Rotary filler-capper monobloc
TL-FC4016-64A

Operating Manual

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目录

Contents

1. 前言

为了能最大限度地使用这台灌装一旋盖一体机，请在使用前认真阅读此说明书，并且严格遵循说明书的细则来执行操作。

1.1 责任声明

我们公司将不会对以下行为或情况所导致机器出现的问题而负责：

1)没有遵守说明书的细则来操作而出现的问题、损坏和意外；

2)对设备进行擅自的修改、改型或安装的失误；

3)由于自然灾难、安装上的失误或缺乏维护而引起的损坏；

4)电气事故短路；

5)没有使用设计允许使用范围内的包装材料和灌装产品,以及使用的配件不是由我们公司所提供的；

要特别指出：严格禁止此机器用于灌装酸性的、腐蚀性或可燃性的物质。

注意：

- 必须在零部件的使用寿命内更换备件，这样才能充分发挥设备的功能并避免事故发生。
- 禁止在易爆或非适宜的环境下使用本机器。

1. Introduction

To make best use of this filler capper mono-block, read this manual carefully and use it to instruct the workforce.

1.1 Warning over responsibility

- Our Company will not be responsible for problems, damages and accidents due to not following this manual, nor for problems resulting from modifications, reconstruction or wrong installation of the equipment.
- Our Company will not be responsible for damages due to natural calamity, wrong operation, lack of maintenance, short circuit caused by electrical failure.
- Our Company will not be responsible for the use of packing materials and filling products differing from liquids for which the machine has been designed. Our Company will not be responsible in case of parts replaced by parts not supplied by us.

It is strictly prohibited to use the machine for acid, corrosive or flammable substances.

Notice:

- To prevent accidents it is important the parts are replaced before the end of their lifetime.
- It is prohibited to use the machine in explosive or unsuitable environments.
- It is prohibited to copy our whole

1.2 安全细则

机器必须按照当地的安全细则进行操作。

机器的安装、调试、操作和维护必须要由受过培训的合格专业人员来操作。这些专业人员必须在阅读并理解本说明书的操作细则后，才能进行作业。机器的操作员要对机器的安全细则以及机器所配备的安全保护有一个很深入的了解。

为了避免出现意外，操作人员必须穿着简洁、轻便的工作服和劳保鞋。

操作机器时，不要佩戴戒指、手表、项链、手镯等首饰或配饰。

不要使用明火和利器来清洁机器。

不要在机器附近抽烟或进食。

操作员必须接受专业的培训，并确保他们能深入了解以下细则：

- 安全事项和事故的防范方法
- 设备操作时的特殊要求
- 控制位置
- 急停按钮

最终用户需要提供生产员工合适的清洁和维护的工具，这些工具要符合ISO14122-1, ISO14122-2, and ISO14122-3,

1.2 Safety

The machine must be operated in compliance with the Safety rules where the machine is installed.

Installation, commissioning, operation and maintenance of the machine must be carried out by trained, qualified specialists. These specialists must have read and understood these Operating Instructions before performing above work.

Supervisors of the filling monobloc must have an in-depth knowledge of the safety hazards of the machine and of the safety protections that the machine is equipped with.

To avoid accidents, production personnel must wear proper clothing, wear properly laced safety shoes. Don't wear rings, watches, chains, bracelets, etc. during operation. Don't use free flames, pointed elements or pins to clean the machine. Don't smoke and drink besides machine.

Production personnel must be trained to ensure they know the following:

- Safety rules and means to avoid accidents
- Special conditions to operate the equipment
- Position of the control equipment
- Emergency push buttons locations

End users need to provide production personnel with proper tools complying with

ISO14122-4 标准。例如，要使用合格的梯子来爬上机器。

即使机器配备有排水管道，但是我们还是建议用户自己配备一些防滑垫，工人维护时可以在上面作业。

我们再次强调：操作和维护机器时，用户要特别注意相关的安全规范和安全条例。当然，安全保护设施不可能完全地保护操作员，我们会在可能会对操作员造成人身伤害的地方贴上安全标签。而且操作员必须具备基本的安全常识。

以下地方可能会对您造成危险，请注意！

注意：这本说明书必须配备在设备生产现场。

standard ISO14122-1, ISO14122-2, and ISO14122-3, ISO14122-4 to access the machine for any clean or maintenance work. For example, a qualified ladder can be supplied to step on to the machine surface.

Though there are drainage channels equipped with the machine to gather possible spillage, we suggest users to prepare non-slip sheet on machine when operators need to do maintenance work on it.

Considering the safety protecting devices are impossible to protect operator completely, we will stick the safety labels to the place where the danger may occur. Only specialists with the appropriate accident prevention training are allowed to perform installation, startup and service work. These specialists must also comply with the local regulations in force when performing this work.

Attention: The manual must be available at production location.

如果您想要爬上机器，请务必要使用合适的梯子。请注意安全！
A qualified ladder should be supplied to step on to the machine surface. Watch your steps for your safety.

请注意以下地方，可能会对您造成危险： Pay more attention to following places.

1.3 安全警示标签

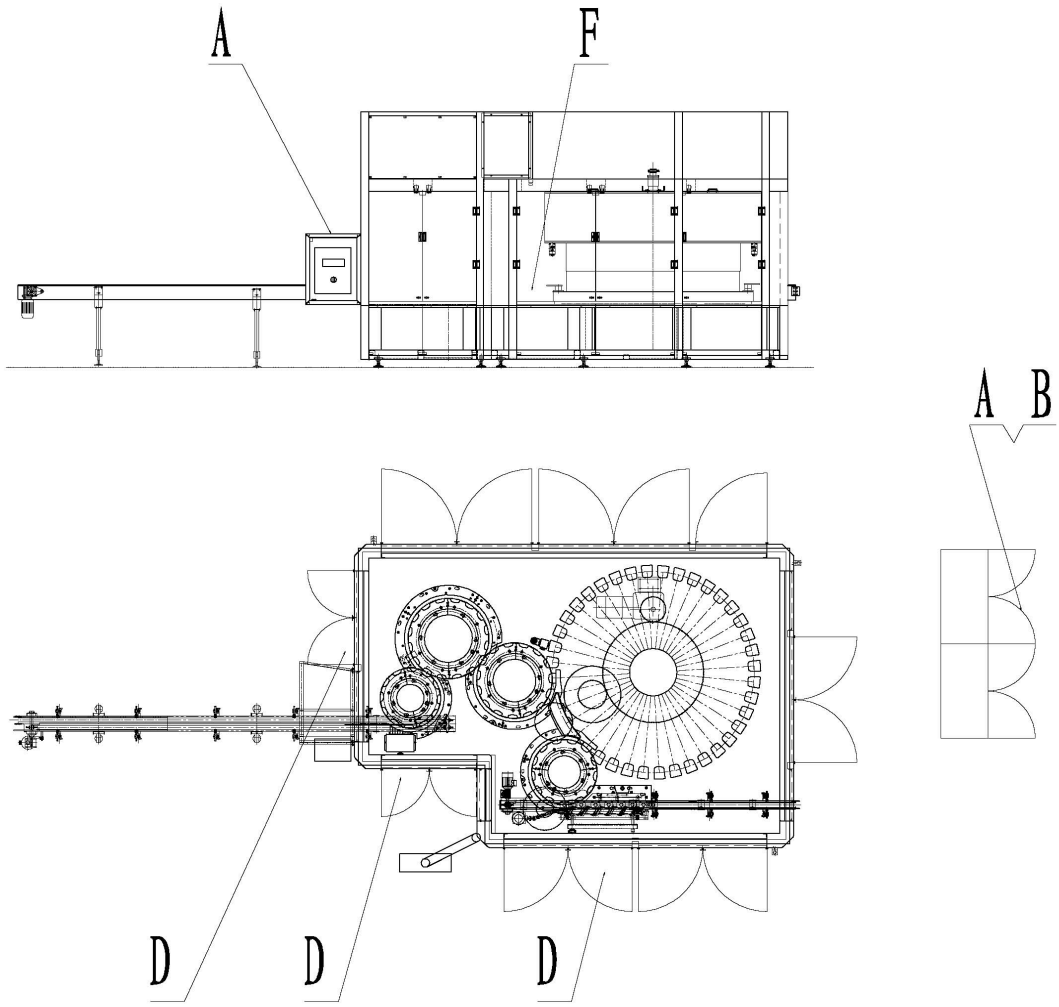
我们会在可能会对用户造成人身伤害的地方贴上安全警示标签，用户可以根据下图在机器上找到标签的位置。

1.3 Safety label chart

The below table shows the warning labels stuck on the machine, users can find their location according to the following drawing.

A	Hazardous voltage	
B	Lock here.	
C	Lubrication point is here.	
D	Mechenical injury	

E	**Pay attention to oil level here.**	
F	**Beware of slipperiness.**	



1.4 机器的安全等级

本机器属于欧洲标准的第三类安全等级，也就是美国的控制可靠性等级。

机器的急停和安全门开关属于第一等级。当急停开关或安全门启动的时候，机器会减速直到停止，然后切断动力线电源。

每一个停机的原因无论是单一的或者是多种的因素作用的结果，都能通过 HMI 看到报警的信息。

电子和控制电路的设计允许用户根据机器安装现场的危险性评定把机器的急停设置为区域的急停或者是整线的急停。

急停的电路串联回到安全继电器输入 1，通过单独的辅助触点接到 PLC，以达到监控的目的。

在第三类安全等级里，所有的安全开关要求串联接到双道的安全继电器 2。这个安全继电器并联到两个安全接触器。而安全接触器的常开输出又是串联接回到安全继电器。

以下电路图符合第三类安全等级的要求。

1.4 Machine safety category

The safety level of machine is Category 3 (Europe) = Control Reliable (US).

The stop function of machine e-stops and guard switches are category 1, which means when pressed or activated, there is a deceleration of the machine to zero speed then removal of power.

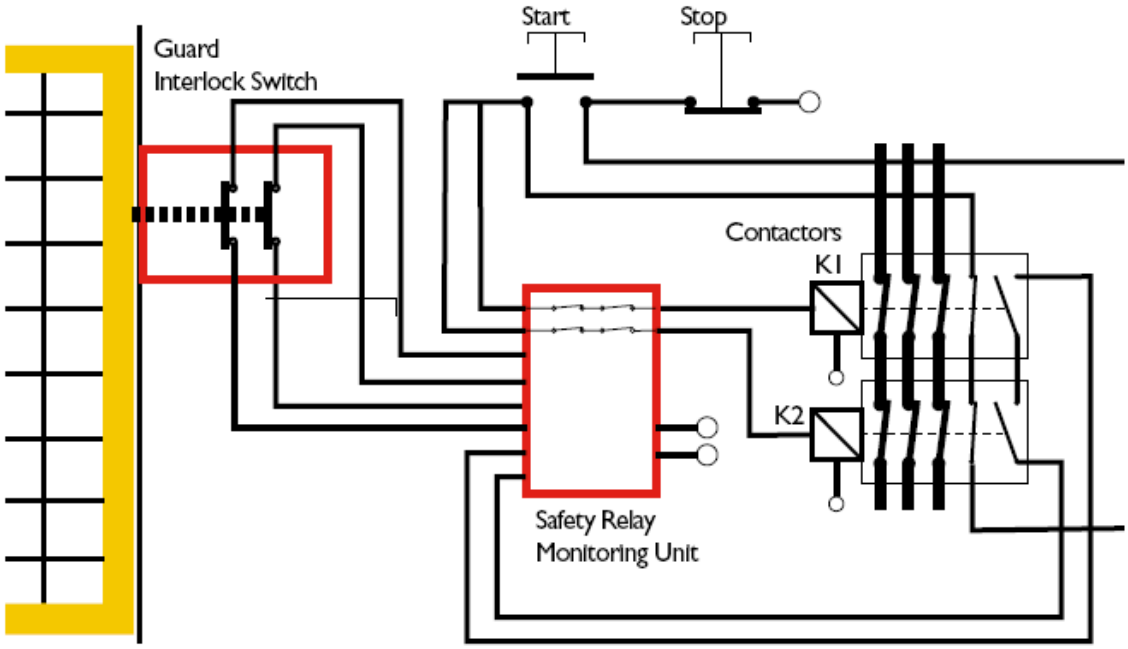
Each stop type whether acted independently or together result in the individual alarm being generated on the HMI screen.

Electrical and control circuit is designed to permit the users to configure the machines e-stop circuit as a zone e-stop or line e-stop based on the risk assessment prepared at the site where the machine is installed.

E-Stop Circuit is hardwired in series back to the Safety Relay Input 1, with individual auxiliary contacts wired to the PLC for monitoring purposes.

For Category 3 all guard switches are required in series and connected to a dual channel safety relay Input 2. This safety relay is wired in parallel to two safety contactors which have their normally open outputs wired in series back to the safety relay.

Picture below shows a circuit which satisfies the requirements of a category 3 circuit.



所有的安全开关、急停开关都有一套常开的辅助触点连接到 PLC。这些状态信息可以在 HMI 上看得到。

机器是第三类安全等级，MINOR SERVICES 要根据以下的程序来执行：

使用常规停机

开门

执行 MINOR SERVICE 任务

关门

机器复位

开机

MINOR SERVICE 包括：堵瓶清理、清洗、检测、润滑、手动上下瓶、机器的调整（不要使用工具）、危险评估文件。

All guard switches, disconnects, E-Stops have one set of normally open auxiliary contacts wired back to the PLC for monitoring. This information is displayed on the main screen of the HMI for status purposes.

Given the machine is category 3 protected, minor services may be carried out following this procedure:

1) Stop machine using normal stop procedures.

2) Open door

3) Perform minor servicing task

4) Close door

5) Reset machine

6) Start machine

The minor services tasks include: Jam clearing, cleaning, inspection, lubrication, manual loading/unloading, machine

1.5 机器符合欧洲规定

本机器根据欧洲的规则和标准进行制造。

adjustments not requiring a tool, minor servicing with documented risk assessment.

1.5 Conformity statement to the European rules

This equipment has been built in accordance of the European rules and standard.

1.6 噪音声明

经过测试，噪音值的范围为 70.4 分贝～79.6 分贝。

1.6 Noise Declaration

During noise test, noise emission is in the 70.4dB-79.6dB range.

以下数值有待检测（CE 认证）：

Noise Declaration

Declared dual-number noise emission levels in accordance with EN ISO 4871.

Measured A-weighted sound power level (to survey grade 3):

L_{WA} 83dB, Uncertainty 4dB,

Measured A-weighted sound pressure level (to engineering grade 2):

L_{pA} 72.8dB, Uncertainty 4dB,

Values determined in accordance with EN415-2 annex A with reference to the basic standards EN ISO 3746 and EN IS0 11204.

Note: the sum of a measured emission and the stated uncertainty yields an upper limit for the values to be expected in measurements.

1.7 售后服务

本台机器保修期限为一年。保修的日期是从出厂日期开始算起。一旦出现任何故障，请与我们的售后服务部联系，同时，请务必要给我们提供下列信息：

- 故障细节
- 诊断报告

1.7 After sales service

The warranty for this machine extends for a period of 12 months commencing from the date of the delivery from the Tech-Long's factory.

