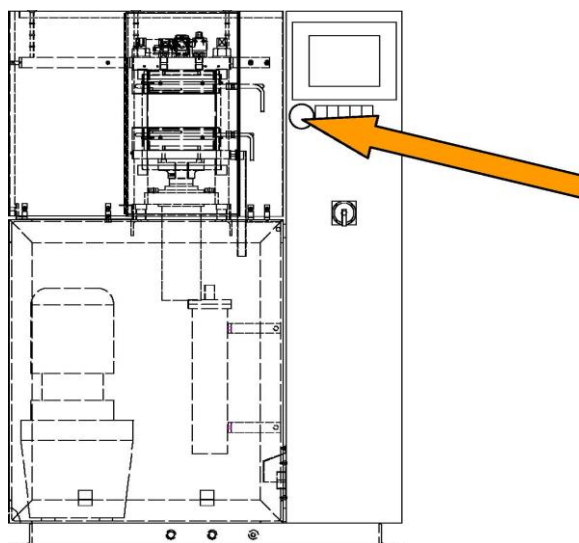


图 1：急停按钮

Figure 1: Emergency-stop push-button


#### 急停按钮的启动 Actuate the emergency-stop push-button:

启动急停按钮会有如下动作：

The following actions are started with actuating the emergency-stop push-button:


本设备的所有可能导致危险的驱动部分立即关停。

All drives of the machines which could cause any risks of danger are switched off immediately.


	下列系统不随急停按钮的启动而失压或关闭： The following machine systems will not be depressurized or switched off after actuating the Emergency-stop push-button: - 气动系统仍保持压力。 The pneumatic system remains pressurized.
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### 急停按钮启动后的设备再启动 Starting up after actuating the emergency-stop push-button

	<p>再启动本设备前须确保工作区域或危险区域无人或无障碍。 Before restarting the machine, make sure that no people or objects are within the working area and the dangerous area.</p> <p>再启动本设备前须确保本设备的所有部件在正确的初始位置。视查可以防止意外与危险的发生。 Before restarting the machine, make sure that all machine parts are in their correct initial positions. A visual inspection avoids accidents and damages.</p> <p>只有当本设备的所有部件工况良好时才能重新启动。 Only start the machine after an emergency-stop when all machine parts are in good order and condition.</p>
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- 视查，消除风险；  
Eliminate hazard, perform visual inspection
- 逆时针方向旋转急停按钮结束急停状态；  
Release the Emergency-Stop-button by turning against clockwise direction
- 关联的所有设备都要在其控制面板上逐项重新启动，参见各自的操作说明；  
All machines integrated in the production line must be restarted individually on their control panels, see separate operating instructions.
- 有些设备的运转要检查其安全设施。这就需从其控制面板进一步了解急停功能；  
Certain machines need to check their safety equipment for functioning. In this case acknowledge the emergency-stop function additionally on the control panel.

	<p>再启动程序因设备控制系统不同而各异。请参阅本操作指南第12.1节。 The procedure for starting up the machine depends on the control system of the machine and therefore it can vary. Please find further details in the operating instructions in chapter 12.1.</p>
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#### 3.5.5. 急停与信号的插头链接 Emergency-stop chaining with signal plug

不存在 Nonexistent.

#### 3.5.6. 可移动防护设施 Movable protective equipment

可移动防护设施（如：防护门等）是防止人员进入本设备的危险区域。

Movable protective equipment (e.g. protective doors, etc.) protect people from accessing individual machine parts within the dangerous area.

	<p>重新启动前，确保在工作区域与危险区域无人或无障碍，方可启动本设备。 Before restarting the machine, make sure that no people or objects are within the working area and the dangerous area. The drives of the machine can start immediately.</p>
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#### 移动式防护设备的概述

##### Overview of movable protective equipment

移动式防护设备的位置如图箭头所示。

The position of the movable protective equipment is shown in the outline drawing with arrows or bolt lines.

##### ① 无锁定装置的安全开关

###### Safety switch without locking device

打开本安全设施，安全开关将立即停止可能引起伤害的驱动装置。

Immediately after the protective equipment has been opened, a safety switch will stop the drives accessible through the protective equipment and which can cause a risk of danger.

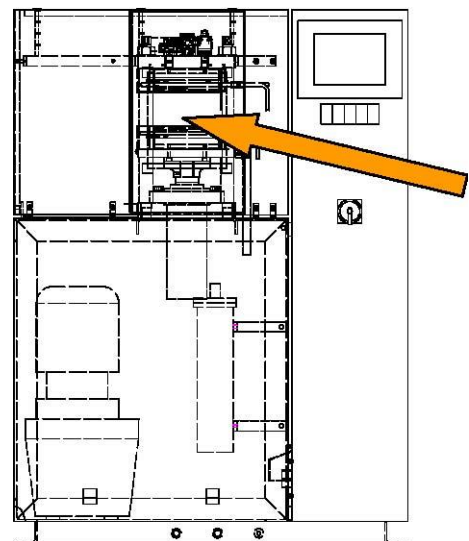


图 2：移动式防护装置

Figure 2: Movable protective equipment

**启动防护设施后，重新启动设备 Restart after actuating the protective equipment**

- 消除故障；  
Eliminate the fault;
- 关闭移动式防护设施；  
Close the movable protective equipment;
- 在操作面板上启动关停的驱动装置；  
Start the switched off drives on the control panel;

**② 带锁定装置的安全开关 Safety switch with locking device**

带锁定装置的安全开关将保持移动式防护设施紧闭直到设备的动作部分不再有任何风险或满足如下操作条件：

The safety switches with locking device keep the movable protective equipment closed until there is no risk of danger anymore by moving machine parts or the following operating conditions have been reached:

- 危险的动作部分保持原位或在其初始位置，或者  
Dangerous drives stand still or are at their home positions or
- 设备减速运转（缓慢的速度）；  
The machine is operated with reduced speed (threading speed)



一旦供电失灵或将主开关置于“O”位时移动式防护设施仍然紧锁，只能借助于手动解锁装置打开。详细操作，请参阅第12章“附件”中由其他供应商提供的指南。

In case of a power failure or after switching the main switch to the position "0", the movable protective equipment remains locked. It can only be opened using an auxiliary manual unlocking device. Please find details about this in Chapter 12 "Annexes" of the provided instructions from other manufacturers.

**启动防护设施后的设备重新启动 Restart after actuating the protective equipment**

- 消除故障；  
Eliminate the fault;
- 关闭移动防护设施；  
Close the movable protective equipment.;
- 在控制面板上开启关闭的启动装置；  
Start the switched off drives on the control panel;

**3.5.7. 安全拉线开关 Safety rip lines**

*不存在 Nonexistent.*

**3.5.8. 键式开关 Key switch**

*不存在 Nonexistent.*




**3.5.9. 信号装备 Signalling equipment**




声光信号发生装置通知操作人员存在的故障或可收集到的故障、警报或启动急停按钮。信号装置（闪光灯、灯光和/或声音信号）随设备不同而各异且分别在各自的操作指南予以描述。

Optical and acoustical signalling devices inform the operator about an existing malfunction / collective faults, warnings or actuated emergency-stop push buttons. The types of the signal devices (flashlight, permanent light and/or acoustic signal) vary for the individual machines and are described in the separate operating instructions.



### 3.6 会有风险的主要危险区域 Main dangerous areas, residual risks

序号No	设备构件 Machine component	标志 Symbol	危险风险 Risk of danger
1	加热或冷却平板，压制试片，水冷回路再循环 Heating/cooling plates, press sample, cooling water recirculation		热压试片本身以及加热/冷却平板或水冷回路再循环都存在失火的风险。在加工热压试片或在加热板/冷却板上工作时，要戴手套。操作热压必须穿戴个人防护用具。 There will be the risk of burning due to the hot press sample itself, as well as on the hot heating/cooling plates or at the cooling water recirculation. Only work with the hot press sample or on the heating/ cooling plates wearing suitable protective gloves. Therefore, it is urgently required that the operator wears his/her personal protective equipment.
2	压制试片 Press sample		常规操作本设备时会产生有毒、灼热和有损健康的气体与气味。这些气体与气味的危险性取决于所使用与加工的材料，使用单位须对此作专家评估。如果某些材料预期的排放有损健康，使用单位应负责向操作人员提供足够的通风设备（自然或技术通风）。如果采取技术措施，应考虑服务保养人员进出的通畅。如果有毒或有损健康的气体发生，使用单位必须采取合适的安全措施，特别制定工作规程并定期指导操作人员。工作时，应遵守国家健康法令与安全条例。 During normal operation of the machine, gases and fumes can escape which can be toxic, hot and injurious to health. Depending on the application of the used and processed raw material, danger from gas and vapour can vary and have to be determined by the operating company using an expert risk assessment. If for certain pro-cessed materials emissions are expected which are hazardous to health, the operating company will be responsible for providing sufficient air ex-change (natural or technical ventilation). If technical measures are taken, consider the accessibility for the service and maintenance personnel. If toxic or health-hazardous vapours occur, the operating company has to arrange appropriate safety measures and company-specific work procedures on the basis of company rulings and to instruct the operators regularly. Observe national health and safety regulations at work.
3	连接电缆/连接管路 Connecting cable/ connecting pipe		由于灵活连接（如：水冷回路软管）的松散布置，存在绊倒的风险。灵活连接管线尽量不要放在操作人员一侧。 There will be the risk of falling and tripping and due to loosely laid out flexible connecting lines (e.g. cooling water hoses). Flexible connecting lines may not, as far as possible, be laid out at the operator's side of the machine.