In case of failure, the following details need to be supplied:

- Failure details

- 处理故障的方法
- 其他相关的操作信息
- 机器序列号

以下是我们的通讯地址：

中国广州市萝岗区云埔一路 23 号

广州达意隆包装机械股份有限公司

联系电话：＋86(0)20-82266688

售后服务电话：＋86(0)20-82266999

传真：＋86(0)20-82266909

E-mail: service@tech-long.com

tech-long@vip.163.com

1.8 机器铭牌

灌装旋盖一体机的铭牌和位置如下所示：

- Diagnostic report
- How was the failure handled
- Other related operating information
- Machine serial number

Contact us:

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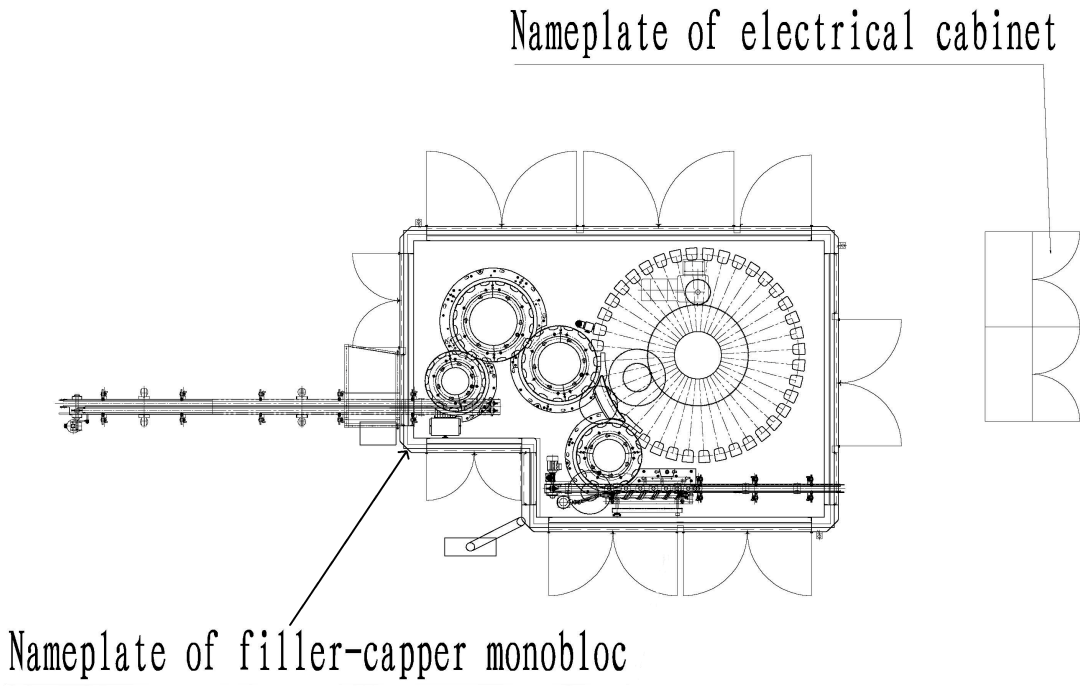
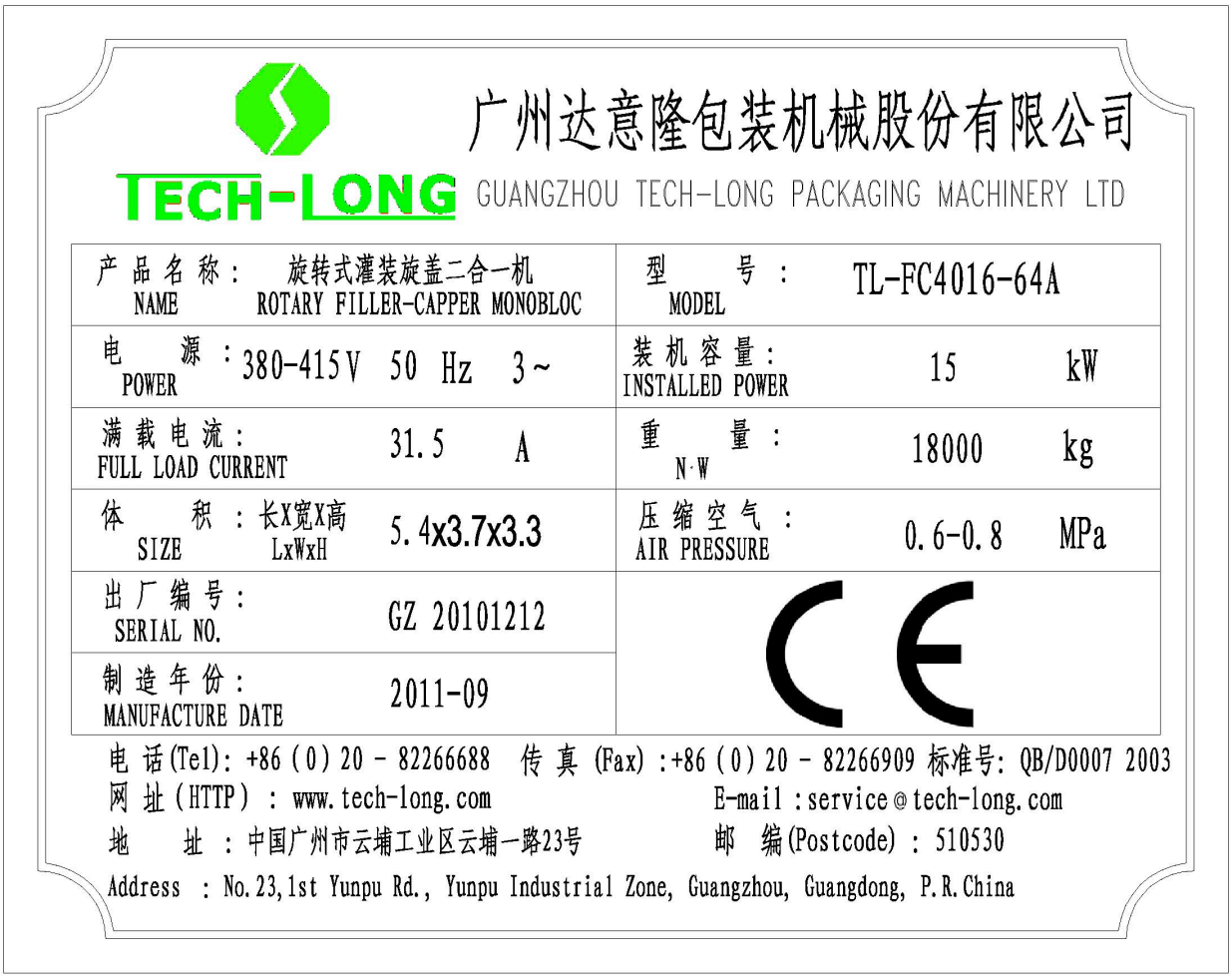
1.8 Machine identification

The nameplates for the filler-capper mono-block and the electrical cabinet are located as per the indication below：


Nameplate of electrical cabinet
Nameplate of filler-capper monobloc

主机铭牌 Nameplate on this machine:



1.9 运输

机器会打包装在木制的板条箱里。机器安全地固定箱子的每个角上。灌装旋盖主机与输送链、支撑件、电柜和备件分开打包。

所有的机器部件都是用优质的塑料薄膜真空包裹，防潮。

为了防止机器的损坏，特别是电气元件受到损坏，运输过程中，温度要保持在-10℃到 50℃之间。

包装箱的尺寸如下所示：

1.9 Equipment transportation

The equipment is crated in wooden packing containers. The equipment is securely fastened in several positions to the bottom of the containers. The cabinets, conveyors, supports and spare parts are packed separately from the filler-capper mono-block. All equipment parts are covered with plastic film under vacuum to protect it from the humidity. In order to avoid any damage to the machine, especially to the electric equipment, keep the machine under temperature ranging from -10 degrees C to +50 degrees C during transportation.

The information of the wooden crates is shown as below:

	Crate Content	Crates Dimensions L*W*H	Crate Weight (kg)
No.1 Crate	Filler-capper monobloc	600cm*430cm*340cm	21,800
No.2 Crate	Cabinet and conveyor	280cm*220cm*225cm	1,100
No.3 Crate	Small composition parts	220cm*220cm*125cm	550

1.10 存放

如果机器在使用前要存放一段较长的时间，务必先要开箱检查设备是否在运输过程中受到损坏。机器存放的区域要保持干燥，温度要保持在－10℃到 50℃之间。请不要把其他设备放置于机器上面。要注意防潮。特别是，对易腐蚀的部件要涂上润滑油。

1.11 机器的卸载

由于机器非常重，所以要小心处理包装箱。严禁箱子倾斜 10°以上！我们建议您使用适当的方法和专业的人员来操作，安全地把包装箱从卡车上卸载下来。

a）必须使用合适的起重机。在箱子边上做好起吊点位置的记号。

1.10 Storage instructions

If the equipment is to be stored for a long period of time before use, open the crates to verify the equipment has not suffered from the transportation. Keep the equipment in a storage area with a temperature between minus 10 degrees and 50 degrees. Keep the equipment in a dry place and do not load the equipment with other equipment on top of it. Take all necessary precautions to prevent humidity. In particular, grease or oil all parts subject to corrosion.

1.11 Machine downloading and unpacking

The equipment is particularly heavy. Please take care of handling the crates properly. The crates must not be inclined more than 10°. When downloading these heavy wooden cases from trucks, it is recommended that you should use proper tools and professional personnel to perform the work.

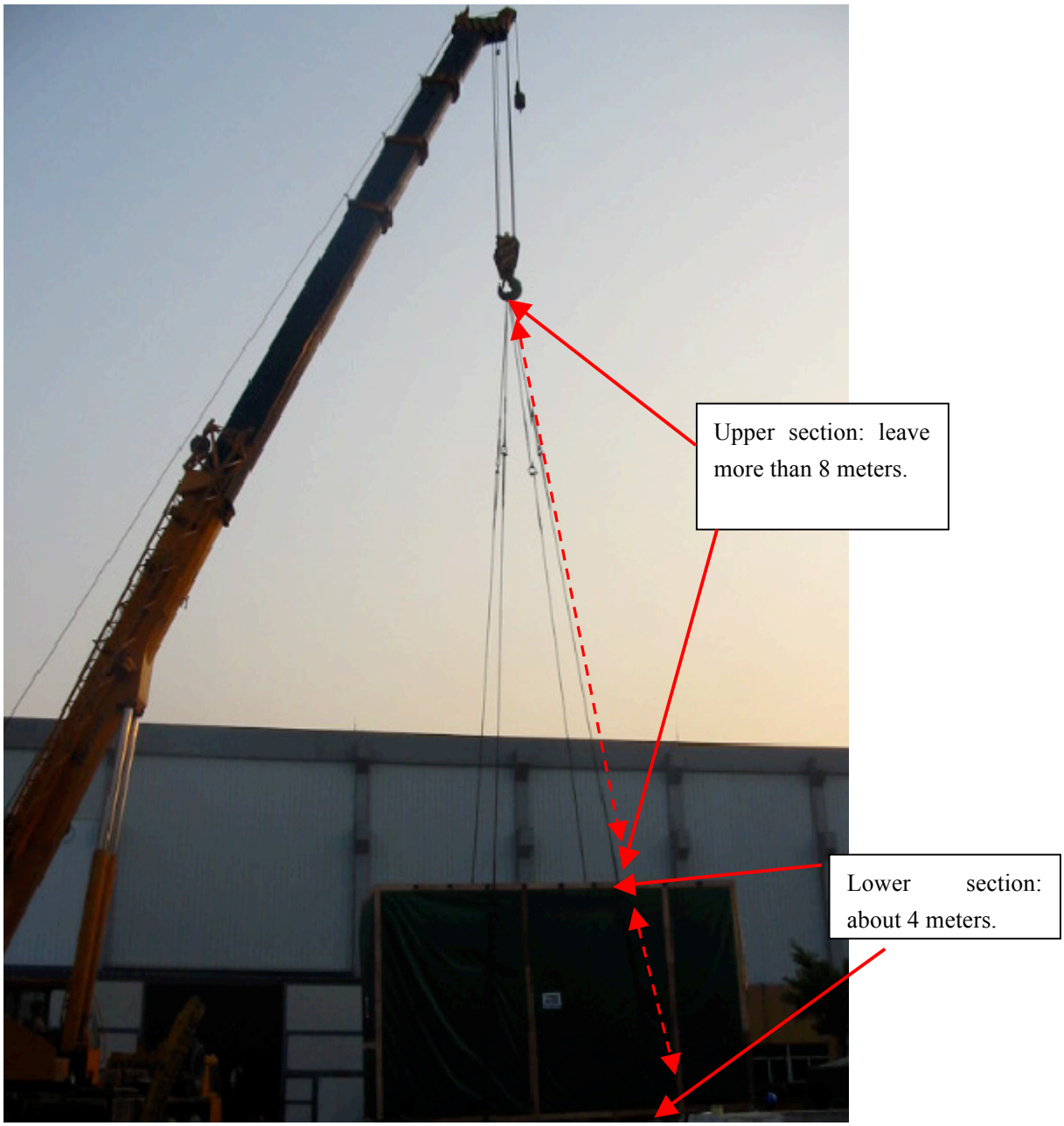
a) Find suitable crane according to the weight of wooden cases. Hoist the case through the hoisting points marked on the case side.

a) 箱子上部的钢丝绳要保持在 8 米以上，以防损坏到包装箱。（请看下图）

b) 将钉子从机器移除以免钉子伤人，在起钉时，要带上防护手套，以免木头的碎片伤人。

b) Leave the upper section of steel string as long as more than 8 meters in order to avoid damaging the wooden case. (Below picture.)

c) In order to remove all the nails or from the wood, which might be dangerous to the persons. Use safety gloves in order to avoid any wounds or abrasions caused by wood splinters.


Upper section: leave more than 8 meters.
Lower section: about 4 meters.

1.12 消毒

机器一旦到达用户工厂，首先必须要进行消毒，以减少微生物的污染。整台机器必须用酸洗（柠檬酸）。

用户可以用一下任何一种方法消毒：

- 使用 130℃水蒸汽
- 使用 85℃以上的热水
- 使用次氯酸盐

注意：不能使用酒精来对机器进行消毒。

如果用户的工厂会存在污染机器的潜在危险，请在进瓶链和进盖链上方额外加上防尘盖。

1.12 Sanitization

Once the machine arrives at user plant, need to do the sanitization first, preventing the microbiological contamination. The entire machine should be cleaned/acid (lemon acid) wash.

There are two methods to do the sanitization, such as:

(1) use 130□ water steam

(2) use hot water above 85□

(3) use hypochlorite

Note: Alcohol can not be used to sanitize the machine.

Also if the user plant has potential risk on the contamination, please add an additional cover on the top of in-feed conveyor and in-feed cap conveyor, to avoid the contamination.

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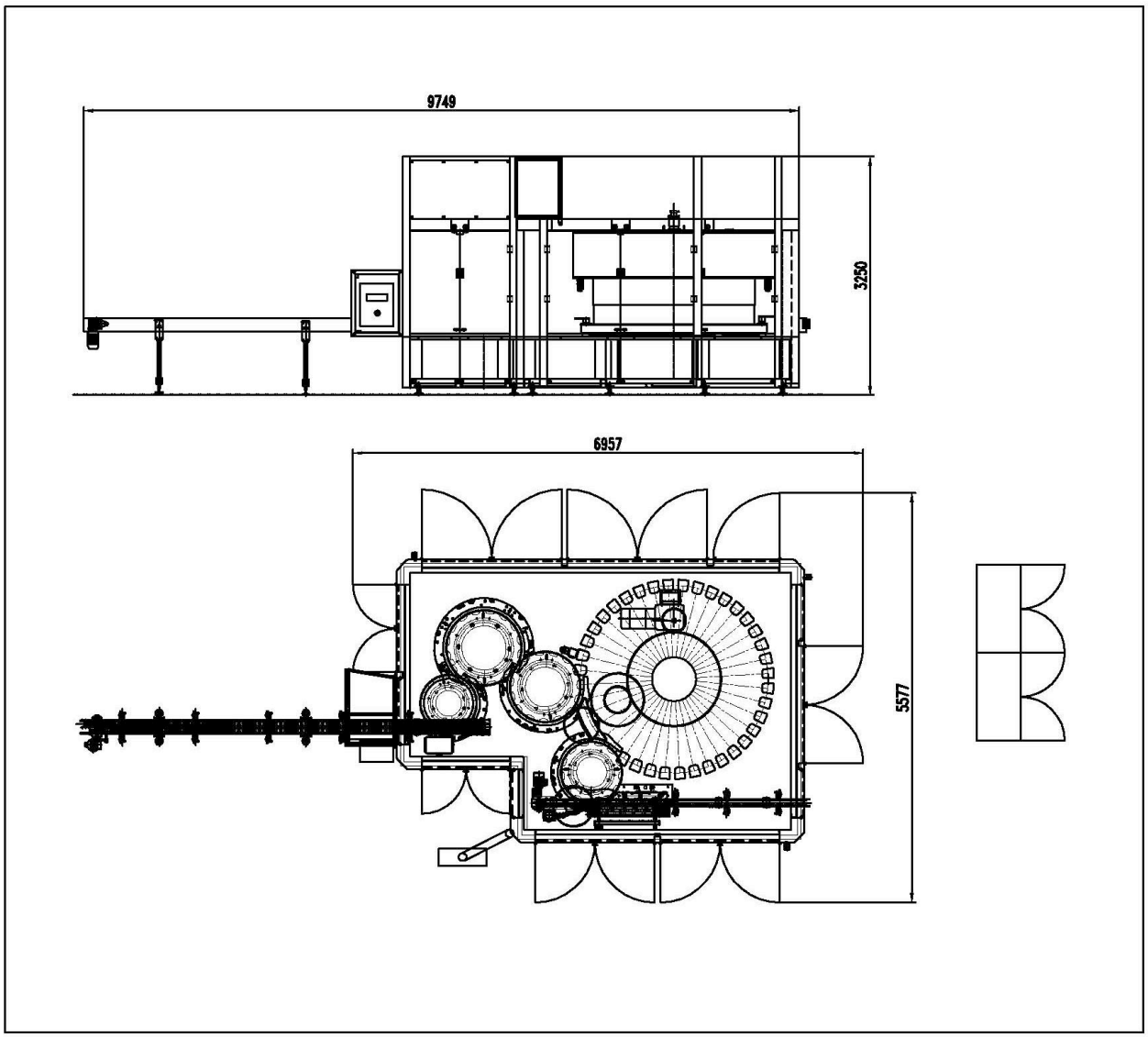
2. 设备的技术说明

2.1 机器的布局

2. Technical specification

2.1 Machine Layout



2.2 技术数据

2.2 Technical data

- **设备综合数据 General data**

Min. bottle size 最小的瓶型 (W, FtB, H)	57mm, 46mm, 150mm
Max. bottle size 最大的瓶型 (W, FtB, H)	160mm, 115mm, 320mm
Cap size 盖子型号	以合同为准。 According to contract

注意：适用的瓶型大小和盖样的具体信息请咨询达意隆的工程师。

Attention: Please consult our engineers for detailed information of available bottle and cap size.