序号No	设备构件 Machine component	标志 Symbol	危险风险 Risk of danger
4	电气设备 Electrical Equipment		<p>电气驱动部分会有电击风险，尤其是连接部分出现损坏时。</p> <p>There is the risk of an electrical shock on the electrically driven machine parts, especially when the connections are damaged.</p>
5	液压 Hydraulic		<p>为了防止下压板失控落下（如：防护门打开时），在开启“急停”后，设备停止运行，但液压缸仍然保持压力。</p> <p>The hydraulic pressure remains locked up in the cylinder with switched off machine on "emergency stop", in order to avoid an uncontrolled dropping of the lower press plate (e.g. with opened protective door).</p>
6	气动 Pneumatic		<p>设备停止运行或开启“急停”后，气动系统仍保持压力，以确保开启“急停”或打开防护门时冷却头处在相应的直立位置且不再移动，防危险发生。</p> <p>Pneumatics remains also under pressure with switched off machine or with "emergency stop". Thus it can be ensured that, with "emergency stop" or opened protective door, the pneumatically actuated cooling cartridge remains in the respective standing in position and can not further be moved, so that can develop no endangerment.</p>

## 4. 平板硫化机描述 DESCRIPTION OF THE PLATEN PRESS

### 4.1. 设备的任务 Task of the machine

本平板硫化机用来生产橡胶成型材料。

The platen presses are used to produce rubber moulding materials.

### 4.2. 应用 Applications

本平板硫化机适合在实验室加工橡胶成型材料。

The platen press is suitable for processing rubber moulding compounds in the laboratory scale.

可以进行如下应用：

The following fields of application are planned:

- 在塑料、橡胶与陶瓷工业进行简单的压缩试验；  
Carry out simple test compressions in the field of plastics, rubber and ceramics industry
- 生产聚合物片和薄膜进行光学或物理试验；  
Polymer sheet and film production for optical and/or physical testing
- 任意成型件的生产；  
Production of arbitrary moulding parts
- 衍生产品的生产；  
Production of product coinages

### 4.3. 工作原理 Work principle

将制件（如：塑料、橡胶或陶瓷）放在两层加热/冷却平板之间。上平板由液压缸驱动向下压下平板。

Put the press sample (e.g. plastics, rubber or ceramics) between two heating/cooling packs. The bottom heating/cooling pack is pressed against the top heating/cooling pack using the hydraulic cylinder.

制件由此加热/冷却平板压制。

The press sample is pressed by the pressure of the heating/cooling packs.

### 4.4. 平板硫化机的设计 Design of the platen press

平板硫化机的设计如下图所示：

Following Figure shows the design of the platen press.

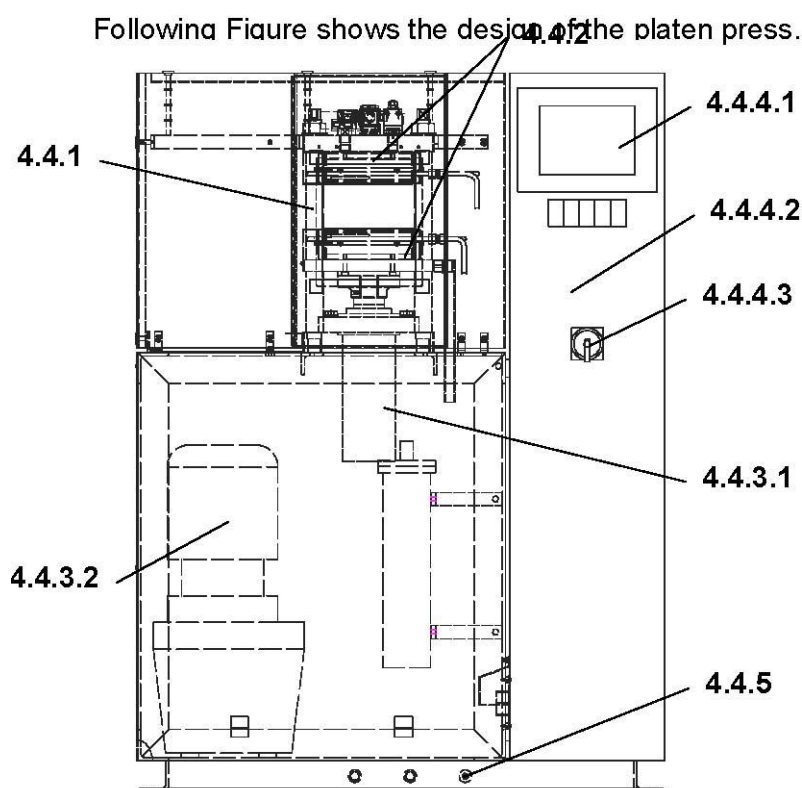



图 3：平板硫化机的设计  
Figure 3: Design of the platen press

表Table 1: 平板硫化机的设计 Design of the platen press

位置号 Pos	描述 Description
4.4.1	导架立柱 Guide column
4.4.2、4.4.3	加热/冷却平板，液压系统 Heating/cooling plates, Hydraulic system
4.4.3.1	液压缸 Hydraulic cylinder
4.4.3.2	液压站 Hydraulic unit
4.4.4	电气设备 Electrical equipment
4.4.4.1、4.4.4.2	控制面板，开关柜 Control panel, Switch cabinet
4.4.4.3	主开关 Main switch
4.4.5	气动系统 Pneumatic system

作为选购，孟泰科检测设备有限公司还可提供“盒式冷却系统”和/或“水温测定装置”。

As option the MonTech Werkstoffprüfmaschinen GmbH offers the special equipment “cassette cooling system” and/or “water temperature device”.

	<p>详情请参阅第8章的“专用装备” For further information refer to chapter 8 “special equipment”.</p>
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四根导架立柱用作安装加热/冷却平板。

The four guide columns serve as mounting for the heating-/ cooling plates.

#### 4.4.2. 加热/冷却平板 Heating/cooling plates

加热/冷却平板配备有一块加热板和冷却板。加热板由电加热，冷却板由水冷回路组成。

The heating/cooling plates are equipped with a plate heating and a plate cooling. The plate heating is an electrical system, the plate cooling works with a cooling water circuit.

改变加热/冷却平板温度，可以使制件获得不同效果。

By a change of the temperature of the heating/cooling plates, different effects on the press sample can be obtained.

#### 4.4.3. 液压系统 Hydraulic system

##### ① Hydraulic cylinder

在液压缸的作用下，上压板压下压板；

By means of the hydraulic cylinder the lower heating/cooling plate is pressed against the upper heating/cooling plate.

##### ② 液压工作站 Hydraulic unit

液压缸通过安全阀与方向控制阀传递液压油的容积流量；

The volume flow of the hydraulic oil is transferred to the cylinder via a safety block and the directional control valves.

闭合时，由软件控制的限位阀使下平板向上压紧上平板。限位开关启动自动程序，比例阀开始控制容积流量。

Upon closing, the lower press platen presses the upon press platen upwards. Thus a software controlled limit switch is operated. The automatic program is started by operating this limit switch and the proportional valve starts controlling the volume flow.

当限位开关工作时，动作的最后一毫米将会非常缓慢。打开时，定位阀通过回路泄压使得根据容积（以升为单位）的特定输出压力可以迅速打开平板。

When the limit switch is operated, the movement of the last millimetres is very slow. Upon opening, the valve positioned through the return line releases so that the total specific output with reference to the volume in litres is available for quick opening of the press.

详见第12章的液压工作站操作手册。

See operation manual hydraulic unit in chapter 12.

#### 4.4.4. 电气设备 Electrical equipment

##### ① 操作面板 Operating panel

在平板硫化机的操作面板上可以控制

At the operating panel the press can be controlled.

##### ② 控制柜 Switch cabinet

控制包含所有功能，如主开关、保险丝、控制单元及控制板。

The switch cabinet includes all functions, e.g. main switch, fuses, control unit and control panel.

③ 主开关 **Main switch**

主开关上电启动本设备的控制单元。

Switching on the main switch activates the control unit of the platen press.

**4.4.5. 气动系统 Pneumatic system**


如果操作中要使用气动安全门罩、降温、低压系统和/或盒式冷却系统，将提供压缩空气连接装置。

If a pneumatic safety shield, tempering ramp, a low pressure system and/or a cassette cooling system is used for pressing, a connection for compressed air will be provided.

## 5. 运输、安装、存储与拆卸

### TRANSPORT, INSTALLATION, STORAGE AND DECOMMISSIONING

#### 5.1. 运输 Transportation

	<p>设备移动时，严禁在起重物下逗留 Do not stand under suspended loads when the machine is transported.</p> <p>只能使用合适的安全的且能力足够的运输与起重设备 Only use suitable and not damaged transport and lifting devices with sufficient load capacity.</p> <p>指派合格的起重操作人员！仅可使用指定的位置提起本设备！ Assign qualified instructing people for the lifting procedures! Only use the provided lifting positions on the machine!</p> <p>即使短距离移动，也必须切断本设备的所有能源供应。 Also for transporting the machine over a short distance, disconnect it from all energy supplies.</p>
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所提供的本平板硫化机已准备就绪，可以整机运输。

The platen press is supplied ready for use. Therefore the complete machine can be transported.

- 用卡车和/或起重机运至安装位置；  
Transport the machine with industrial truck and/or crane to the place of installation;
- 注意设备的重心；  
Pay attention to the centre of gravity;
- 需要2吨以上的叉车方可移动本设备；  
Only transport the press unit with a forklift of at least 2 tons lifting capacity;
- 禁止用绳索或吊钩，只能使用叉车提起设备或电器柜的底部。  
Do not lift the press unit with a rope or hook but only with a forklift underneath the bottom plate of the press frame and cabinet.
- 裸机移动时要小心  
Carefully lift the plate press out of the packaging.

在运输中要避免由于温度变化与振动引起的冷凝水流出。

The condensation of water due to considerable temperature fluctuations and shocks are to be avoided during transportation.

#### 5.2. 安装 Installation

要注意楼板地面承重强度及本设备的重量（设备重量参阅第二章“技术数据”）。

Consider the floor bearing capacity and the weight of the machine (For the weight of the plate press, please refer to Chapter 2 “Technical Data”).

如果设备安装在工作台上要考虑工作台的承重能力。工作台应该落地安放。要注意楼板地面承重强度及本设备的重量（设备重量参阅第二章“技术数据”）。

Table mounted machines have to be installed on a table with sufficient bearing capacity. The table may only stand on a floor with sufficient bearing capacity. Consider the floor bearing capacity and the weight of the machine (For the weight of the plate press, please refer to Chapter 2 “Technical Data”).

- 将运输包装拆除；  
Unpack the press from the transport box;
- 不要移去保护薄膜；  
Do NOT remove cover films;
- 将设备移至最终工作地；  
Bring press unit to its final destination;
- 将所需电源等准备就绪（参见前页）；  
Keep supplies ready (see above pages);
- 准备好棉质清洁布；  
Keep cotton cleaning towels ready;
- 将模具与胶料准备就绪（如需要，将模具吹干净）；  
Keep mould and rubber ready (and mould release spray if needed);
- 设备调平以免掉落；  
Align the machine to avoid falling over;
- 检查所有电气设备的连接并拧紧；  
Check the contacts of all connections of the electric equipment and tighten them if necessary;

- 检查所有设备元器件的螺栓并拧紧：  
Check the screws at all mechanical components and tighten them if necessary.
- 固定平板的上防护罩  
Fix upper protective cover of the platen press.

### 5.3. 存储 Storage

如果设备不立即使用，请妥善存放在有保障的地方。

If the machine is not used immediately after delivery, carefully store it at a protected place

有关存放条件的要求，请参阅第2.2节的“连接载荷”。

For information about storage conditions of the machine, refer to chapter 2.2 “Connected load”.

### 5.4. 拆卸及处理 Decommissioning, disposal

#### 5.4.1. 废弃物的处理 Disposal of rejects / waste

使用单位负责处理使用本设备所产生的废弃物。废弃物的丢弃应与废弃物管理单位会商并遵守有关废弃物处置的规定。

The operating company will be responsible for the disposal of rejects produced by the machine. Rejects have to be disposed in consultation with the responsible waste management companies in compliance with the applicable waste disposal regulations.

其他废弃物，如：碎片、利器、油破布应该丢弃在指定的集料箱里。

Other waste, e.g. broken pieces, sharps, oily rags, may only be disposed of into the designated containers.

#### 5.4.2. 废润滑油的处置 Disposal of used lubricants

润滑油是需要有指定的供应商。

One of the especially required supplies is lubricant.

通常本设备的元器件已具有终身润滑的功能，参阅第7章的“保养与维修”。但是如果需要更换，使用单位负责废润滑油的处置。废润滑油的处置要遵循当地废弃物处置的规，且按照安全参数规格单执行。

Usually the machine components are equipped with lifetime lubrication, refer to Chapter 7 "Maintenance and repair". If it should be necessary, however, to change the lubricant, the operating company will be responsible for the disposal. The local disposal regulations for lubricants, as well as the specifications in the safety data sheets will be applicable.

#### 5.4.3. 设备本机的报废处理 Disposal of the machine itself

本设备的报废处理应与废弃物管理单位会商并遵守有关废弃物处置的规定。

The machine has to be disposed in consultation with the responsible waste management companies in compliance with the applicable waste disposal regulations.

油和其他物料，如：润滑油或液压油，在本设备弃置前必须放尽并另行处理。

Oil and other supplies, if present, e.g. lubricant or hydraulic oil, must be discharged before the machine is disposed and they have to be disposed separately.

大多数元器件，尤其是钢材和铝材以及电缆可以回收利用。



Most of the components, especially steel and aluminium components, as well as electrical cables, can be delivered to recycling companies.

## 6. 连接、调试与操作 CONNECTIONS, COMMISSIONING AND OPERATION


### 6.1. 连接 Connections

使用单位负责连接电源、供水与压缩空气。

The operating company has to connect the machine to the power supply, water supply and the pressurized air supply.

	<p>在布置电源线缆、供水管线及压缩空气管路时要遵循常规。</p> <p>The applicable regulations must be followed when laying the lines for electricity, water and pressurized air.</p>
	<p><b>注意 ATTENTION!</b></p> <p>在地面上活动连接管线，存在绊倒的风险。使用单位不得将活动连接管线布置在操作人员一边！</p> <p>If flexible cables are laid out on the floor, there will be the risk of tripping. The manufacturer did not plan to lay out flexible cables at the operator's side. Do not lay out flexible cables at the operator's side!</p>

#### 6.1.1. 电源连接 Electrical connection

	<p><b>注意 ATTENTION!</b></p> <p>带电的元器件会造成电击。</p> <p>Live electrical components can cause electric shocks.</p> <p>只有合格的电工或受过专业培训的人员在能够遵守电气安装安全规程的电气工程师监督下方能从事电气工作。</p> <p>Only qualified electricians or trained personnel, conducted and supervised by an electrician, who observe the applicable regulations for electrical installations are allowed to work on the electrical systems of the machine.</p> <p>严禁单独带电工作！确保主电源开关能立即启动。将工作区域用封闭带封闭并里警告标志。</p> <p>Never work alone on live electrical systems. Make sure that the main switch can be actuated immediately. Mark the work areas with a cordoning-off ribbon and a warning sign!</p> <p>电子元器件（如：变频器、电容等）即使断电后仍可能在带电15分钟，在工作前，先测试元器件的电压。</p> <p>Electronic components (e.g. frequency converter, capacitors, etc.) can be live for about 15 minutes, also after disconnecting from the mains network. Before all works on electronic components, always measure the voltage first.</p>
--	--

本设备出厂前已完成了所有内部电气安装，因此用户只需连接电源。

The complete internal electrical installation of the machine has already been carried out and checked in the factory, so that the customer only has to connect the machine to the power supply.

确保用户的电网规格与本设备的要求一致。

Make sure, that the network data at the user's site comply with characteristics of the electrical connection required by the machine.

有关电气连接的特性，请参阅“技术数据”的章节。

For information about characteristics of the electrical connection refer to chapter “Technical Data”.

将电源连接至端子。

Connect the power supply with the terminal.



请检查下列问题：

Check if:

- 旋转部分是否为顺时针旋转；  
If there is the clockwise rotating field;
- 接头是否连接妥当  
If the connectors are connected properly.



### 6.1.2. 供水连接 Water connection

	<p><b>注意 ATTENTION!</b> 热加压液体会产生蒸汽，有失火风险！需要安装畅通的耐热管接头连接至水冷回路回路系统。 Hot and pressurized fluids can cause fume generation. Risk of burning! Only connect temperature-resistant hoses with free outlet to the cooling water return system.</p> <p>确保耐热管接头的截面足够大且管路长度足够短。 Keep the cross sections of the hoses as big as possible and the length of the lines as short as possible.</p>
	<p><b>注意 ATTENTION!</b> 灼热表面可引起烧伤。严禁触摸灼热表面！ Hot surfaces can cause serious burns. Do not touch the hot surfaces!</p> <p>戴隔热防护手套！ Wear heat-resistant protective gloves.</p>

水冷回路回路的连接截面要足够大。

The cross section of the cooling water connection for the water return shall be sufficient.

为确保水冷回路在无压力下排放，注意下列几点：

To ensure that the water is discharged without pressure, pay attention to the following items:

- 回水装置装在低于本设备的出水口；  
Mount the water return to the press below the outlet;
- 根据第11.3章节的冷却系统图连接冷却系统。  
Connect the cooling water connection according to the cooling system diagram in Chapter 11.3.

“吹冷”或“快速降温的水气混合”冷却是在冷却循环开始时先由压缩空气吹冷后附加水冷。

In presses with the function "blowing out of cooling water" or "air-water-mixture for cooling ramp" cooling is effected by compressed air at the beginning of the cooling cycle and later on additionally by water. During this process great amounts of air and steam enter the cooling water outlet system.