Max. mechanical speed 最大的机械速度	360 b/min （60Hz）
Capper height adjustment range 旋盖机机械高度调整范围	0－250 mm
Filler height adjustment range w/o screen capability 灌装机机械高度调整范围	0－250mm
Number of filling nozzles 灌装头数量	40 heads
Number of capping heads 旋盖头数量	16 heads
Filling mode 灌装模式	Flow metering 流量计定量灌装
Filling accuracy 灌装精度	±0.5 %
Filling material temperature 灌料温度	15 degree C – 30 degree C

Maximum filling pressure 最大灌装压力	5 bar
Bottle material 瓶子材料	HDPE/PET

Ratio（Reference Matrix）
比率

Size	Bottles/min	Bottles/hr
500ml	300	18000
1000ml	250	15000
1500ml	200	12000
2000ml	150	9000

Capping torque range 旋盖扭距	150-550 N.cm

- **机器重量 Equipment weight**

灌装旋盖主机 Filler-capper Mono-block	18000kg

- **电气数据 Electrical data**

电源 Power supply	400VAC
频率 Frequency	60Hz +/- 1%
相数 Number of phase	3 phases + earth
控制电压 Control voltage	24V DC
安装功率 Installed power	15 kW
功耗 Normal consumption in use	12 kW

- **压缩空气数据 Compressed air data**

空气类型 Air type	干净，干燥，无油 clean, dry, oil-free
允许的最大气压 Max. pressure permitted	8.0 Bar
允许的最小气压 Min. pressure permitted	6.0 Bar
压缩空气消耗量 Compressed air consumption	500-700L/min

- 设备环境温度 Ambient temperature 5^0C - 40^0C
- 相对湿度 Humidity 30-95%

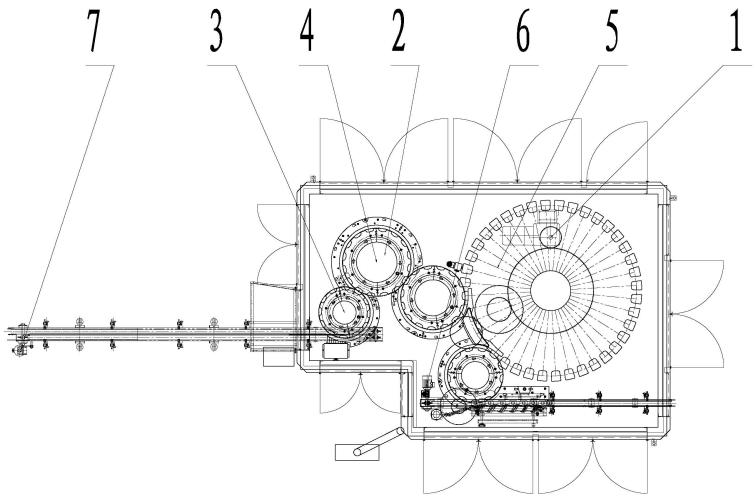
2.3 电机列表

电机的详细信息和它们相应的位置如下所示：

2.3 Motor list

The motors' descriptions and their locations are shown as below:

Name	Function	Qty	Manufacturer	Type	Power (kW)
1	Main drive 主电机	1	SEW	KA87 DRE132M4/BE11/HF/5.5KW/i=44.02/M6/A/90°	5.5
2	Capper over speed drive 旋盖高速电机	1	SEW	KAF47 DRE90L4/1.5kW/i=15.86/M5/A/180°	1.5
3	Cap star-wheel height adjustment 分盖盘高度调整电机	1	SEW	SAF47 DRE80M4/BE1/0.75kW/i=47.32/φ25/M6/A/270°	0.75
4	Capper height adjustment 旋盖机高度调整电机	1	SEW	SAF47 DRE80M4/BE1/0.75kW/i=47.32/φ25/M6/A/270°	0.75
5	Filler height adjustment 灌装机高度调整电机	1	SEW	DRE90M4BE2/FI/B3/270°	1.1
6	In-feed conveyor drive 进瓶链电机	1	SEW	SA37 DRE80M4/0.75kW/i=6.8/M6/A/270 ° -2″	0.75
7	Out-feed conveyor drive 出瓶链电机	1	SEW	SA47/TDRE80M4/0.75KW/i=10.8/ ϕ25/M2A-270°	0.75



电机铭牌 Motor nameplate

SEW Filler Main Motor 灌装主电机 16M1

1	TYPE:	KA87 DRE132M4/BE11/HF/5.5KW/i=44.02/M6/A/90°	3～Mot	
			IM M6A	
		50HZ		
	r/min:	1455/33	IP	55
	V:	220-242Δ/380-420Y		
	A:	19.10/11.00	COSψ:	0.85
	KW:	5.5	I	44.02
		60HZ		
	r/min:	1760/40	IP	55
	V:	254-277Δ/440-480Y		
	A:	15.50/9.00	COSψ:	0.85
	KW:	5.5	I	44.02

SEW Filler Height Adj Motor 灌装机高度调整电机 21M1

2	TYPE:	DRE90M4BE2/FI/B3/270°	3～Mot	
			IM B3	
		50HZ		
	r/min:	1420/30	IP	55
	V:	220-242Δ/380-420Y		
	A:	4.45/2.55	COSψ:	0.79
	KW:	1.1	I	47.32
		60HZ		
	r/min:	1735/36.67	IP	55
	V:	254-277Δ/440-480Y		
	A:	3.65/2.10	COSψ:	0.77
	KW:	1.1	I	47.32

SEW Infeed Motor 进瓶链电机 22M1

3	TYPE:	SA37 DRE80M4/0.75kW/i=6.8/M6/A/270° -2″	3～Mot	
			IM M5A	
		50HZ		
	r/min:	1435/211	IP	55
	V:	220-242Δ/380-420Y		
	A:	3.05/1.75		

KW:	0.75	I	6.8
	60HZ		
r/min:	1745/257	IP	55
V:	254-277Δ/440-480Y		
A:	2.65/1.52		
KW:	0.75	I	6.8

4 SEW Cap Overspeed Motor 旋盖高速电机 17M1

TYPE:	KAF47 DRE90L4/1.5kW/i=15.86/M5/A/180°	3～Mot	
		IM M5A	
	50HZ		
r/min:	1430/90	IP	55
V:	220-242Δ/380-420Y		
A:	6.00/3.45		
KW:	1.5	I	15.86
	60HZ		
r/min:	1745/110	IP	55
V:	254-277Δ/440-480Y		
A:	4.95/2.85		
KW:	0.75	I	15.86

5 SEW Cap Height Adj Motor 旋盖机高度调节电机 19M1

TYPE:	SAF47DRE80M4/BE1/0.75kW/i=47.32/φ25/M6/A/270°	3～Mot	
		IM M6A	
	50HZ		
r/min:	1435/30.33	IP	55
V:	220-242Δ/380-420Y		
A:	3.05/1.75	COSψ:	0.79
KW:	0.75	I	47.32
	60HZ		
r/min:	1745/36.88	IP	55
V:	254-277Δ/440-480Y		
A:	2.65/1.52	COSψ:	0.76
KW:	0.75	I	47.32

SEW Cap Starwheel Height Adj Motor 分盖盘高度调节电机 18M1

6	TYPE:	SAF47DRE80M4/BE1/0.75kW/i=47.32/φ25/M6/A/270°	3～Mot	
			IM M6A	
		50HZ		
	r/min:	1435/30.33	IP	55
	V:	220-242Δ/380-420Y		
	A:	3.05/1.75	COSψ:	0.79
	KW:	0.75	I	47.32
		60HZ		
	r/min:	1745/36.88	IP	55
	V:	254-277Δ/440-480Y		
	A:	2.65/1.52	COSψ:	0.76
	KW:	0.75	I	47.32

SEW Reject Motor 剔瓶链电机 23M1

7	TYPE:	SA47/T DRE80M4/0.75KW/i=10.8/ Φ25/M2A-270°	3～Mot	
			IM M2A	
		50HZ		
	r/min:	1435/133	IP	55
	V:	220-242Δ/380-420Y		
	A:	3.05/1.75		
	KW:	0.75	I	10.8
		60HZ		
	r/min:	1745/162	IP	55
	V:	254-277Δ/440-480Y		
	A:	2.65/1.52		
	KW:	0.75	I	10.8

2.4 气动元件列表

2.4 Pneumatic parts list

	Description	Drawing No.	Serial No.	Manufacturer
Air source				
1	Manual on-off valve	MV01	HE-1/2-D-MIDI	FESTO
2	Pressure-reducing valve	MV02	LFR-1/2-D-7-MIDI-A	FESTO
3	On-off valve	AV03	HEE-1/2-D-MIDI-24	FESTO
4	Pressure switch	PS04	PEV-1/4-B-OD	FESTO
Block bottle				
1	Block bottle cylinder	CL905	DPZ-32-50-P-A	FESTO
2	Solenoid valve	AV903	MSFG-24/42-50/60-OD	FESTO
3	Pressure-reducing valve	MV901	LR-1/4-D-7-MINI	FESTO
CIP				
1	CIP drip tray cylinder	CL805	DNC-50-160-PPV-A	FESTO
2	Solenoid valve	AV803	MSFG-24/42-50/60-OD	FESTO
3	Pressure-reducing valve	MV801	LR-1/4-D-7-MINI	FESTO
Blowing cap				
1	Throttling check valve	MV705	GR-QS-6	FESTO
2	Solenoid valve	AV703	MSFG-24/42-50/60-OD	FESTO

3	Pressure reducing valve	MV701	LR-1/4-D-7-MINI	FESTO
Block cap				
1	Block cap cylinder	CL605	ADVUL-20-10-P-A	FESTO
2	Solenoid valve	AV603	MSFG-24/42-50/60-OD	FESTO
3	Pressure-reducing valve	MV601	LR-1/4-D-7-MINI	FESTO
Capper chuck				
1	Double-piston cylinder	CL505	DPZ-10-25-P-A	FESTO
2	Solenoid valve	AV503	MSFG-24/42-50/60-OD	FESTO
3	Pressure-reducing valve	MV501	LR-1/4-D-7-MINI	FESTO
Capper branch				
1	Pressure-reducing valve	MV401	LR-1/2-D-7-MIDI	FESTO
2	Double-lever roller valve	AV403	M5L220-06-KGS-026B	AirTAC
3	Capper chuck cylinder	CL405	ADVC-50-20-I-P	FESTO
Filler branch				
1	Pressure-reducing valve	MV301	LR-1/2-D-7-MIDI	FESTO
2	Solenoid valve for filling	AV303	916B-PM-613JD	MAC
1	Cut-off valve	MV201	HE-2-QS-8	FESTO
2	Air gun plug	MV202	KS3-1/8-I	FESTO

3	Air gun socket	MV203	KD3-1/4-A	FESTO

3. 安装

请仔细阅读本说明书，在未完全掌握之前，不得开始作业。

- 检查当地的供电是否符合机器要求
- 电源要安装在干燥的环境并且有要所保护
- 电气的接线必须要由合格的电工来操作

注意：由于安装失误造成机器损坏，本公司将不负任何责任！

3.1 机械安装

按照布局图，把主机部件放置在相对应的位置。调节支脚上的螺杆以保证机器在同一水平线上；检查所有的螺钉是否拧紧。把输送链的支架装配在输送链上，调节好水平高度之后，把输送链和主机连接起来。连接水管管，接好排放管，以确保能清洗机器把废水排出。

3. Installation

Please read this manual carefully and ensure you understand the procedure before proceeding with the installation of the equipment and operating the machine.

- Check the local power supply is rated to the machine requirement.

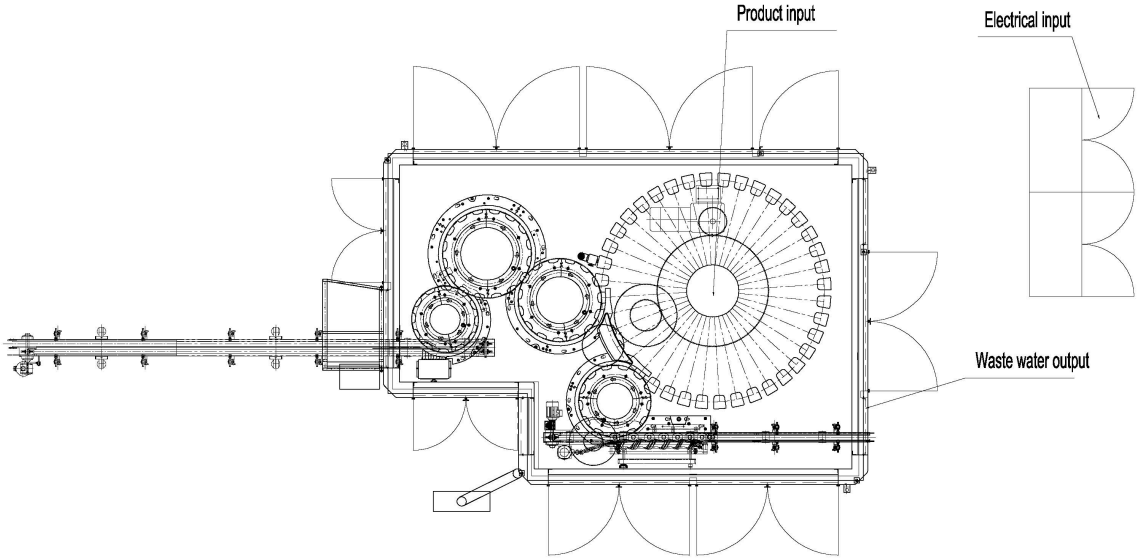
- The power supply needs to be placed in a dry environment and be protected.

- Electrical connections must be done by qualified engineers.

- Our Company is not responsible in case of damages to the equipment caused by incorrect installation.

3.1 Mechanical installation

Move the mono-block on site according to the layout, adjust the foot screws to secure the machine and keep it level. Check the possible unfastening of all bolts. Assemble the conveyor with its supports; connect the conveyor to the mono-block after proper height adjustment. Set the water connections besides the machine, and make the draining channel so that to clean the machine and to drain waste water away.



在机器放置好后，依照以下步骤来调整水平高度：

a) 调整进瓶和出瓶链的高度:从地面到传送链平面高度为 1050mm；

b) 根据进瓶和出瓶链的高度来调整主机框架支脚的水平高度；

3.1.1 进瓶和出瓶链的高度调整

如图所示，松开螺母，旋转螺杆调节高度，直至从地面到输送链的高度为 1050mm 时，拧紧螺母。

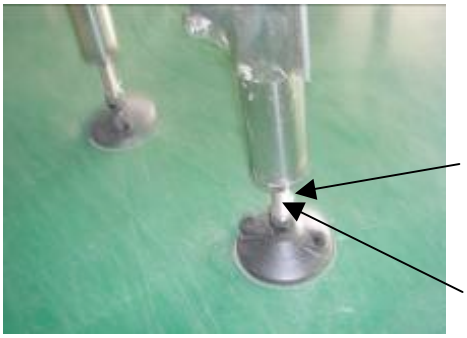
After the machine is placed on its location, please follow the sequence to adjust machine level.

1) Adjust bottle in-feed and out-feed conveyors to 1050mm from floor to slat chain surface.