因此，出口不能与闭合的冷却系统相连，需配备尽可能靠近本设备的有良好通风的开放式储水罐

The outlet can therefore not be connected to a closed re-cooling system. An open accumulator tank with a good ventilation standing as near to the press as possible has to be provided.

### 6.1.3. 液压系统 Hydraulic system

整个液压系统出厂前调试就绪可以直接使用。使用时，应根据要求进行过滤、通风及泄漏点检查。

The complete hydraulic system is supplied ready for use. It is filled, ventilated and checked for leakage points according to instructions.

### 6.1.4. 气动连接 Pneumatic connection

如果使用快速降温系统：

**If a press with tempering ramp is used:**

使用软管连接

Connect the air via a hose.

如果使用低压系统和/或盒式冷却系统：

**If presses with a low pressure system and/or a cassette cooling system are used:**

气动单元安装在设备的底座上，包括：

The pneumatic unit is installed on the base frame of the press. It consists of:

- 过滤器 filter / 压力表 pressure regulator (1),
- 压力开关 pressure switch (2)

通过压力调节器设定压力并通过压力表显示读数。压力开关监控系统压力。

The pressure can be set using a pressure regulator and can be read out on the manometer. The pressure switch monitors the pressure in the system.

1



气动系统按如下方法连接:

The pneumatic system is connected as follows:

- 将压力调节器与气动系统相连

Connect the pressure regulator with the pressure pneumatic system.

## 6.2. 调试 Commissioning



### 注意 ATTENTION!

气动系统按如下方式连接:

The pneumatic system is connected as follows:

设备安装前, 装上所有防护罩!

Mount all protective coverings before the commissioning of the machine!

由于运输需要而拆开的部件, 要仔细予以牢固固定。

Carefully fasten and fix all machine parts which have been demounted for transport purposes.

- 从本设备上移去所有运输装备与工具;

Remove all transportation equipments and aids from the machine;

- 确保上防护罩已经安装妥当;

Make sure that the upper protective cover of the platen press is mounted;

- 接通电源;

Install power connection.

详细步骤, 请参阅6.1章节的“连接”。

For details refer to chapter 6.1 “Connections”.

进一步的调试信息, 请参阅本操作指南的12.1章节。

For further information refer to the separate operating manual of the press in chapter 12.1.

## 6.3. 操作 Operation

### 6.3.1. 操作人员的工位 Work stations for operating staff

操作人员的工位布置如下图箭头所示。

The position of the work stations can be seen in an outline drawing, pointed by an arrow.

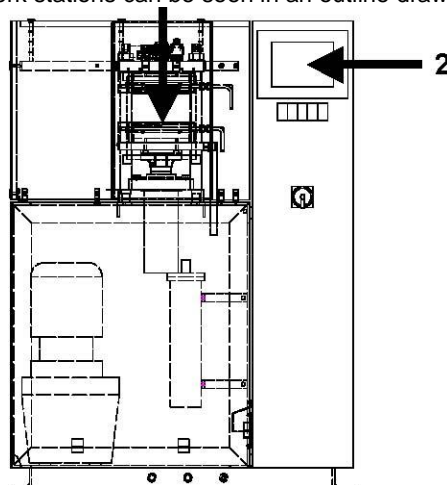


图4: 操作人员的工位

Figure 4: work stations of the platen press

#### 位置描述 Pos. Description

- 1 临时工位, 监察设备, 放入压制试片;

Occasional work station monitoring of the machine, inserting of the press sample;

- 2 常规工位, 操作设备;

Permanent work station operation of the platen press;

#### 表2: 平板硫化机的工位

Table 2: Work stations of the platen press

进一步资料请参阅本操作指南的12.1章节。

For further information refer to the separate operating instructions of the press in chapter 12.1.

### 6.3.2. 常规操作的安全规范 Safety regulations for normal operation

严禁做违反规定的任何事

Never do anything to jeopardize safety!

只有在所有安全设施安装就绪且工作正常，如：放电装置、急停装置、拉线开关、排废装置等，方可操作本设备。

Only operate the machine when all safety devices and safety-related components, e.g. releasable protective devices, EMERGENCY-STOP devices, pull-wire switches, exhaust devices, if necessary, are in place, in proper working order, and in protective position!

对于本设备的任何异常情况，须立即向负责人员报告。如果需要，立即关机予以保护。

Immediately report any occurring changes of the operating behaviour of the machine to the responsible person. If necessary, immediately switch off the machine and secure it.

如有故障，立即关机予以保护！立即修复故障！

In case of malfunctions, immediately switch off the machine and secure it! Immediately get malfunctions repaired!

遵守操作指南的开机关机的程序及控制指令。

Follow the switch on and off procedures and control indications according to the separate operating instructions.

开机前，确保无人处在危险区域。

Before switching on or starting up the machine, make sure that nobody can be endangered by the starting machine.

#### 6.3.3. 开机 Start of operation

	<p><b>注意 ATTENTION!</b></p> <p>如果操作不当，本设备会过热并产生失火风险与形成易燃气体</p> <p>If the machine is not operated properly, it can overheat and can cause the risk of fire and the formation of combustion gases.</p> <p>离开岗位要关闭本设备。</p> <p>Switch the machine off when you leave your workplace at the machine.</p>
	<p><b>注意 ATTENTION!</b></p> <p>如果用本设备加工不适合的材料，可能有爆燃的风险。</p> <p>If materials are processed which are not intended to be used in the plate press, there will be the risk of explosion and fire.</p> <p>严禁加工在本设备中会产生易燃气体的物质。</p> <p>It is not allowed to process substances in the plate press which generate an explosive atmosphere.</p> <p>严禁用本设备加工易燃物质。</p> <p>It is not allowed to process combustible or highly flammable substances in the plate press.</p>
	<p><b>注意 ATTENTION!</b></p> <p>高温表面可引起严重伤残</p> <p>Hot surfaces can cause serious burns.</p> <p>严禁触碰高温表面</p> <p>Do not touch the hot surfaces.</p> <p>戴隔热防护手套。</p> <p>Wear heat-resistant protective gloves.</p>

- 开启本设备并加热压板；  
Switch on the platen press and heat the platen press up;
- 打开防护门并放入压制试样；  
Open protective door and insert press sample.
- 关闭防护门；  
Close protective door;
- 启动压制程序  
Start press procedure.
- 有关操作的进一步资料，请参阅12.1章节。

For further information refer to the separate operating instructions of the press in chapter 12.1.

#### 6.3.4. 改变生产条件 Change production conditions

生产条件（如压力）可以通过设备面板的电气控制来设置。

The production conditions (e. g. pressing force) are set by means of the electrical control at the operating panel.

有关改变生产条件的进一步资料，请参阅12.1章节。

For further information refer to the separate operating instructions of the press in chapter 12.1.

#### 6.3.5. 操作压力、锁紧力及额定压强的计算

##### Calculation of operating pressure, locking force and specific surface pressure

符号 Symbols:

p = 操作压力 operating pressure (液压压力 hydraulic pressure) [bar]

f = 额定压强 specific surface pressure [N/cm<sup>2</sup>]

A = 压制试样尺寸 size of press sample [cm<sup>2</sup>]

F = 锁紧力 locking force [kN]

操作压力（液压压力）可以按如下方法计算：

The operating pressure (hydraulic pressure) can be calculated.

液压缸直径 Diameter of the hydraulic cylinder [mm]	公式 Formula
80 mm	$p=502.6*[A*(f+1.5)]$
100 mm	$p=785*[A*(f+1.5)]$
125 mm	$p=1227*[A*(f+1.5)]$
160 mm	$p=2010*[A*(f+3)]$
200 mm	$p=3141*[A*(f+3)]$

表3：操作压力计算公式

Table 3: Formula for the calculation of the operating pressure

加热/冷却平板的锁紧力取决于液压缸直径与操作压力：

The locking force of the heating / cooling plates depends on the diameter of the hydraulic cylinder and on the operating pressure.

操作压力[kN] Operating Pressure [bar]	锁紧力[kN] 取决于液压缸直径 Locking force [kN] in dependence of the cylinder diameter				
	80 mm	100 mm	125 mm	160 mm	200 mm
10	5,0	7,8	12,3	20,1	31,4
25	12,5	19,6	30,7	50,3	78,5
50	25,1	39,3	61,4	100,5	157,0
80	40,2	62,8	98,2	160,9	251,3
100	50,3	78,5	122,7	201,1	314,2
125	62,8	98,2	153,4	251,3	392,7
150	75,4	117,8	184,1	301,6	471,2
175	88,0	137,4	214,8	351,9	549,8
200	100,5	157,1	245,4	402,1	628,3
225	113,1	176,7	276,1	452,4	706,9
240 (*1)	120,0	188,5	294,5	482,5	754,0
250	125,7	196,4	306,8	502,7	785,4

表4：加热/冷却板锁紧力

Table 4: Locking force of the heating/cooling plates

注1 对有些特定规格的平板硫化机，其有效操作压力限制在240 bar。

(\*1) For specific press types, the operating pressure is limited to 240 bar effective.

额定制片的压强计算如下：

The specific surface pressure on a press sample can be calculated.

$$f = \frac{F}{A}$$

#### 6.3.6. 停止操作 Stop of operation

本设备的停止由电气控制。有关停止操作，请参阅本操作指南的12.1章节。

The operation of the machine is stopped by means of the electrical control. For further information refer to the separate operating instructions of the press in chapter 12.1.

## 7. 保养与维护 MAINTENANCE AND CARE

### 7.1. 保养 Maintenance

疏于保养或不恰当维护会招致设备故障且高昂的维修费用及长时间停机。因此，定期保养不可或缺。

Malfunctions which occur due to insufficient and improper maintenance can cause very high repair costs and long standstill periods of the machine. Therefore, regular maintenance is indispensable.

另外，设备的可靠性与寿命也取决于正确的保养。

Additionally to some other factors, the machine's reliability and service life depend on its proper maintenance.

用正确的润滑油脂仔细润滑本设备可是设备的操作无故障，且避免昂贵的维修，尤其轴承必须很好地润滑，不然会损坏轴承。

For trouble-free operation, the machine has to be lubricated carefully using the right lubricant. This will avoid expensive repairs. Particularly the bearings have to be lubricated properly. If it is not lubricated carefully the bearings can be damaged.

#### 7.1.1. 保养工作的常规安全规定 General safety regulations for maintenance works

注意本操作指南中有关调试、保养和检查工作及其日期包括更换零备件或部分装备的日期。这项工作须由专业人员实施。

Observe the activities for setting up, maintenance and inspection works and dates including the dates for replacing the parts/partial equipment specified in the Operating Instructions. This work is only allowed to be done by specialists.

在这项特殊与保养工作开始前要通知操作人员！

Inform the operators before special and maintenance works are started!

保养与维修工作开始前，关闭主开关并确保不会意外上电！

Before starting the maintenance and repair works switch the main switch off and secure it against accidental switching on!

将气动系统泄压（如：关闭供气开关）！

Depressurise the pneumatic system (e.g. pull off the supply hose)!

切不可移去、绕过或切断安全设施！如果在保养与维修中非要移去不可、或非要绕过或切断安全装备不可，使用单位必须采取特殊的安全措施，如：指派监管人员、设立工作警戒区、等等。

Never remove, bridge, bypass, or switch off safety equipment. If you have to, for maintenance and repair works, the operating company must take special safety measures, e.g. assign a supervisor, cordon off work areas, etc.

### 7.1.2. 保养与检查 Maintenance and Inspection

元器件/系统 Component/Sy stem	零件/部套件 Part / Unit	工作项目 Action	润滑/检测点 Greasing/checking point		油（升），油脂（克） Oil (l), grease (g)		再注油时间 Refilling time		检查间隔 Inspection interval	润滑油 脂牌号 Type of lubricant oil/ grease	供应商 Supplier
			位置 Pos.	编号 Number	总量 Total Q'ty	再注油量 Regreasing Q'ty	第一次 First	下一次 Next			
安全设备 Safety equipment	急停按钮 Emergency Stop Button	检查功能 check function							每天 every day		
	安全开关 Safety switch	检查功能 check function							每天 every day		
	防护门罩 Protective door	检查功能 check function							每天 every day		
水冷却回路 Water cooling circuit (7.1.4)	污垢滤网 Dirt screen	检查 check							每月 every month		
		更换 replace							如果需要 if necessary		
	精滤器 Fine filter	检查 check							每月 every month		
		更换 replace							如果需要 if necessary		
	加热/冷却平板 Heating/cooling plates	检查 check							每月 every month		
		脱钙 decalcifying							每 6 个月 every 6 months		
	软管接头 Hoses	检查 check							每 6 个月 every 6 months		
		更换 replace							如果需要 if necessary		

表 5：保养与检查  
Table 5: Maintenance and Inspection

保养与检查（续上表）

元器件/系统 Component/Sy stem	零件/部套件 Part / Unit	工作项目 Action	润滑/检测点 Greasing/checking point		油（升），油脂（克） Oil (l), grease (g)		再注油时间 Refilling time		检查间隔 Inspection interval	润滑油脂 牌号 Type of lubricant oil/ grease	供应商 Supplier
			位置 Pos.	编号 Number	总量 Total Q'ty	再注油量 Regreasing Q'ty	第一次 First	下一次 Next			
压缩空气 Pressurized air (7.1.5)	积尘网 Dirt screen	检查 check							每周 every week		
		更换过滤器 replace filter							如果需要 if necessary		
		清空冷凝物 empty condensate container							如果需要 if necessary		
	减压器 Pressure reducer	检查功能 check function							每月 every month		
液压系统 Hydraulic system (7.1.3)	液压动力套件 Hydraulic power pack	检查 check							每周 every week		
		重新注入液压油 refill oil				根据需要 as required			如果需要 if necessary	Hydraulic oil Shell Tellus 32	Otto Glas Handels - GmbH
		更换液压油 change oil			1x 16 l				每年 every year		
	液压油过滤 Oil filter	检查 check							每年 every year		
		更换 replace							如果需要 if necessary		
	液压油路管 Hydraulic pipes	检查 check							每 6 个月 every 6 month		
		保养 maintain							如果需要 if necessary		

表 5：保养与检查  
Table 5: Maintenance and Inspection

### 7.1.3. 液压系统的保养 Maintenance of the hydraulic system

① **液压系统保养的安全规定 Safety regulations for maintenance of the hydraulic system**

只有在液压方面具有特殊技能的专业人员才能从事这方面的工作！

Only people especially skilled in this field are allowed to work on pneumatic or hydraulic equipment!

开始保养工作前，确保所有系统与压力管路已经泄压。

Before starting the maintenance works, make sure that all system sections and pressurized lines (pressurized air) have been depressurized.

液压系统在主开关关闭后仍可能有压力。有关液压系统详情，请参阅11.2章节中的液压图。

Possibly, parts of the hydraulic system can remain pressurized after the main switch has been turned off. Please find details about this problem in the hydraulic diagram in chapter 11.2.

② **液压管路的检查 Check hydraulic pipes**

如果管路或螺栓连接有缺陷，液压油会从液压系统内外泄，损坏压板，因此要定期检查与试验管路及螺栓连接处是否漏油。

If tubes or screwed connection are defect, oil can leak out of the hydraulic system. This can damage the plate press. This is the reason why:

- 定期检测管路及螺栓连接是否泄漏  
Test pipes and screw connections for leaks regularly.

有关液压系统的保养与检查，请参阅7.12章节中的保养计划。

For information about maintenance schedules refer to the maintenance and inspection schedule in chapter 7.1.2.

③ **更换液压油过滤器 Replace oil filter**

如果需要，本设备的比例液压系统液压油过滤器需要定期检查与更换。

The oil filter of the plate press with proportional hydraulic system has to be checked regularly and replaced, if necessary.

- 关闭本设备并确保不会意外上电；  
Switch off the machine and secure it against accidental switching on;
- 液压系统泄压；  
Depressurise the hydraulic system;
- 将液压系统内的油放出并适当予以处理；  
Discharge the oil of the hydraulic system and dispose it appropriately;
- 有关放油，请参阅12.2章节中的液压泵文件；  
Please find information about oil discharge in the manufacturer's documentation for the pump unit in Chapter 12.2;
- 请参阅5.4章节中“报废与处理”中的液压油处置；  
The proper disposal of the hydraulic oil is described in Chapter 5.4 “Decommissioning disposal”;
- 更换过滤器，包括回流过滤器；  
Replace flow and return flow filters;
- 将液压油注入液压系统；  
Fill hydraulic system with oil;
- 有关液压系统注油，请参阅12.2章节；  
Please find information about filling oil in the hydraulic system in the manufacturer's documentation for the pump unit in Chapter 12.2;
- 关闭本设备；  
Switch off the machine;
- 多次开合压板使液压系统中的空气排出。  
Open and close the platen press several times, in order to air out the hydraulic system.

如果加热/冷却平板可轻松移动，说明液压系统的油已放尽。

If the heating/cooling packs work smoothly, the hydraulic system is completely bled off.



#### ④ 更换液压油 Replace hydraulic oil



##### 注意 ATTENTION!

不同种类的液压油混合使用会起化学反应成浆糊状，胶泥状等。  
Mixing different kinds of hydraulic fluids can lead to inadvertent chemical reactions with mud formation, gumming or the like.

不得混用不同的液压油。

Never mix different kinds of hydraulic fluids.

在注入其他液压油前要充分清洗液压系统。

Rinse thoroughly the hydraulic system before filling with another hydraulic fluid.

液压油的牌号为Shell Tellus 32。

The hydraulic aggregate is filled with Shell Tellus 32.

注入液压油时，要使用带细网过滤器的漏斗（网格尺寸不要超过0.4 mm）。

A filling funnel with fine-meshed strainer (mesh size not exceeding 0.4 mm) is to be used.

- 注入液压油；

Fill in oil;

- 在检测窗检查油位；

Check oil level at the inspection glass;

- 为排尽系统中的液压油，可多次开合本设备！

For a venting of the complete system, open and shut the press several times!

此后应该再检查油位。如果不够，要再注入些液压油。

After that you should control the oil level once more. If necessary, fill it up.

要确保液压油干净。

Cleanliness must be warranted.