2) Adjust the feet of the mono-block frame to follow in-feed and out-feed conveyor level.

3.1.1 Bottle in-feed conveyor and out-feed conveyor height adjustment

As shown on the picture，loose the nut, urn the rod to reach the height 1050mm from the ground to slat chain surface and re-tighten the nut.



有必要时，用户可以在进瓶链上安装一个防尘盖以防止生物污染。

It is necessary for the user to mount a cover above the bottle in-feed conveyor to avoid the microbiological issues.

To mount a cover here 此处安装防尘盖

3.1.2 主机高度调整

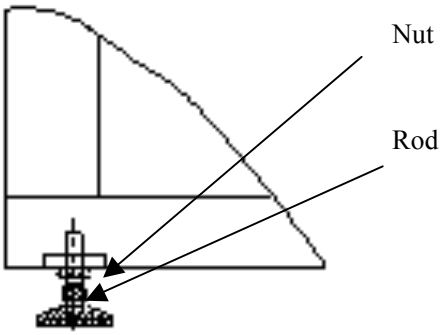
所有的支脚（总共 18 个）在出货前就应该从主机架上拆卸下来，运到用户工厂后立刻装上。根据进瓶和出瓶链的高度来调整主机的高度。如下所示，松开螺母，旋转螺杆调节高度，直到与输送链表面的高度持平，然后拧紧螺母。

注意：在高度调整时应该使用高度测量仪器工具来测量。

3.1.2 Monobloc height adjustment

All feet (18 pieces in total) need to be dismantled from the mono-bloc frame before shipment, they need to be installed back once the machine arrive customer plant. The height adjustment is to follow in-feed and out-feed conveyor height. As shown below, loose the nut, loose the rod to adjust height for matching conveyor chain surface, then retighten nuts.

Note: the tools for surface level measuring should be used during height adjustment.

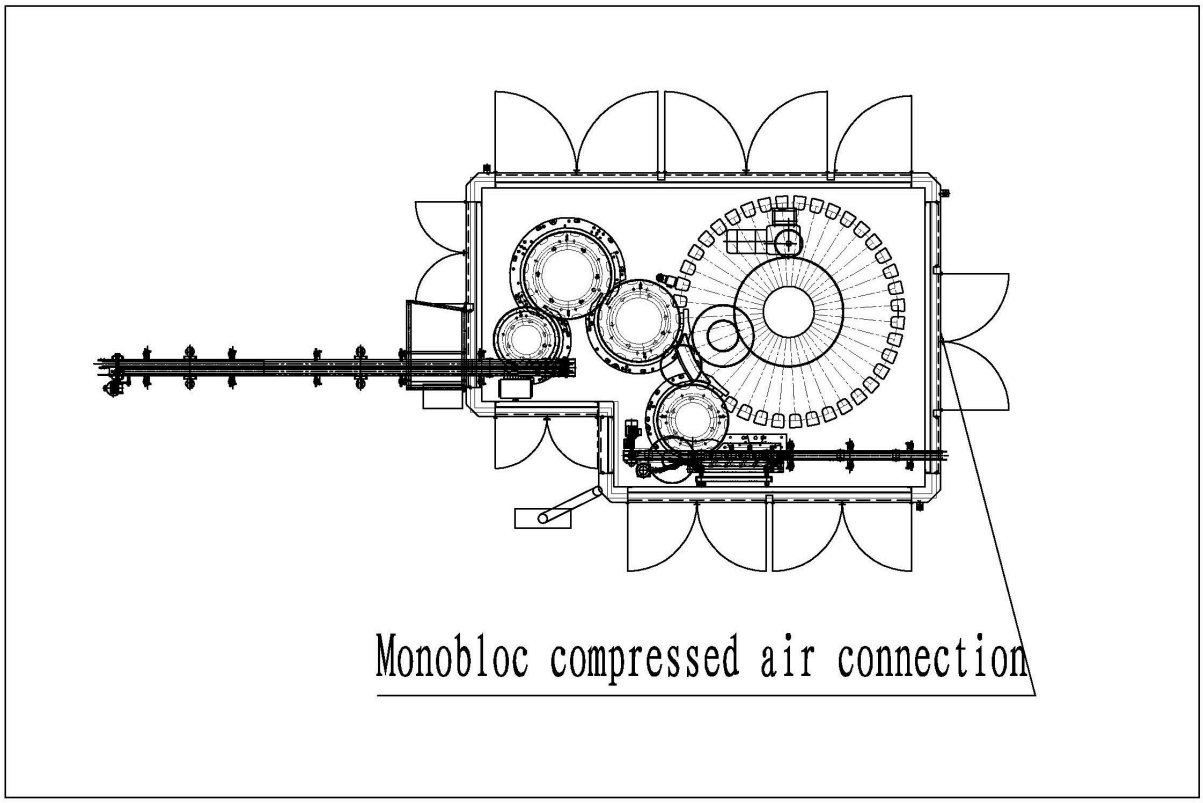


3.2 气动元件的连接

把压缩空气接入到灌装主机底部的空气连接处。压缩空气的最大的压力不超过8.0 bars。

3.2 Pneumatic components connection

Bring the compressed air to the mono-block air connection situated at the bottom of the filler, next to the electrical panel on the in-feed side. Compressed air should be maximum 8.0 bars.

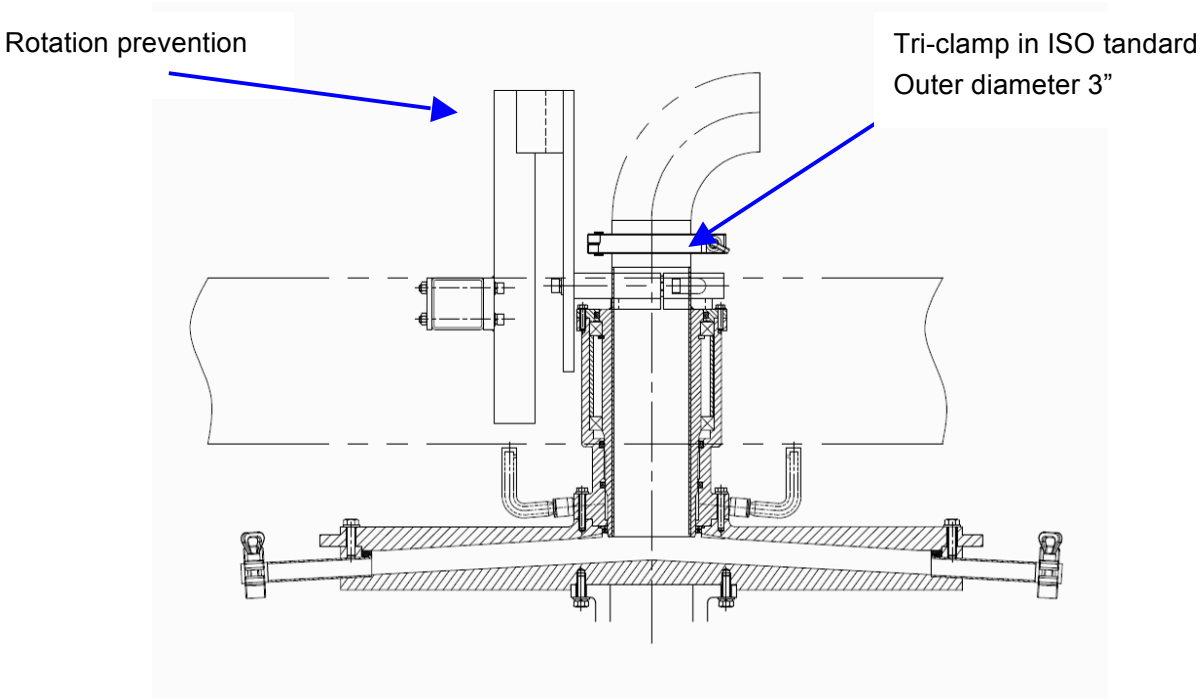


3.3 产品的接入

把产品管道接入到灌装机上部的 3”卫生管道。用水来测试它是否会出现渗漏。

3.3 Product connection

Connect the product line to the 3” sanitary connection provided on top of the filler. Test it with water and ensure no any leaking occurred.

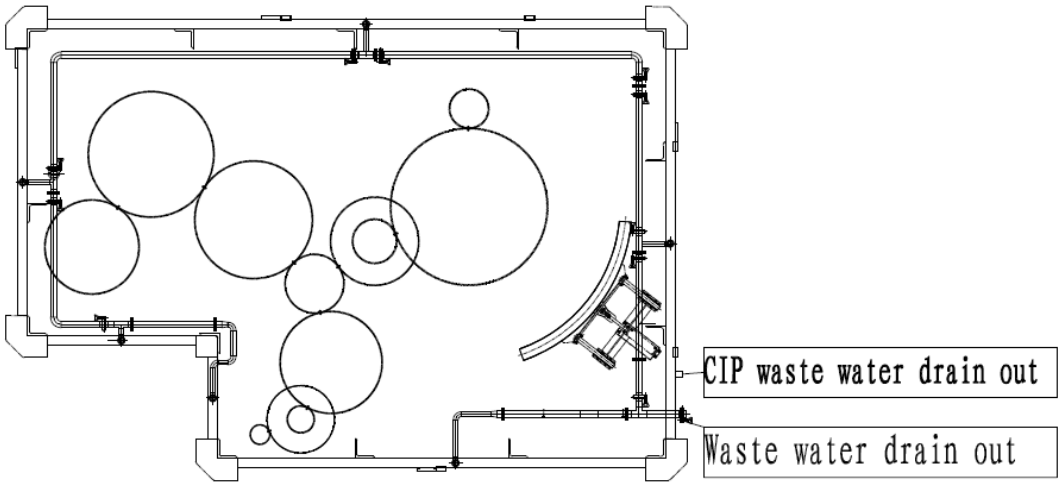


3.4 废水排放管道的连接

本台机两个废水排放口。

3.4 Waste water connection

Connect the waste water to two output connections of the filler.



3.5 电源的连接

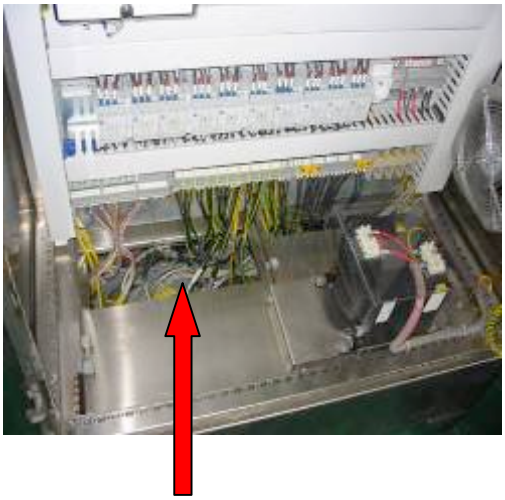
用户需要提供三相电源线和一根接地线来连接动力电柜。线路的电压为 400V AC，50/60HZ。参照图纸来连接电路。

3.5 Power supply connection

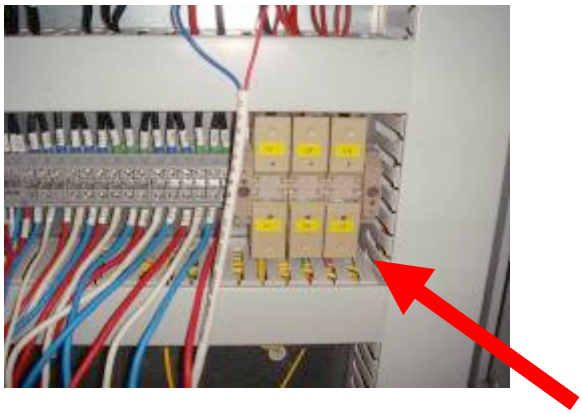
The customer needs to apply 3 phase power wires and one grounding wire to power cabinet of the machine. The line voltage is 400 V AC, 50/60 Hz. Refer to the electrical drawing for exact connection.

● 动力电柜的外观 housing of the power electrical cabinet

● 把电柜里面的底盖拿掉 take off the bottom cover



- 把电缆连接到端子板上 connect the cable to the terminals

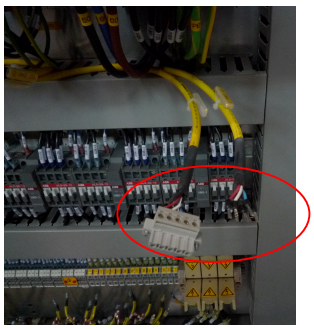
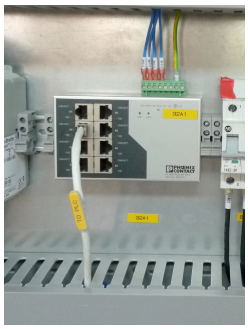
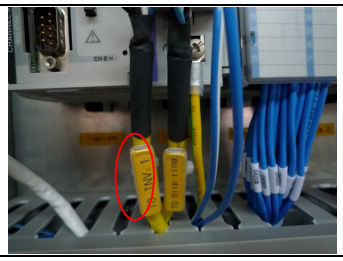
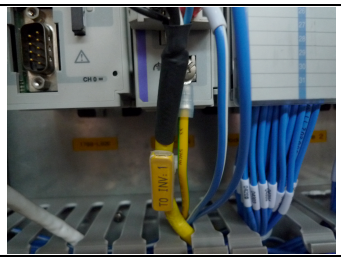
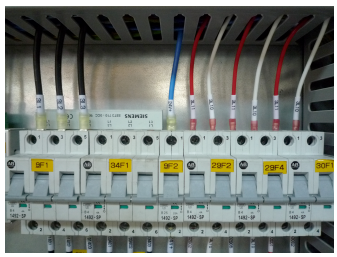


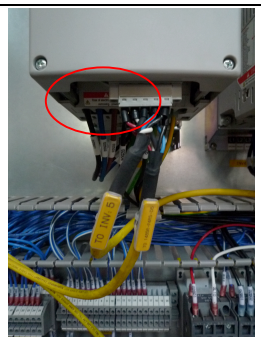
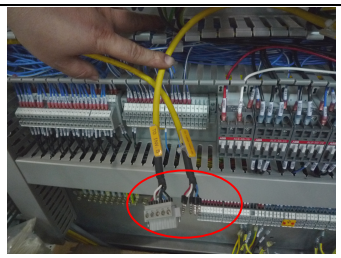
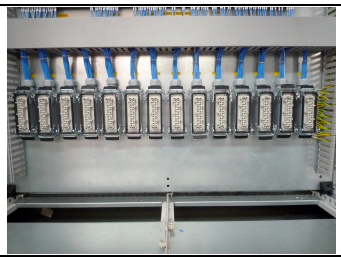
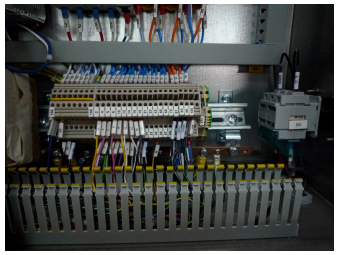
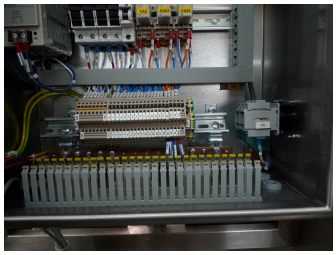
- 把盖子安上 place the cover back

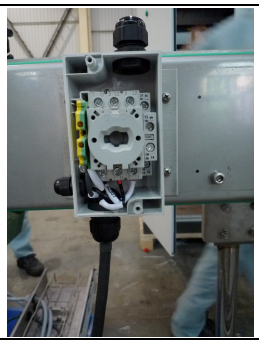
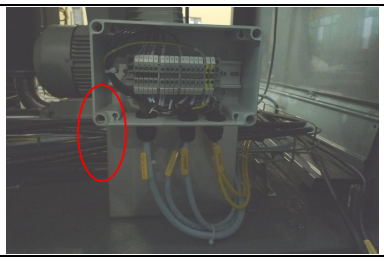
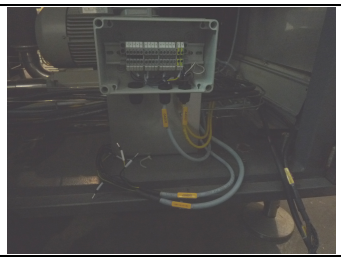
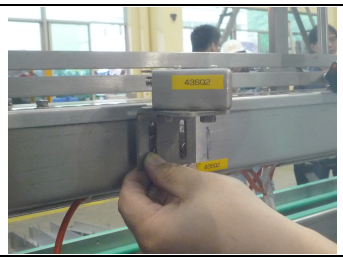
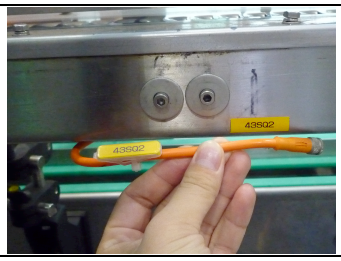
- There are four lamps underneath the frame surface needed to be installed and configured by end users according to attached electrical diagram in order to provide sufficient illumination for possible maintenance requirement, the lamps and their holders must comply with European regulation or standard. 底架下有四个照明灯需要客户根据附件的电气图进行安装配置，这四个灯是为维护时提供足够的照明，灯、灯座等应该符合欧洲的要求和标准。