应该保养间隔，请参阅本手册7.1.2章节的“保养与检查”与制造商文件12.2章节中的液压单元。

Information about maintenance intervals is located in the maintenance and inspection schedule in Chapter 7.1.2 and in the manufacturer documentation of the hydraulic unit in Chapter 12.2.

有关允许的液压油资料，请参阅7.1.3章节与制造商文件12.2章节中的液压单元。

Information about permissible hydraulic fluid is located in the lubricant list in Chapter 7.1.3 and in the manufacturer documentation of the hydraulic unit in Chapter 12.2.

#### 7.1.4. 水冷回路的保养 Maintenance of the water cooling circuit

##### ① 检查管路和螺栓连接 Check pipes and screw connections

如果管路或螺栓连接有缺陷，水冷系统会泄漏并损坏本设备。因此，要定期检查下列元器件：

If lines or screwed connection are defect, oil can leak out of the cooling water system. This can damage the plate press. Therefore, the following components have to be checked regularly:

- 加热/冷却总成 Heating/cooling packs:

管路与螺栓连接的防漏性；

Leak-proofness of lines and screw connections;

- 冷却平板 Cooling plates:

管路与螺栓连接的防漏性；

Leak-proofness of lines and screw connections.

有关保养计划的资料，请参阅7.1.2章节的“保养与检查”。

For information about maintenance schedules refer to the maintenance and inspection schedule in chapter 7.1.2.

##### ② 滤清器的更换 Replace dirt catcher

如果滤清器严重污染，则必须更换。

If the dirt trap is strongly polluted, it has to be replaced.

根据11.3章节中的冷却系统图给出下列参数：

The following data refer to the cooling system diagram in Chapter 11.3.

滤清器（6.0）装在设备的入口的外侧。

The dirt trap (6.0) is installed in the flow at the outside of the press.

- 关闭水冷回路入口；

Shut off the cooling water inflow;

- 系统泄压;  
Depressurise the system;
- 更换滤清器 (6.0) 。  
Replace the dirt trap (6.0);

有关保养计划的资料, 请参阅7.1.2章节的“保养与检查”。

For information about maintenance schedules refer to the maintenance and inspection schedule in chapter 7.1.2.

### ③ 更换精滤器 Replace fine filter

根据11.3章节中的冷却系统图给出下列参数:

The following data refer to the cooling system diagram in Chapter 11.3.

带快速降温的平板硫化机在水冷回路中装有带精滤器 (4.0) 的减压阀。

The plate presses with temperature ramp include a pressure reducing valve with fine filter (4.0) in the cooling water circuit.

精滤器要定期检查并需要时更换。

The fine filter should be checked regularly and replaced if necessary.

有关减压器与精滤器的保养资料, 请参阅制造商文件12.2章节中的减压器。

For information about Maintenance of pressure reducer and fine filter refer to the manufacturers' documentation of the pressure reducer in chapter 12.2.

### 7.1.5. 气动系统的保养 Maintenance of the pneumatic system

如果保养单元的过滤器严重污染, 就必须更换。

If the filter in the service unit is strongly polluted, it has to be replaced.

有关保养单元与过滤器的保养资料, 请参阅制造商文件12.2章节中的保养单元。

For information about maintenance of maintenance unit and filter refer to the manufacturers' documentation of the maintenance unit in chapter 12.2.

### 7.1.6. 润滑油清单 Lubricant list

单元 Unit	润滑油 Lubricant	牌号 Trade name	供应商 Supplier
液压动力站 Hydraulic power pack	液压油 Hydraulic oil	Shell Tellus 32	Otto Glas Handels-GmbH

有关保养计划, 请参阅7.1.2章节。

Maintenance schedules - see chapter 7.1.2.

## 7.2. 维护 Care

### 7.2.1. 维护与 清洁的安全规程 Safety regulations for care and cleaning works

在维护与清洁工作开始前, 主电源开关必须关闭且防止器意外上电;

Before starting the care and cleaning works, switch the main switch off and secure it against accidental switching on.

确保设备, 尤其是电子元器件需要防水或水雾。

Protect the machine, especially the electrical components, from spray water.

不得用潮湿的方法擦洗本设备, 尤其是电子元器件, 也不得用高压水枪冲洗本设备。

It is not allowed to clean the machine, especially the electrical components, using a humid and wet method. Neither it is permissible to clean the machine using a high pressure washer.

不得用含氯和其他腐蚀性方法来清洁本设备。如果这些溶剂具有低放射性, 也将会腐蚀或损害设备, 如: 填片等。

Chloric and aggressive means may not be applied. Also, if these agents are low dosed, they cause corrosion and damage, e.g. to gaskets.

清洁完毕, 要确保在设备中没有任何辅助工具或物品。

Make sure, that not auxiliary aids or objects are left in the machine after cleaning.


### 7.2.2. 加热/冷却板的脱钙 Decalcification of the heating/cooling plates

如果加热/冷却板用的水含钙量重, 那么加热/冷却板必须定期脱钙。

In case there has been used strongly calcified water for cooling of the heating/cooling plates, the heating/cooling plates need to be decalcified regularly.

有关水质, 请参阅2.2章节的“连接数据”。

For the necessary water quality see Chapter 2.2 – "Connection data".

	<p>不能使用含钙的水来运转设备，不然会损坏阀门与螺栓连接。 The press may not be operated with decalcified water, because thereby valves and screw connections can be damaged.</p>
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① **脱钙介质 Decalcification medium**

有关加热/冷却板的脱钙，请遵循下列推荐的介质：

For decalcifying of the heating/cooling plates, following decalcification media are recommended:

- 含20%水和80%柠檬酸混合液体，或  
Mixture, consisting of 20 % water and 80% citric acid, or
- 含80%水和20%磷酸混合液体。  
Mixture, consisting of 80% water and 20% phosphoric acid

② **脱钙装置 Decalcification device**

	<p>本设备的供货范围不包括脱钙装置 The decalcification device is not included in delivery of the platen press.</p>
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脱钙装置必须连接在水冷回路的入口与出口处。

The connection of the decalcifying device has to be fixed at the cooling water inlet and cooling water outlet.


有关脱钙装置的详细资料，请参阅制造商文件。

For information refer to the manufacturers' documentation of the decalcification device.

③ **加热/冷却板的脱钙处理 Decalcify the heating/cooling plates**

加热/冷却板要分别予以脱钙处理。

The heating/cooling plates are decalcified separately.

	<p><b>注意 ATTENTION!</b> 一旦磷水混合液过度加热会产生对人体有害的烟气。 If a phosphor/water mixture is overheated, fumes can be generated which are injurious to health. 磷水混合液以及加热/冷却板的温度不应超过60°C且压力低于4 bar。 The temperature of the phosphor/water mixture and the heating/cooling packs may not exceed 60°C and a pressure of 4 bar.</p>
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参照11.3章节的水冷回路图进行如下操作：

The following information refers on the cooling scheme in chapter 11.3:

- 关闭本设备并防止意外启动  
Switch off the machine and secure it against accidental switching on.

上加热/冷却板要分别予以脱钙处理：


Decalcify upper heating/cooling plate:

- 连接将脱钙装置的软管。请参阅制造商提供的有关脱钙装置的资料；  
Connect the flexible hoses to the decalcification device. For information refer to the manufacturers' documentation of the decalcification device;
- 松开上加热/冷却板的螺栓连接(A)与(A1)；  
Loosen screw connection (A) and (A1) for upper heating/cooling plate;
- 将脱钙装置的软管固定连接(A)与(A1)；  
Fix flexible hoses to the screw connection (A) and (A1).
- 上加热/冷却板脱钙。请参阅制造商提供的有关脱钙装置的资料；  
Decalcify the heating/cooling plate. For information refer to the manufacturers' documentation of the decalcification device;
- 从(A)与(A1)的连接处移去脱钙装置的软管；  
Remove flexible hoses from screw connection (A) and (A1).
- 固定上加热/冷却板的螺栓连接(A)与(A1)。  
Fix screw connection (A) and (A1) for upper heating/cooling plate.

下加热/冷却板要分别予以脱钙处理：


Decalcify lower heating-/ cooling plate:



- 连接将脱钙装置的软管。请参阅制造商提供的有关脱钙装置的资料；  
Connect the flexible hoses to the decalcification device. For information refer to the manufacturers' documentation of the decalcification device;
- 松开下加热/冷却板的螺栓连接(B)与(B1)；  
Loosen screw connection (B) and (B1) for lower heating/cooling plate;
- 将脱钙装置的软管固定连接(B)与(B1)；  
Fix flexible hoses to the screw connection (B) and (B1);
- 下加热/冷却板脱钙。请参阅制造商提供的有关脱钙装置的资料；  
Decalcify the heating/cooling plate. For information refer to the manufacturers' documentation of the decalcification device.
- 从(B)与(B1)的连接处移去脱钙装置的软管；  
Remove flexible hoses from screw connection (B) and (B1);
- 固定上加热/冷却板的螺栓连接(B)与(B1)。  
Fix screw connection (B) and (B1) for lower heating/cooling plate.