- Here is the comparison table between parts Connected with cable and without cable. 下图是电气部件接上电缆和没有接上电缆时的对比：

Guangzhou Tech-Long Packing Machinery Co., Ltd.
Tel: 020-82266688 Fax: 020-82266288
Website: www.tech-long.com PC: 510530
Add: 23, Yunpu 1st Road, LuoGang District, Guangzhou, China

No.	Description 描述	With Cable 连接电缆	Without Cable 没连接电缆
1	DEVICENET cable from main VFD to 1769-SDN in control cabinet		
2	ETHERNET cable from Switch to PLC and HMI		
3	DEVICENET cable from slip ring to 1769-SDN in control cabinet		
4	24VDC Power supply in-feed cable and circuit breaker in-feed cable of cabinet fan and light and in-feed cable of the circuit breaker controlling the lights under machine		

5	The two DEVICENET cables ,the one marked “TO INV 5” come from 1485P-P4R5-D5 Devicenet distributor under machine near the outfeed of machine, another one connect the INV4 and INV5		
6	This cables are some power supply cables for all of the motors within machine, each cable you can distinguish from their mark		
7	Heavy duty output cable to machine		
8	There are control cables in the control cabinet of FT system, each cable mark refer to the FT manual		

9	This is the safety disconnect of reject conveyor the removal cables are power supply and signal		
10	The removal signal cables used to connect with control cabinet to cap supply system		
11	43Q2,magic eye		
12	FT Panel		

3.6 通电和启动

给机器通电必须由合格的工程师来操作。务必要把所有的安全预防措施做到位，确保万一出现误接时，无人伤亡。

在给机器通电前，工程师必须要检查所有的连接是否已经准备就绪。

确保所有的螺钉已经上好。

确保机器里面无异物或者是安装正确，部件能够顺利运转。

在启动机器之前，确保你对机器已经了解透彻并且已经阅读和理解了本说明手册。

安装减速器时请注意：

油漆不能盖过橡胶部件和通气孔。

检查和确保润滑油量。

减速器要用矿物润滑油（AGIP BLASIA 460）来进行润滑。

警告：

确保所有电机的运行方向，否则会引起部件严重的损坏。

安装完毕后，机器应该要检查一遍，以确保能够正常启动。

a) 检查机器里是否有碎片，以确保人和机器的安全。

b) 清洗机器。

c) 检查安全保护装置运行是否正常。

3.6 Power up and start-up of the machine

Powering-up the machine must be done by a qualified engineer. All safety precautions must be taken to ensure no-one can get hurt in case of wrong installation.

Before to power-up the equipment, qualified engineers need to check all connections are properly made.

Ensure all bolts are securely bolted, that they did not come loose during transportation.

Ensure all parts are free to run, that they are not prevented to run because of foreign bodies or wrong assemblies.

Before to start-up the machine, make sure you are familiar with the equipment, and that you have read and understood this manual.

To install the main reduction unit it's necessary to note the following recommendations ：

Painting must definitely not go over rubber parts and the holes on the breathe plugs. Check the correct level of the lubricant through the indicator. The main reduction units are supplied completed lubricant, mineral oil, AGIP BLASIA 460.

Warning:

Ensure all motors are running in the proper direction, otherwise parts could be seriously damaged.

After installation, the machine should be checked and be ready for start.

a. Check if there are any chippings in the machine; remove it in order to prevent the people and machine from hurt.

d) 通上电，点动主电机，检查电机的旋转方向是否正确。

e) 检查是否所有的旋转件和连接件都已经准备就绪。

f) 检查星轮的位置，是否星轮能够平稳地运送瓶子。

g) 检查所有的管路是否已经连接完毕。

h) 检查是否所有的管路安装正确，是否所有的阀和安全阀都能正常工作。

i) 确保压缩空气的气压和流量。

j) 集中润滑系统能够把油加到主轴承；检查是否每个减速箱里、所有的齿轮、涡轮和滚轮都有油；严禁不加油运转。

k) 检查主电机的润滑油。

l) 启动必须循序渐进，严禁以最大负载来运行。

b. Clean the machine.

c. Check if the safeguard devices work.

d. Power on, jog the main motor, and check if the rotary orientation is correct.

e. Check if all the rotary parts are well, connecting parts are tight. All the components can use only if they are in good status.

f. Check the position of the star wheels. Can they carry the bottles placidly?

g. Check if all the pipes are well connected.

h. Check if all the pipelines are right mounted, all the valves can act as the preconcerted program, all the safety valves can right act.

i. Ensure the pressure and flux of the compressed air.

j. The centralize lubrication system can add grease into the main bearing, Check if there is oil in every gear box. Check if all the gears, worm wheels and rollers need oil. Run without oil is forbidden.

k. Check the correct level of the lubricant through the indicator on main motor.

l. starting must take place gradually, without immediately applying the maximum load.

4. 机器的操作

4.1 安全细则

安全第一

机器的运行、维护和维修操作必须由合格的专业人员来操作。酒精和一些药物会影响操作员的身体和精神状态，会导致操作失误甚至发生危险，因此操作员必须在身体和精神状态良好的情况下操作机器。

不要让无关人员靠近机器。

当机器停止生产的时候，应该断电防止误操作。

在机器开机之前，应该检查以下项目：

有无明显的故障或者是灌装机内有无异物。

有无异常的声音。如果出现异常的声音，立刻停机检查，排除异常情况。

机器的安全装置工作正常。

操作员要穿着简便的工作服，如果有必要，要戴上发帽，以防被旋转部件卷入；穿着防滑鞋。

严禁将头、手、脚等身体部位伸进运转的机器中。

警告：在进入机器前，要把机器电源切断，并且把电源开关上锁。进入机器内部的作业必须由受过培训的专业人员执

4. Machine operation

4.1 Safety rules

Safety comes first

The operation, maintenance, and repair of the equipment have to be performed only by those who are qualified. The operators must be physically and intellectually suitable, and must not work under the influence of alcohol or medicines or drugs that can bring sleepiness.

DO NOT ALLOW PEOPLE WHO ARE NOT ASSIGNED TO THIS EQUIPMENT TO APPROACH IT.

When the machine is not on production，it should be powered off to prevent the equipment to be mistakenly turned on.

Before using the equipment, check:

- There are no evident faults or foreign bodies in the filling machine;

- There are no abnormal noises. If there is one, stop the machine immediately and check to find and eliminate the cause;

- Safety provided equipment is working;

- Operators wear appropriate clothes which cannot be caught by moving parts, wear hair nets if required and wear proper safety shoes with anti-slip soles;

- Operators do not put parts of their body in the running machine.

Warning: **Turn the main electrical switch to the off position and lock it with a**

行。

然而，因为机器是属于第三类保护范畴，

Minor service 请根据以下的程序来执行：

- 使用正常程序停机
- 开门
- 执行辅助程序任务
- 关门
- 机器复位
- 开机

Minor service 包括：堵瓶清理、清洗、检测、润滑、手动上下瓶、机器的调整还要有危险评估文件。

警告：机器的运转必须要由一名专业的操作人员来操控。不要干扰正在运行的机器。与正在旋转的部件保持相对安全的距离。

- 严禁使用工具或其他物品去接触正在运行的机器。发现设备故障严禁开机。
- 如果要检查和维护机器，要先切断机器电源，并且电源开关要上锁。而且要遵循一系列的机械和电气的指令来操作。
- 如果由多人同时维修设备时，机器运行前，必须通知到所有维修人员。
- 严禁用水或者其他液体来清洗电气元

personal lock before entering the machine. Work inside the machine must be carried out by specially trained personnel.

However, as the machine is category 3 protected, minor services may be performed following the minor services procedure here below:

1) Stop machine using normal stop procedures.

2) Open door

3) Perform minor servicing task

4) Close door

5) Reset machine

6) Start machine

The minor services tasks include: Jam clearing, cleaning, inspection, lubrication, manual loading/unloading, machine adjustments not requiring a tool, minor servicing with documented risk assessment.

Warning: While the equipment is running, it must be watched by a qualified operator. Don't interfere with the machine while it is running. Remain at suitable distance from the moving parts.

- Don't use tools, or other objects to approach the equipment while it is running. Don't start the machine if one notices that the instruments or lights are defective.
- Checks and maintenance can be done only after specially trained mechanical and electrical instructors have cut off the

件。

- 除非经过特许，严禁移动机器任何保护装置。
- 应在机器排出气压后，维修气动和液压系统或元件。
- 在检修电气元件前，要先断电并且使设备接地良好。
- 清洗机器时，有关操作者必须穿着合适的工作服，戴上眼镜和手套等，以避免化学烧伤。
- 在所有维护工作完成之后，开机前检修人员必须检查所有的安全装置是否能正常工作。
- 所有的安全装置必须每半年进行一次全面的安全检查。
- 每年的安全检查和维护必须有专业的安全检测人员来执行，以保证整个安全系统能够正常地工作。在每年的安检之后都要在机器上贴上标签，告知操作员此机器可以放心安全地使用。
- 每运行十年之后，建议机器由本公司在客户的工厂来进行一次彻底地检修。

power and locked it with a personal lock.

- When there is more than one person assigned to repair the equipment, all of them must be warned before the machine starts.
- Do not clean the electric components with water or other liquids.
- Do not remove any guards from the machine unless properly authorized.
- Repairs to the pneumatic and hydraulic systems or components must be carried out only after the pressure has been released.
- When operating on the electric unit, the power must be cut off and the equipment must be electrically grounded.
- Proper clothing, gloves and glasses etc must be worn while personnel carry on the cleaning of the equipment to prevent chemical burns.
- After the maintenance is finished, the supervisor must check all safety aspects before starting the equipment.
- A safety check of all safety devices must be conducted every six months.
- An annual safety check and maintenance must be conducted by a safety specialized operator to ensure all safety systems are working properly. A label must be affixed to the machine after the annual safety check to inform the operators the machine can safely be used.
- After ten years of operation, as a suggestion, it is better to overhaul the

equipment completely by our company in customer's factory.

4.2 常规操作描述

注意：为了保持机器的良好性能，在接入产品之前，请对所有的管路和灌装阀进行酸洗。

本台机器是全自动的灌装旋盖一体机。瓶子由进瓶链送进灌装机（图 1）。

当瓶子到达进瓶螺杆（图 2），进瓶螺杆把瓶子分成相应的间距再送入进瓶星轮（图 3）。

瓶子通过进瓶星轮，来到灌装机的托瓶板上（图 4）。托瓶板借助弹簧的压力上升，直到瓶口到达并且对准灌装头的中心（图 5）。

当到达灌装区域瓶子到达灌装嘴时候，灌装阀打开，开始灌装，流量计也开始记录

4.2 General description of the operation

Note: in order to assure the best performance, conduct acid cleaning to all pipework and filling valves before infeed of product (if product has strong abrasion, it is recommended to conduct acid cleaning to outer housing of filling nozzle).

This equipment is an automatic filler-capper mono-block. Bottles are fed to filler (photo No.1) by the in-feed conveyor. The bottles reach the in-feed scroll（photo No.2） which separates them according to the machine pitch. The bottles are then transferred to the in-feed star-wheel（photo No.3）

From the in-feed star-wheel，the bottles are transferred to the filling tables (photo No.4) on the filling section. The filling tables then move up by means of a spring.

流量；当灌装流量达到之前设定好的流量值时，灌装阀关闭；如果液位不合格，瓶子会被剔除器剔除。

灌装结束后，托瓶板随着凸轮（图 6）下降，瓶子被送进中间星轮（图 7），然后到达旋盖机（图 8）。

这时，如果有瓶子送到了旋盖机，抓盖头（图 10）就会抓起盖子。根据旋盖凸轮（图 11）的曲线，旋盖臂（图 12）上升或下降，同时把盖子放在瓶嘴上（图 13）。

旋盖臂通过电机（图 14）随着旋盖机进行旋转，当旋盖进行时，电机用于调整盖子的向下运动，抓取盖子旋于瓶口，当达到预设的扭矩值，相应的旋盖头上的磁铁离合器（图 15）打滑。未旋盖的瓶子或者是旋盖不当的瓶子将会被剔除。然后，瓶子通过出瓶星轮（图 16）传送出来。

剔除器在出瓶星轮位置上（图 17），如果相应的瓶子没有检测出要剔除，那么剔除手指放下，将瓶子导入出瓶输送链（图 18）。如果瓶子检测出要剔除，那么剔除手指往上动作，将瓶子剔除到剔瓶链（图 19）上。

The bottle is pushed up by the table until its neck reaches the centering bell of the corresponding filling head（photo No.5）.

If a bottle is present under a filling nozzle, then, at a given angle of the filling section, the filling valve is opened and the flow measuring system delivers a set amount of flow. When the set amount of flow is reached, the filling valve is closed. If the filling level doea not reach target value, the bottle is marked to be rejected.

At the end of the filling section, a cam (photo #6) brings the filling table down, disengaging the bottle from the centering bell. The bottle is then transferred to the intermediate star-wheel (photo #7), then to the capper (photo #8).

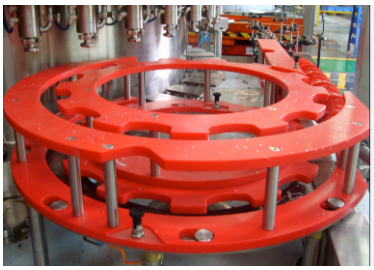
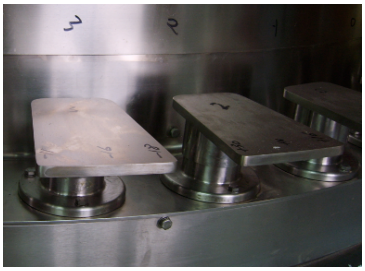
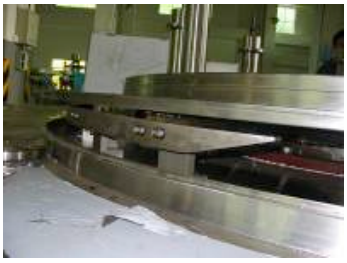
If a bottle is present to be capped, a cap is released and taken by the corresponding capping chuck (photo #10).

The capper cam (photo #11) raises and lowers the corresponding capper arm (photo #12) to present the cap on top of the bottle (photo #13) as the bottle moves around the capper.

The capper arms are rotating by means of the capper rotation and by means of the over-speed motor (photo #14). The over-speed motor is to adjust the down movement of the cap, while the cap is being screwed on, to prevent the bottle to be lifted up from the star-wheel. When a preset torque value has been reached, the magnetic clutch on the corresponding capper head disengages (photo #15). The bottles that did

not receive a cap, or if the cap has not been placed properly, are marked to be rejected. The bottles are transferred out from the capper onto the exit star-wheel (photo #16).

The rejecter is located on the out-going part of the exit star-wheel (photo #17). If the corresponding bottle is not marked to be rejected, the fingers of the rejecter will be down, guiding the bottle to the inner exit conveyor (photo #18). If a bottle has been marked for rejection, the rejecter fingers will move up and the bottle will be going down the reject conveyor (photo #19).

		
1 in-feed conveyor	**2 in-feed scroll**	**3 in-feed star-wheel**
进瓶链	进瓶螺杆	进瓶星轮
		
4 Bottle tables	**5 Filling heads**	**6 cam in filler**
托瓶板	灌装头	灌装机凸轮

Guangzhou Tech-Long Packing Machinery Co., Ltd.
Tel: 020-82266688 Fax: 020-82266288
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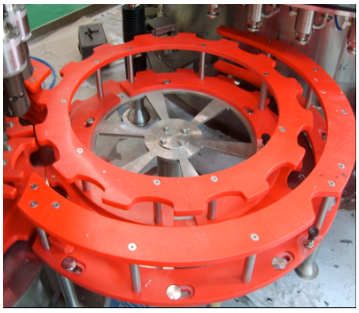
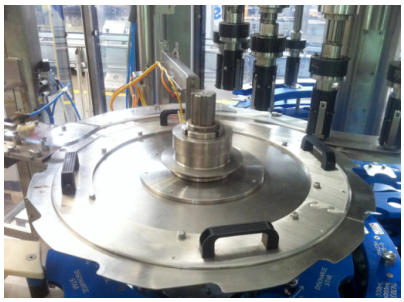
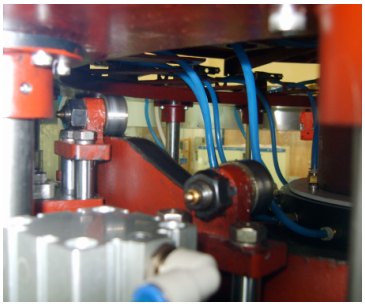
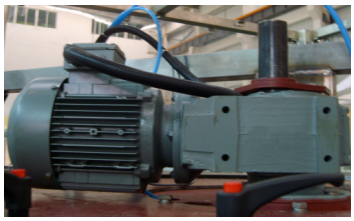
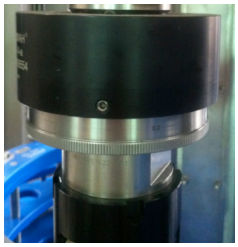
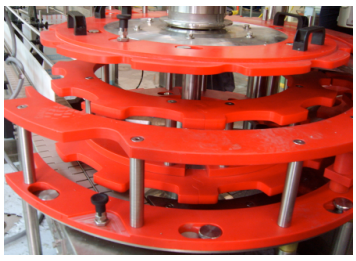
		
7 intermediate star-wheel	**8 Capper**	**9 Cap star wheel**
中间星轮	旋盖机	分盖盘
		
10 Capper chuck	**11 Capper cam**	**12 Capper arm**
抓盖头	旋盖机凸轮	旋盖臂
		
13 Place cap on bottle	**14 over speed motor**	**15 Magnetic clutch**
套盖	旋盖高速电机	旋盖头
		
16 exit star wheel	**17 Reject**	**18 inner exit conveyor**
出瓶星轮	**剔除器**	**出瓶链**

		
19 Reject conveyor		
剔瓶链		

4.3 机器构造

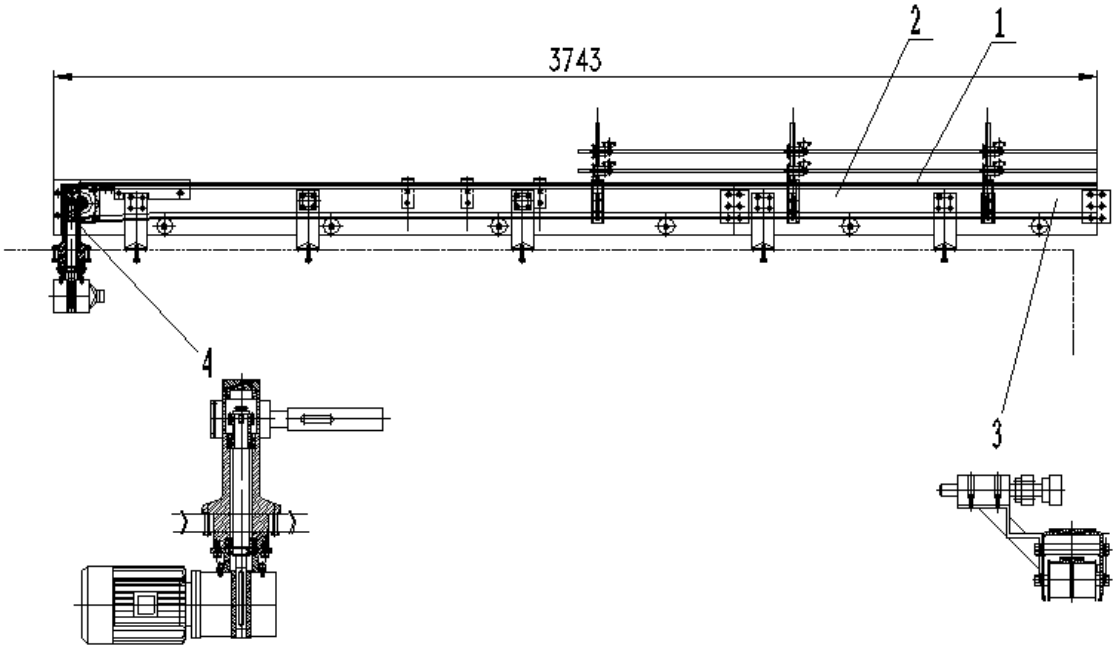
4.3.1 进瓶链

进瓶链包括:1 塑料链;2 传送链支架;3 进瓶阻瓶; 4 传动装置

4.3 Equipment composition

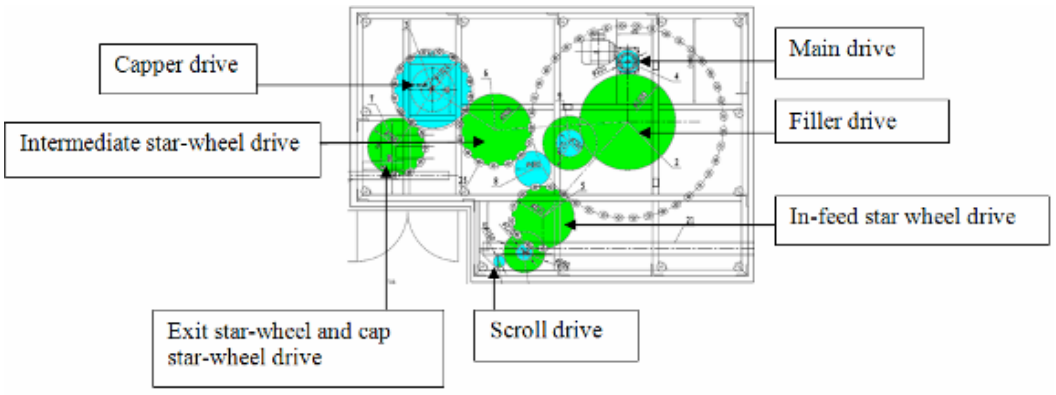
4.3.1 In-feed conveyor

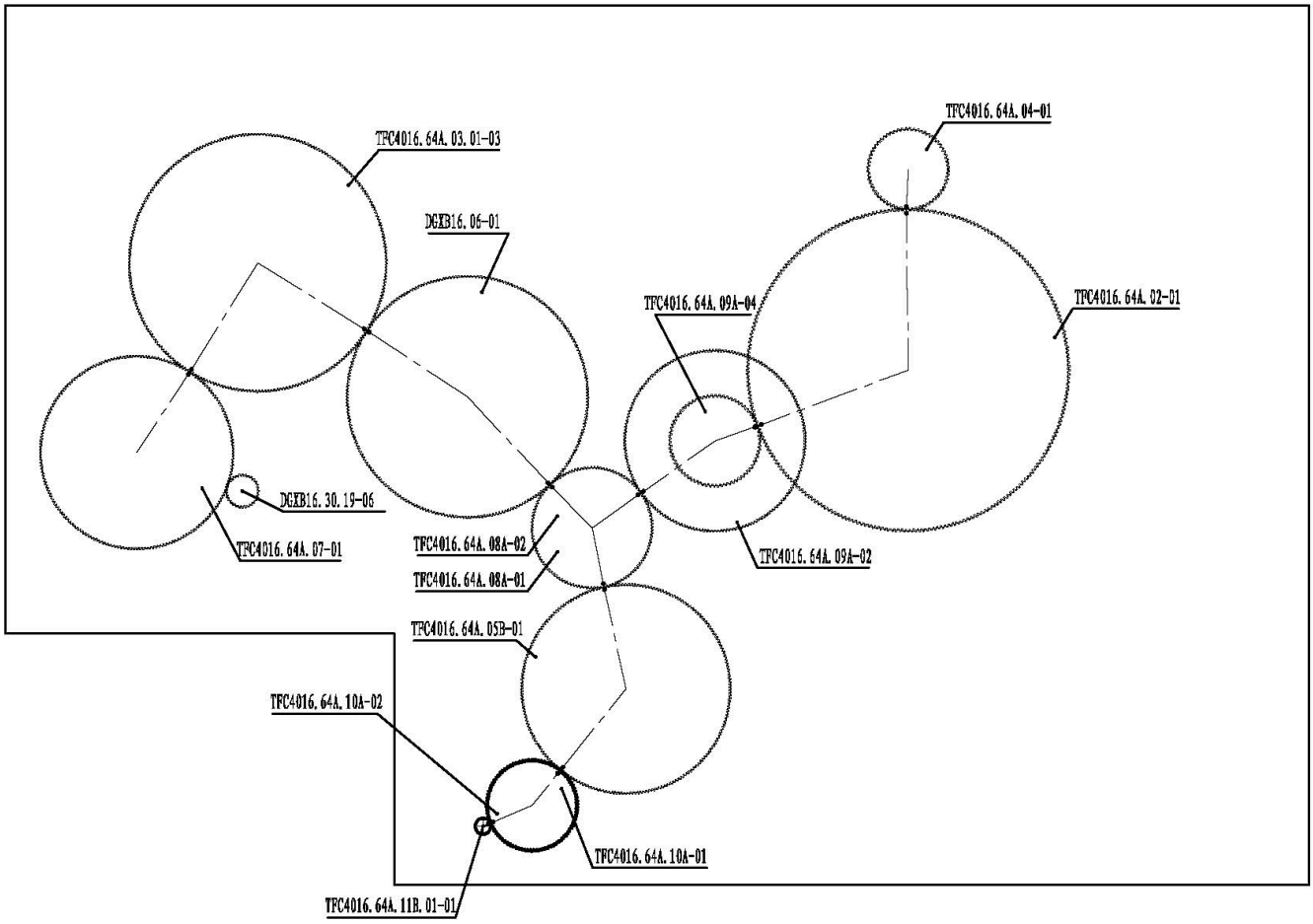
The bottle in-feed conveyor is composed of: 1 a plastic chain, 2 the conveyor frame, 3 the bottle in-feed stop, and 4 the transmission.



4.3.2 灌装旋盖驱动链

4.3.2 Filler-capper drive train





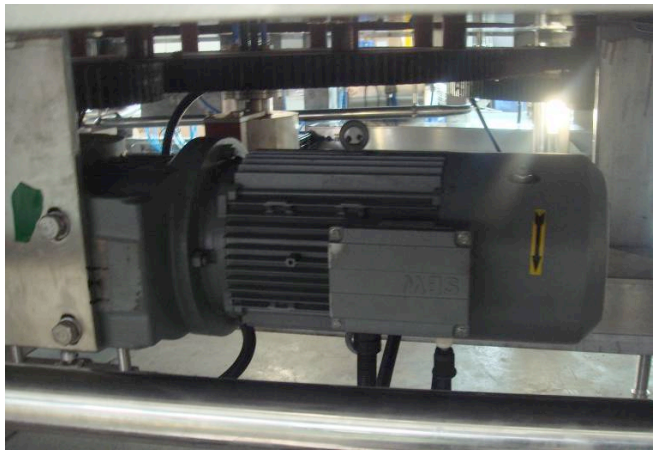
Wheel reference	Modulus; m	Number of teeth; Z
TFC4016.64A.04-01	5	64
TFC4016.64A.02-01	5	256
TFC4016.64A.09A-02	4	180
TFC4016.64A.09A-04	5	72
TFC4016.64A.08A-01	4	120
TFC4016.64A.08A-02	4	120
TFC4016.64A.05B-01	4	208
TFC4016.64A.10A-01	4	90
TFC4016.64A.10A-02	2	180
TFC4016.64A.11B.01-01	2	32
DGXB16.06-01	4	240
TFC4016.64A.03.01-03	4	256
TFC4016.64A.07-01	4	192
DGXB16.30.19-06	4	32

4.3.3 主电机的结构

主驱动装置包括：1 主轴和主编码器；2 电机减速器；3 齿轮。

4.3.3 Main drive components

The main drive is composed of the motor-reducer 1, the main shaft 2 with the main encoder mounted on it, and of the gear drive 3.



4.3.4 进瓶螺杆结构

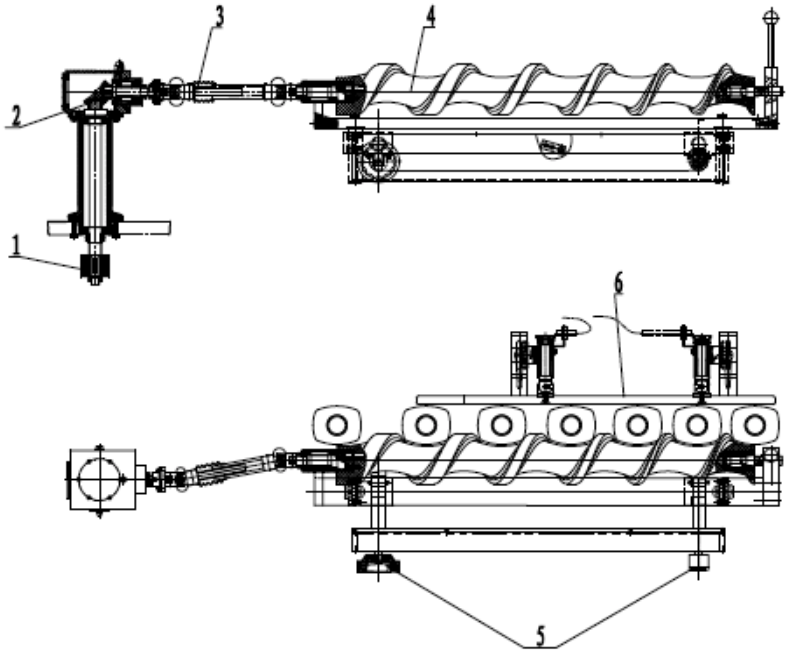
进瓶螺杆有以下部分组成；1 齿轮；2 锥齿轮；3 万向连轴器；4 螺杆；5 前后位

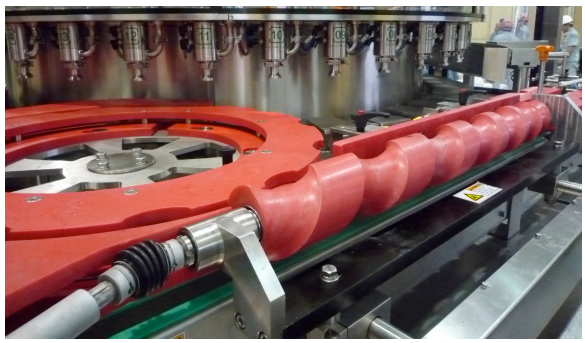
4.3.4 In-feed scroll components

The in-feed scroll is composed of the gear drive 1, the bevel gears 2, the union joints 3, the scroll 4, the cross direction

置调节机械装置和计数器；6 后导板。

machine adjustment wheel 5 and its mechanism and position counter, and the back plate 6.



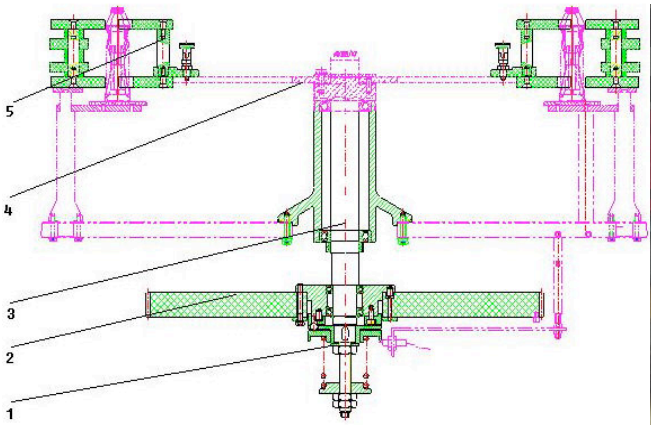


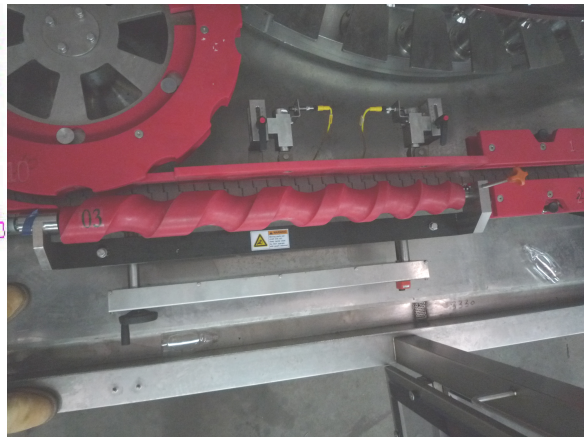
4.3.5 进瓶星轮结构

进瓶星轮由以下部件组成：1 过载离合器和传感器；2 齿轮；3 主轴；4 底板；5 星轮型板。

4.3.5 In-feed star-wheel component

The in-feed star-wheel is composed of: 1 the overload clutch with the electrical sensor, 2 the gear drive, 3 the main shaft, 4 the base plate, and the 5 size part.