	<p><b>建议 Recommendations</b></p> <p>加热/冷却板每次脱钙至少进行30分钟。 Decalcify every heating/cooling plate at least 30 minutes.</p> <p>脱钙处理完毕要用清水冲洗。 Rinse thoroughly with clear water after completion of the decalcifying process</p>
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### 7.2.3. 加热/冷却板与导柱的清洁 Cleaning of heating/cooling plates and guide columns

	<p><b>注意 ATTENTION!</b></p> <p>在热表面使用含有溶剂的清洁剂会产生易燃气体。 Combustible atmosphere can develop when using cleaning agents containing solvent on hot surfaces.</p> <p>不得使用含有溶剂的清洁剂。 Do not use cleaning agents containing solvent.</p>
---	---

	<p>遵守制造商提供的有关清洁剂程序、使用、健康及环境保护的说明。 Follow the instructions given by the manufacturers of the cleaning agents about procedures, usage and health and environment protection.</p>
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 	<p><b>注意 ATTENTION!</b></p> <p>热表面会引起严重灼伤。严禁触碰热表面！ Hot surfaces can cause serious burns. Do not touch the hot surfaces!</p> <p>戴隔热防护手套！ Wear heat-resistant protective gloves!</p>
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趁加热/冷却板与导柱还有余热时，去除塑料残余物更适宜。

To better remove plastics residues, heating/cooling packs and guide columns are cleaned when they are hot.

- 戴隔热防护手套！  
Wear heat-resistant protective gloves!
- 戴护目镜！  
Wear eye protection!

加热/冷却板与导柱的清洁：

Clean heating/cooling plates and guide columns:

- 关闭本设备并防止意外启动；  
Switch off the machine and secure it against accidental switching on;
- 用铜抹刀去除塑料残余物；  
Remove rough plastic residues with a brass spatula;
- 用铜丝球去除其他残余物。  
Remove remaining residues with a copper mesh.

## 8. 特殊装备 SPECIAL EQUIPMENT

### 8.1. 盒式冷却系统 Cassette cooling system

孟泰科检测设备有限公司可以为本设备提供选购的盒式冷却系统。

As option the MonTech Werkstoffprüfmaschinen GmbH offers a cassette cooling system for the platen press.

**盒式冷却系统的职能**

**Task of the cassette cooling system**

盒式冷却系统用于冷却压制试样，而毋需对加热/冷却板停止加热。

The cassette cooling system is used for cooling the press samples under pressure without the need the switch off the heating of the heating/cooling packs.

**工作原理**

**Work principle**

在加工前，盒式冷却系统的冷却板置于加热/冷却板外。

Before the pressing process, the cooling plates of the cassette cooling system are outside the heating/cooling packs.

在加热/冷却板(2)之间，活塞推动盒式冷却系统的冷却板，使一块冷却板(4)置于试样(4)的上方并吹冷。当盒式冷却系统被推入时，冷却系统开关自动打开。

The piston pushes the cooling plates of the cassette cooling system between the heating/cooling packs (2), so that one cooling plate (4) each is above and below a press sample (4). When the cassettes are pushed in, their cooling system switches off automatically.

本设备与盒式冷却系统关闭(5)，压制试样(3)受压冷却。

Plate press and cassette cooling system are closed (5), whereby the press sample (3) is cooled down under pressure.

### 8.2. 水冷装置 Water cooling device

作为选购项目，水冷回路可以接入外接水冷装置。

As option an external water cooling device can be integrated into the cooling water circuit.

**水冷装置的职能**

**Task of the water cooling device**

外接水冷装置向加热/冷却板的水冷回路提供需用纯净水，其好处在于加热/冷却板不再需要脱钙处理且耗水量小。

The external water cooling device feeds the cooling water circuit of the heating/cooling plates with demineralised water. Its advantage is that the heating/cooling packs do not calcify and less water is consumed.

请参阅12.2章节制造商提供的有关水冷装置的资料。

For information refer to the manufacturers' documentation of the water cooling device in chapter 12.2.

## 9. 故障原因及诊断 CAUSES OF MALFUNCTION AND TROUBLE SHOOTING

大多数情况下，仔细的定期的和预防性保养常常会忽视错误源。因此，需要仔细阅读本保养检查指南以及其他供应商提供的说明书，以节省费用与减少不必要的停机时间。

In the majority of cases, sources of error can be excluded when maintenance is carried out carefully, timely and preventively. Therefore, it is absolutely necessary to read the maintenance and inspection instructions as well as the instructions provided by other manufacturers. This will save costs and unnecessary downtimes.

### 9.1. 诊断的安全规定 Safety regulations for troubleshooting

如在操作时发生故障，操作人员和维护人员需要立即作出谨慎的反应，以避免和限制可能的损坏。由此，本设备的操作与维护只能由经过专业培训的人员进行。

If malfunctions occur during the operation of the machine, the operators and the maintenance personnel are required to act immediately and cautiously to avoid and to limit possible damage. Therefore, the machine is only allowed to be operated and serviced by appropriately trained and instructed personnel.

故障诊断只能由经过专业培训的人员进行。

Troubleshooting is only allowed to be done by trained specialists.

手动操作或部分操作只有在系统无损坏风险、无残余能量或压力下进行。

Manual operation of the machine or parts of it is only allowed when there is no risk of danger due the starting machines, potential energy or pressurized systems.

### 9.2. 可能的故障原因及诊断 Possible causes of malfunction and troubleshooting

对可能的故障原因及诊断，请参阅另外提供的操作说明，第12.1章节。

For information about possible causes of malfunction and troubleshooting refer to the separate operating instructions of the press in chapter 12.1.

## 10. 备品备件服务的订购 ORDERING SPARE PARTS AND SERVICE

设备的使用情况取决于磨损、服务周期以及操作条件。

Each machine is subject to a certain wear in the course of time, depending on the period of service and the operating conditions it is exposed to.

为确保设备的最佳工况，需要根据规定（参阅第七章）对设备进行维护保养。

To keep the machine in optimal condition, careful maintenance performed in accordance with the specifications is required (see chapter 7).

尽管在制造过程中严格按照精度要求、最佳原材料选用、制造时使用最好的部套件以及用户使用时予以最周到的保养，设备的有些零部件还是会在运转中磨损与撕破。

Certain parts of the machine are subject to wear and tear due to its operation -despite strict compliance with the most accurate tolerances during production, the selection of optimal materials, the use of the best parts at the manufacturer's plant and optimal maintenance in accordance with the specifications at the customer.

根据所提供产品图中的零件编号及零件清单，可以查到相关的备品备件。

Based on the parts numbers indicated in the respective drawing as well as on the parts list you will find out the respective spare parts.

第10.2章节所列备品备件清单仅为按元器件与图纸的分类的例子及检索易所需损件的方法。

The list(s) of spare parts in Chapter 10.2 is/are only intended as sample(s) classified according to the related components or drawings and shall facilitate the search for wearing parts which you possibly need.

尽管孟泰科检测设备有限公司尽力迅速发运所需备品备件，但是还是建议用户储备一些备品备件以保障服务之需。

To ensure that your machine will be ready for service at any time, we recommend you to have the respective quantity of the required spare parts on stock at your plant -although we will, of course, make every effort to make prompt delivery of the required spare parts.



一旦需要**服务工程师**提供现场服务，请及时与我方联系。我方会尽快派遣服务人员到现场。

Should you require the services of a **service engineer**, please advise us accordingly; he will pay you a visit short-term.

### 10.1. 订购备品备件的程序 Procedure for ordering spare parts

在订购备品备件时，要制定如下参数：

The following data are to be specified in your spare parts order:

#### 1. 设备序列号 Machine number

设备右侧的铭牌上或在操作指南的第一页上记录了设备的型号。

See type plate on the right-hand side of your machine, or 1st sheet of the Operating Instructions.

#### 2. 零件清单号或位置号 Part list number or position number

请参阅总装图的零件清单或备件清单

See assembly drawing with parts list or spare parts list.

#### 3. 零件的命名 Designation of part

#### 4. 订购备件的数量 Quantity (number of pieces) of ordered parts

下列备件与易损件的清单样张，可作为询价单。

The following spare and wear parts lists are examples and can be copied as an ordering form resp. for inquiries.

我方地址 Our address:

MonTech Werkstoffprüfmaschinen GmbH

Carl-Benz-Straße 11, D- 74722 Buchen / Germany

Tel: +49 (0)6281 562230; Fax: +49 (0)6281 562255

[info@rubber-testing.com](mailto:info@rubber-testing.com); [www.rubber-testing.com](http://www.rubber-testing.com)

### 10.1. 备品备件及易损件清单 Lists of Spare Parts and Wearing Parts

用户在订购备件时要报出完整的参数，如10.1章节所示，以便我方工具所交货的设备版本处理订单。

We ask you to quote the complete data when ordering spare parts (see chapter 10.1), so that we will be able to process your order according to the respective version of the delivered machine.