4.3.6 灌装机结构

灌装机由以下部件组成：1 齿轮；2 主轴承；3 下转盘；4 托瓶板；5 凸轮；6 升降立柱；7 上转盘；8 高度调节电机同步带组件；9 万向连轴器（连接升降立柱）；10 编码器；11 进产品管道；12 产品分配器；13 手动阀；14 流量计；15 灌装阀；16 滑环；17 空气分配器；18 高速计数器；19 高速电磁阀；20 CIP 接液装置。

4.3.6 Filler components

The filler is composed of the gear drive 1, the main bearing 2, the lower rotary disc 3, the lifting tables 4, the cam 5, the columns 6, the upper rotary disc 7, the height adjustment motor-pulley-timing belt assembly 8, the union joints connecting the columns 9, the encoder 10, the product in-feed pipe 11, the product manifold 12, the manual valves 13, the flow meters 14, the filling valves 15, the slip ring 16, the air manifold 17, the high speed counter cards 18, the high speed solenoid valves 19, the CIP catch pan 20.

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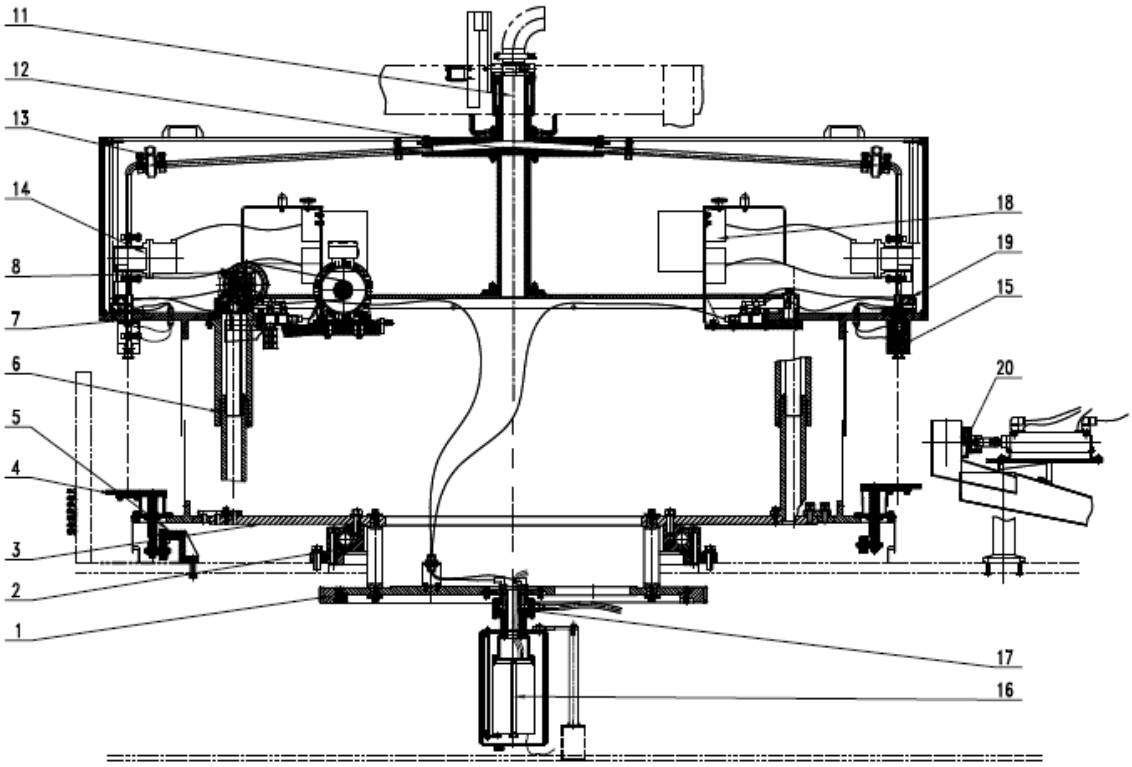

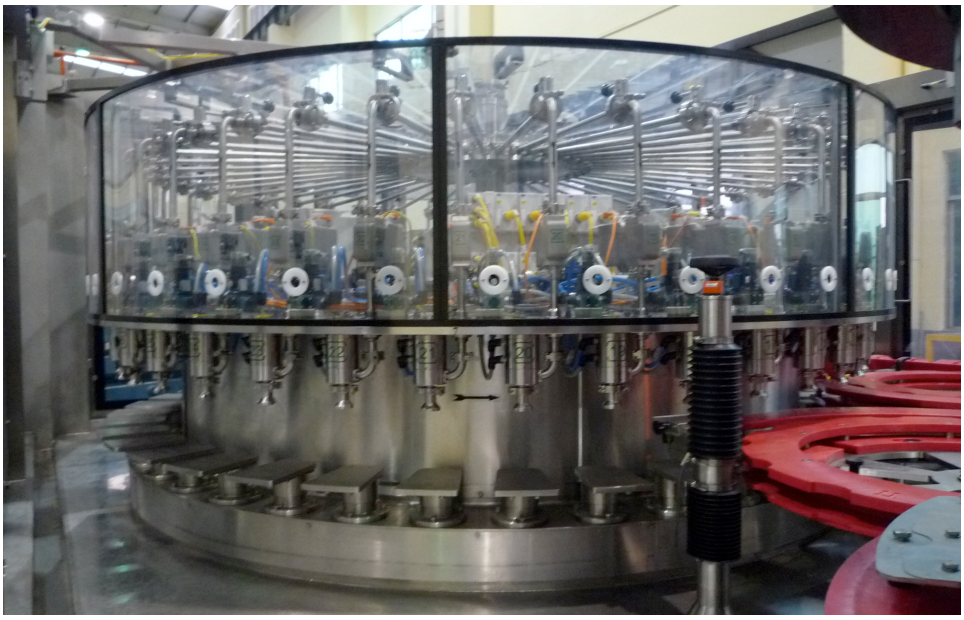

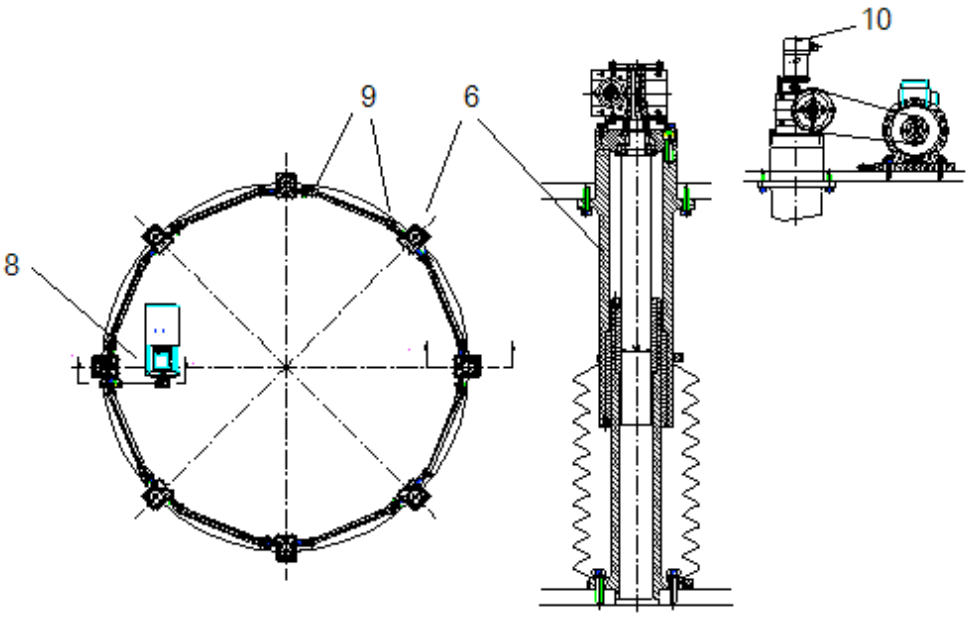
10
9
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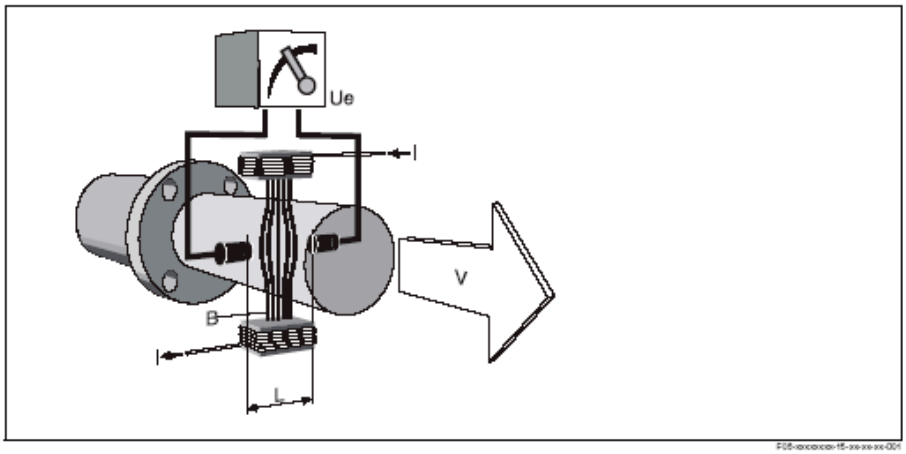
1

4.3.7 流量计的工作原理

法拉第电磁感应定律：闭合电路的一部分导体在磁场里做切割磁力线的运动时，导体中就会产生电压。在电磁检测中，流动的介质（最小电导率为 5 Micro Siemens/cm）相当于运动的导体。感应电压正比于流体的速度，被两个检测电极感应并传送到放大器。根据管路的直径，计算出流量。交互改变方向的直流电极产生恒定磁场。如果您想要获得更多详细的相关信息，请查阅 Binder Three(Document Package).

4.3.7 Working principle of the flow meter(from Endress & Hauser documentation)

Faraday's law of induction states that a voltage is induced in a conductor moving in a magnetic field. In electromagnetic measuring, the flowing medium (min. conductivity 5 Micro Siemens/cm) corresponds to the moving conductor. The induced voltage is proportional to the flow velocity and is detected by two measuring electrodes and transmitted to the amplifier. Flow volume is computed on the basis of the pipe's diameter. The constant magnetic field is generated by a switched direct current of alternating polarity. Please check the Binder Three of Document Package for more detailed information.



$Ue = B \cdot L \cdot v$
$Q = A \cdot v$

Ue	*Induced voltage*
B	*Magnetic induction (magnetic field)*
L	*Electrode spacing*
v	*Flow velocity*
Q	*Volume flow*
A	*Pipe cross-section*
I	*Intensity of current*

4.3.8 产品液位传感器

产品液位传感器包括以下部件：1. 高度调节装置、手柄和位置计数器；2 传感器；灌装不合格的瓶子会由它检测到，最后会被剔除器剔除，这个传感器引导旋盖的进程。

4.3.8 Product level control sensor

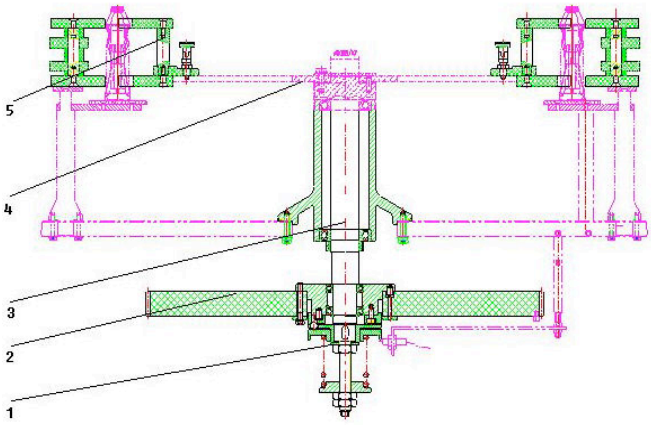
The level control sensor is composed of the height adjustment mechanism, with a handle 1 and its position counter, and the sensor, 2. Bottles improperly filled are marked to be rejected, this sensor initiates the capping process.

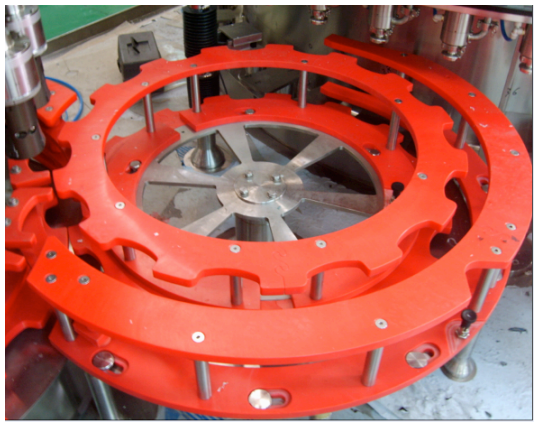
4.3.9 中间星轮结构

中间星轮组件由以下部件构成:1 过载离合器和传感器;2 齿轮驱动;3 主轴;4 底板;5 星轮板.

4.3.9 Intermediate star-wheel component

The intermediate star-wheel is composed of the overload clutch 1 with the electrical sensor, the gear drive 2, the main shaft 3, the base plate 4, and the size part 5.





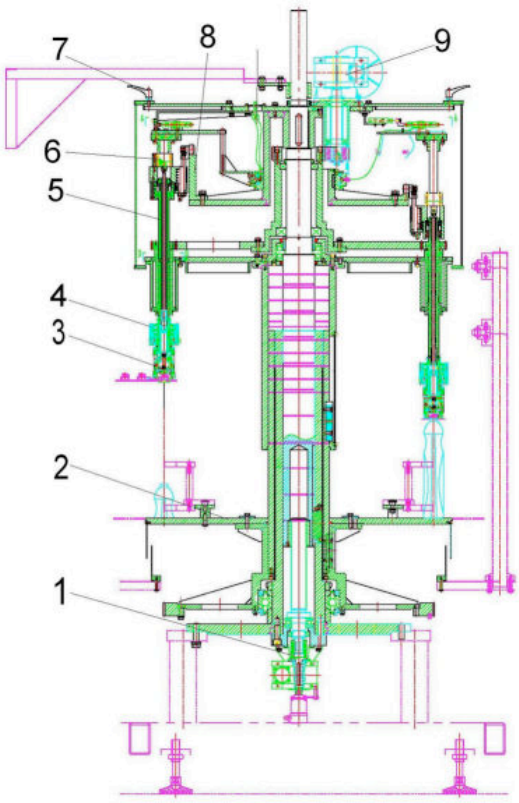
4.3.10 旋盖机结构

旋盖机包括 1 升降电机以及编码器,2 底板;3 抓盖头;4 旋盖头;5 旋盖臂;6 抓盖气缸;7 外罩;8 旋盖凸轮;9 空气分配器;10 高速旋盖电机.

4.3.10 Capper components

The capper is composed of the height adjustment moto-reducer 1 and the encoder mounted on the output shaft，the base plate 2, the cap chucks 3, the capping clutches 4, the capping arms 5, the chuck fingers air cylinders 6, the outer guard 7, the capping

cam 8, the over-speed motor 9.

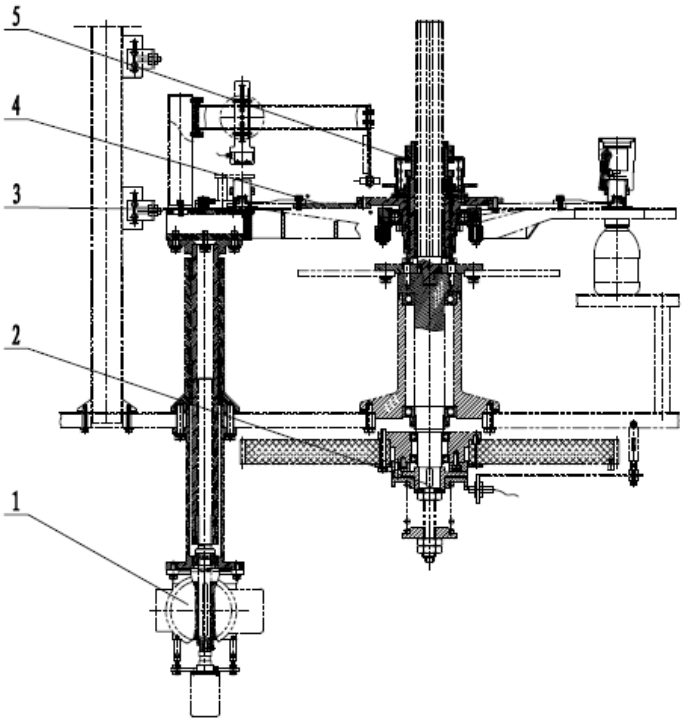


4.3.11 出瓶星轮和分盖盘结构

出瓶星轮由以下部件构成：1 高度调节电机减速器;2 星轮过载离合器和传感器;3 托板焊件;4 分盖盘;5 分盖盘过载离合器.