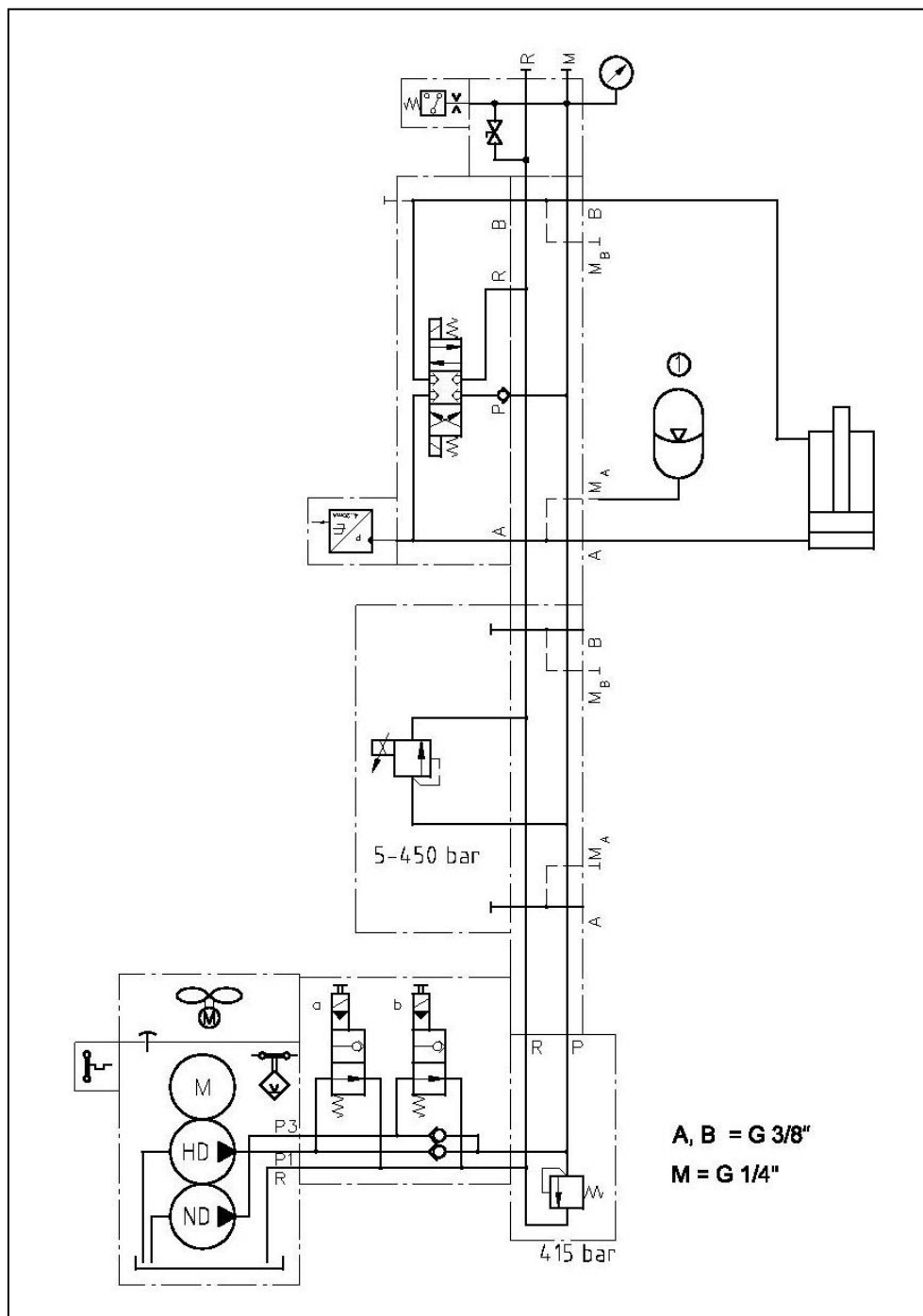
位置号 Pos.	备件名称 Designation	图号 Drawing-No.	备件/易损件清单号 Spare parts/wearing parts list-No

## 11. 图及零件清单 DRAWINGS AND PARTS LISTS

### 11.1. 机械零件图及零件清单 Drawings for mechanical parts and parts lists

位置号 Pos.	备件名称 Designation	图号 Drawing-No.	备件/易损件清单号 Spare parts/wearing parts list-No

### 11.2. 液压系统图 Hydraulic scheme

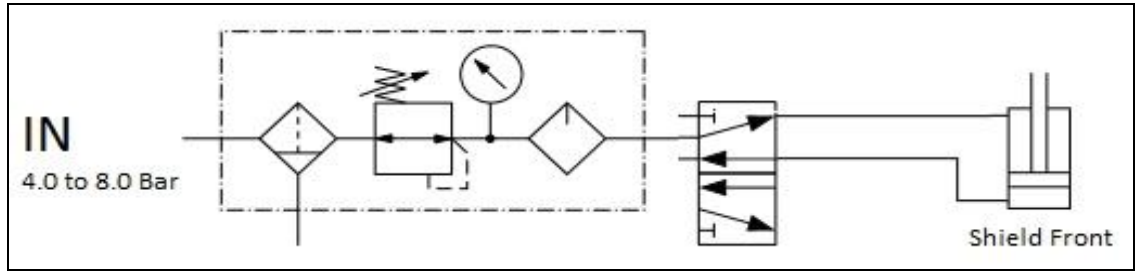




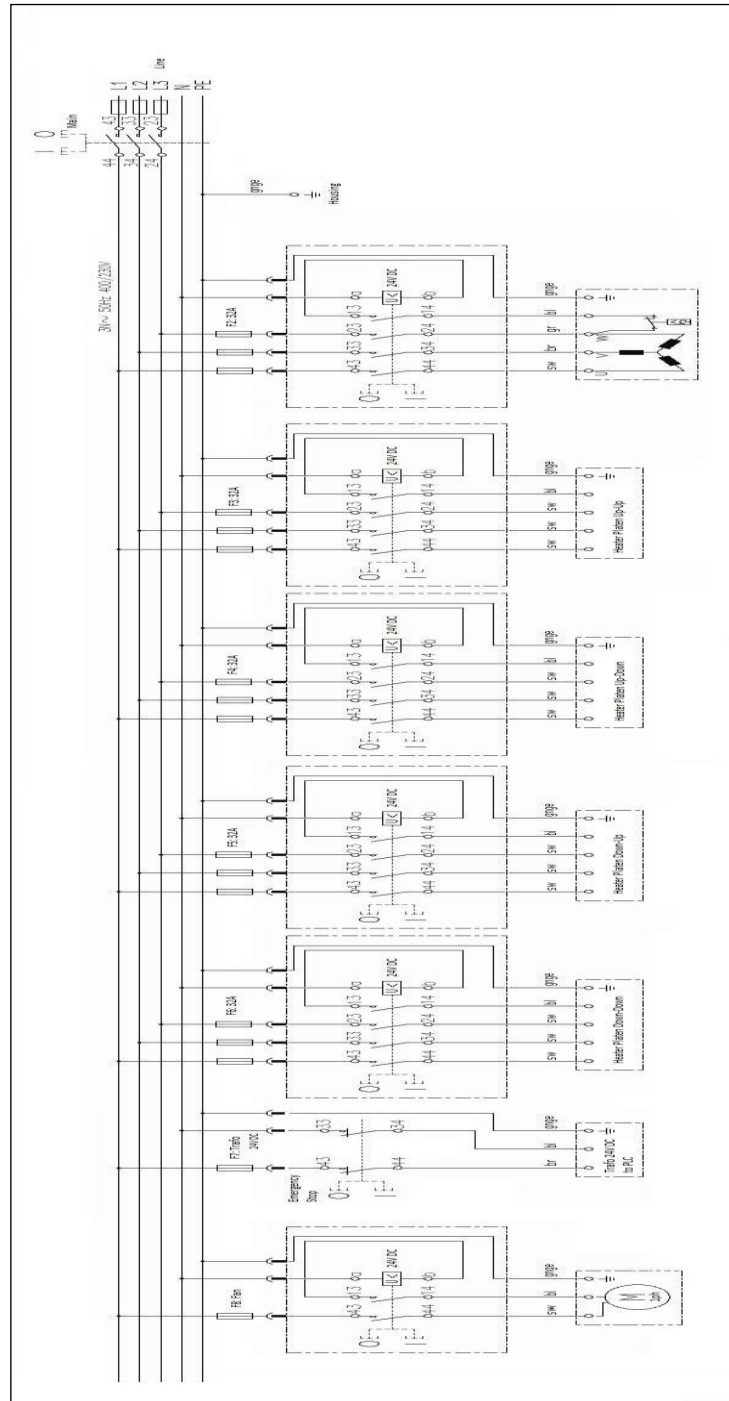
### 11.3. 冷却回路图 Cooling circuit diagram

无

### 11.4. 气动系统图 Pneumatic scheme



### 11.5. 电气线路图 Electrical Scheme



## 12. 附件 ANNEXE

本设备包括本厂生产与指定供应商生产的零部件。

The machine includes parts manufactured in our own company and supplied parts which are designated as "Supplied parts".

这些指定供应商生产的零部件都随附规格、操作说明书、安装指南、装配说明、提示指导、维修说明、服务指南和/或其他用户资料。

These supplied parts are also provided with packing specification, operating instruction, installation guide, assembly instruction, setting instruction, repair instruction, service instruction and/or other user information. 如需要，这些文件以在这些操作说明中指定为“由其他制造商提供的文件”。

These documents for supplied components are designated in these Operating Instructions as "documents provided by other manufacturers" and, if necessary, they are referred to.

### 12.1. 平板硫化机的操作指南 Operating instruction for platen press

控制系统的操作说明

Operating Instructions for Press Control System.