4.3.11 Output and cap star-wheel

The output star-wheel is composed of: The height adjustment moto-reducer 1; The out-feed star-wheel overloads clutch and the electrical sensor 2; The pallet weldment 3; Cap distributor 4 and the cap star-wheel overload clutch 5.



4.3.12 剔瓶器结构

剔除器由以下部件构成:1 剔除手指组件;2 气动装置;3 控制面板。

4.3.12 Rejecter

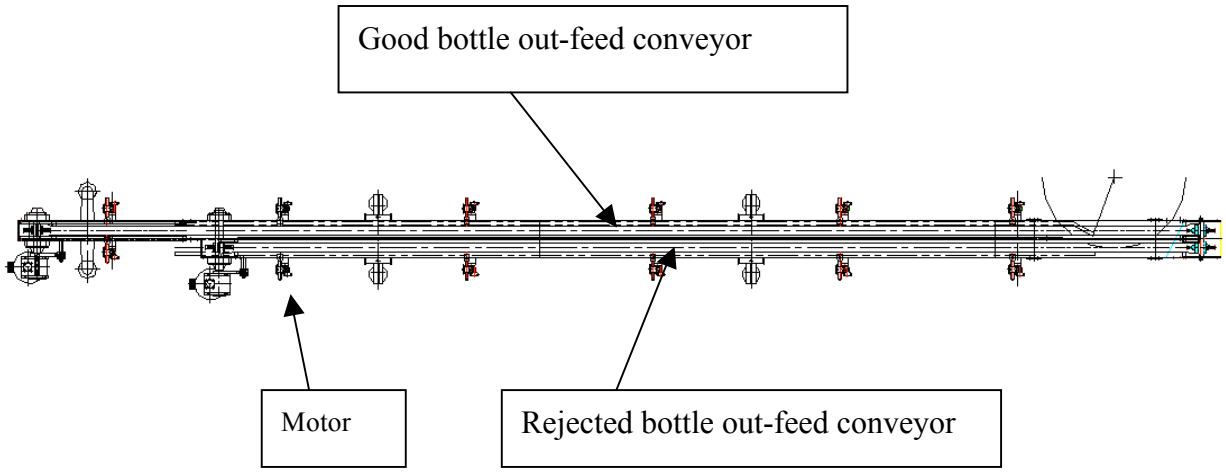
The rejecter is composed of rejecting fingers assembly 1, the pneumatic unit 2, and the control panel 3.

4.3.13 出瓶链构造

出瓶链组件由以下部件构成：电机减速器、合格瓶子出瓶链、剔瓶链和分隔板。

4.3.13 Out-feed conveyor components

The output is conveyors are made of: 1 the motor-reducer, 2 good bottle out-feed conveyor, and 4 the rejected bottle out-feed conveyor and 3 the separation wall.

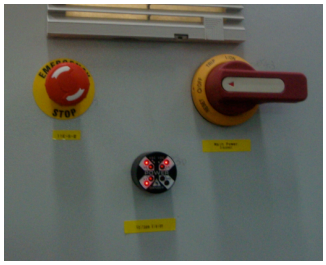


4.3.14 电气控制面板

灌装旋盖机控制面板包括：1 主动力电柜；2 控制电柜；3 HMI 面板；4 按钮盒；5 点动盒；6 剔除面板。

4.3.14 Electrical panels

The filler-capper electrical panels are composed of: 1. the main power electrical cabinet, 2.the control cabinet, 3.the HMI panel, 4. the push button station, 5.the jog push button station, and 6.the rejecter panel.

1	Main power electrical cabinet	
2	Control cabinet	
3	HMI panel	
4	Push button station	
5	Jog push button station	

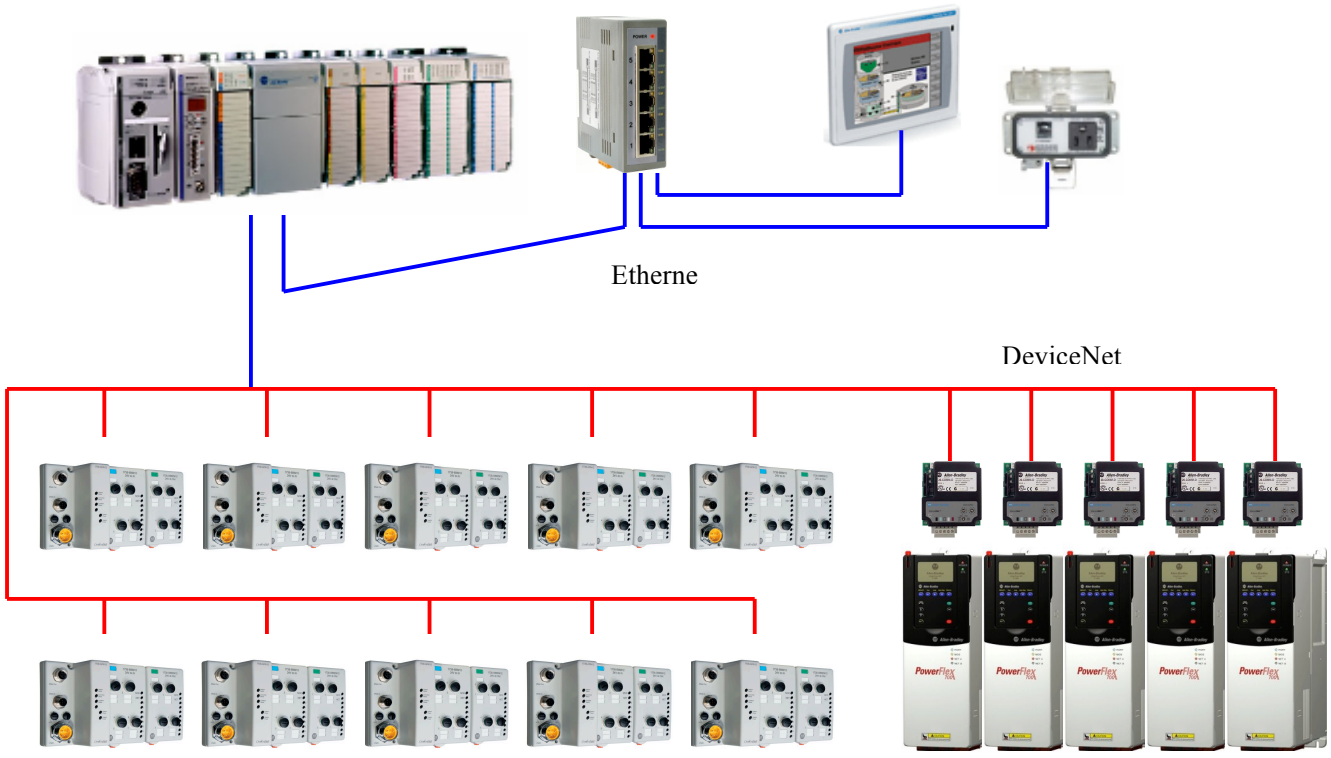
6	**Rejecter panel**	

5. C&IS 系统架构和配置

以下图片描述的是设备控制网络结构，包括了图纸中的设备主要的电气装置，不包括接线方案和终端装置，例如马达或者流量计。

5. C&IS system Architecture and Configuration

The following picture depicts the network architecture of the machine. Major electrical devices were included within the drawing; this does not include wiring specifications or end field devices such as motors or flow meters.



a) PLC Rack Configuration

Quantity	Part Number	Description
1	1768-L45	Compact Logix Processor
2	1768-ENBT/A	Ethernet
1	1768-PB3	Compact 1769 Expansion I/O Power Supplies
3	1769-IQ32	Compact 32 Point, 24vdc, Sink/Source Input Module
2	1769-OB32	Compact 32 Point, Solid State, 24vdc, Source Output Module
1	1769-SDN	Compact DeviceNet Scanner
1	1769-IF4XOF2	Analog module
1	1769-ECR	End Cap Resistor/Terminator

b) DeviceNet Configuration

Quantity	Part Number	Description
8	1738-ADN12	Adapter to interface DeviceNet devices to the Armor Point I/O modules.
40	1738-VHSC24M23	Armor Point 24vdc, Very High Speed Counter Modules, Series A. Used for Flow Meter Interface to PLC.
4	22-COMM-D	DeviceNet connection for Power Flex Drives which control the main motor, infeed & outfeed cap conveyors motors cap sorter and cap overspeed motors.

5.1 以太网

利用以太网，可以把 PLC、交换机、控制界面和编程接口连接起来。利用以太网模块作为网桥，上位机可以监控生产现场生产、故障和报警信息。用户可以方便地在以太网交换机上增加以太网设备而无需连接额外的通讯线到控制器，省去接线的麻烦。

5.1 Ethernet Configuration

Connect PLC to switch, VersaView and programming interface port through Ethernet. Position machine is able to monitor the production, fault and alarm information by Ethernet module as bridge. You can add the Ethernet device on the Ethernet switch conveniently instead connecting the additional cable to the controller, avoiding the trouble of wiring.

6. 用户接触界面

6.1 设备布局

6.1.1 安全门开关

如果停机时，操作者打开机器的门，机器处于次级服务状态，压缩空气仍可作用于机器。

如果当机器正在运转，操作员在没有事先停机的情况下去打开机器的门，会出现以下的情况：

- 所有电机停止运转，并切断电机动力线，但控制回路，PLC，DC24V 仍通电；设备报警停机。
- 安全泄气阀排气，安全泄气阀的出气端被关闭。

6. User Interface Strategy

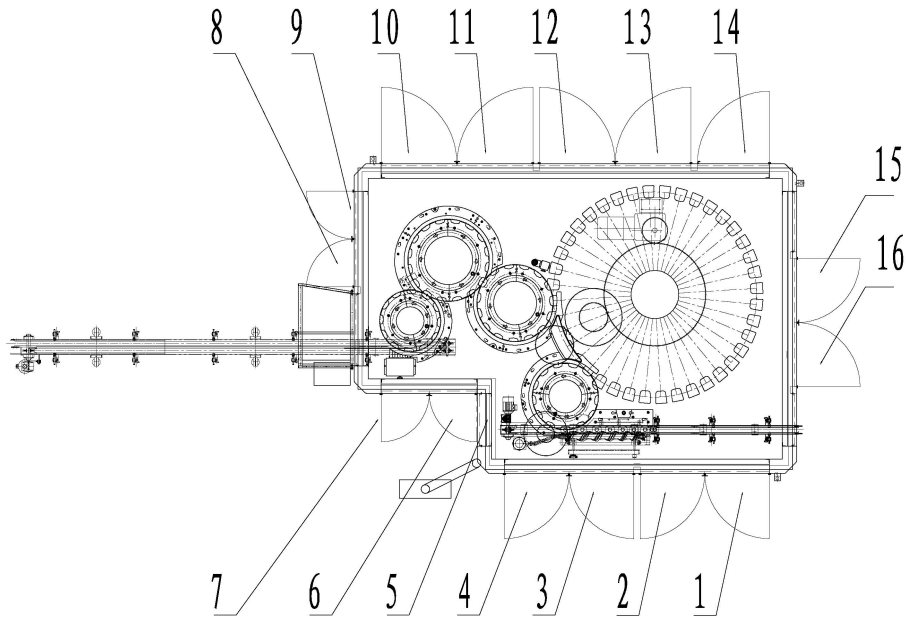
6.1 Equipped devices Location

6.1.1 Guide switch

If the machine stops and then an operator open a door, the machine is safe for minor services, but the compressed air is still on.

If the machine is running and an operator open the door without first stopping the machine, then:

- Controlled stop of all the motors, then power from all motors is removed. But power maintained to PLC and DC24V. The machine will alarm and stop.
- Safety Valve exhaust and its exist end be closed.



Guard switches on the mainframe			
Item	Name	Manufacturer	Type
1	Safety gate 1; Door front right, right	AB	440K-T11363
2	Safety gate 2; Door front right, left	AB	440K-T11363
3	Safety gate 3; Door front middle, right	AB	440K-T11363
4	Safety gate 4; Door front middle, left	AB	440K-T11363
5	Blank		
6	Safety gate 6; Door front left, right	AB	440K-T11363
7	Safety gate 7; Door front left, left	AB	440K-T11363
8	Safety gate 8; Door out-feed side, right	AB	440K-T11363
9	Safety gate 9; Door out-feed side, left	AB	440K-T11363
10	Safety gate 10; Door back right, right	AB	440K-T11363
11	Safety gate11; Door back right, left	AB	440K-T11363
12	Safety gate 12; Door back middle, right	AB	440K-T11363
13	Safety gate 13; Door back middle, left	AB	440K-T11363
14	Safety gate 14; Door back left	AB	440K-T11363
15	Safety gate 15; Door in-feed side, right	AB	440K-T11363
16	Safety gate 16; Door in-feed side, left	AB	440K-T11363

6.1.2 急停开关

如果机器由急停开关停止，会出现以下的情况：

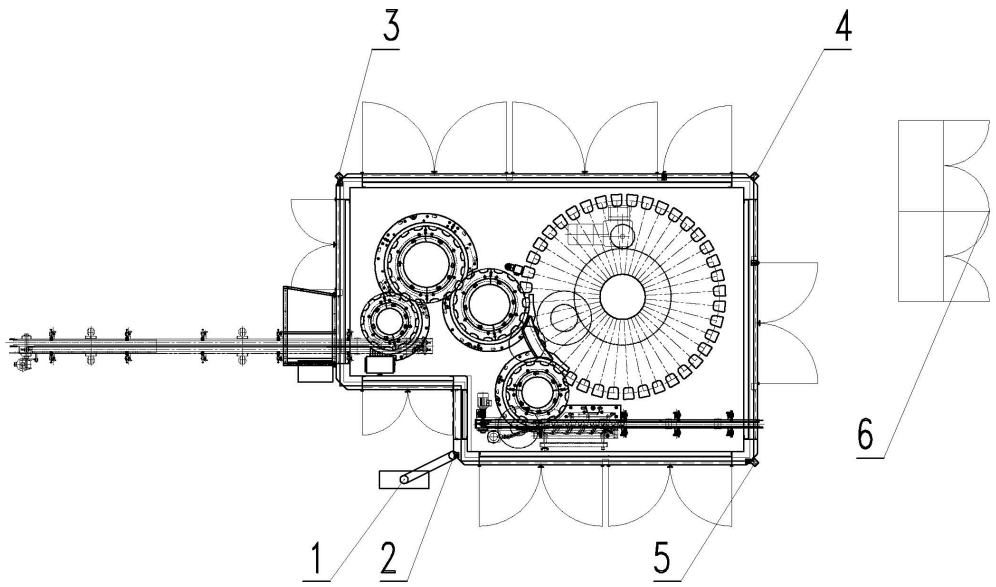
- 所有电机立即停止运转，并切断电机动力线，但控制回路，PLC，DC24V仍通电；设备报警停机。
- 安全泄气阀排气，安全泄气阀的出气端被关闭。

6.1.2 Emergency stops

If the machine is stopped by an Emergency Stop, then;

- Controlled stop of all the motors immediately, then power from all motors is removed. But power maintained to PLC and DC24V. The machine will alarm and stop.

- Safety Valve exhaust and its exist end be closed.



Emergency stops			
Item	Name	Manufacturer	Type
1	Emergency stop1 : HMI panel	AB	800FP-MT44
2	Emergency stop2 : on jog	AB	800FP-MT44
3	Emergency stop3 : out-feed side	AB	800FP-MT44
4	Emergency stop4 : back side	AB	800FP-MT44
5	Emergency stop8 : infeed side	AB	800FP-MT44
6	Emergency stop6 : Cabinet	AB	800FP-MT44

6.1.3 断能开关

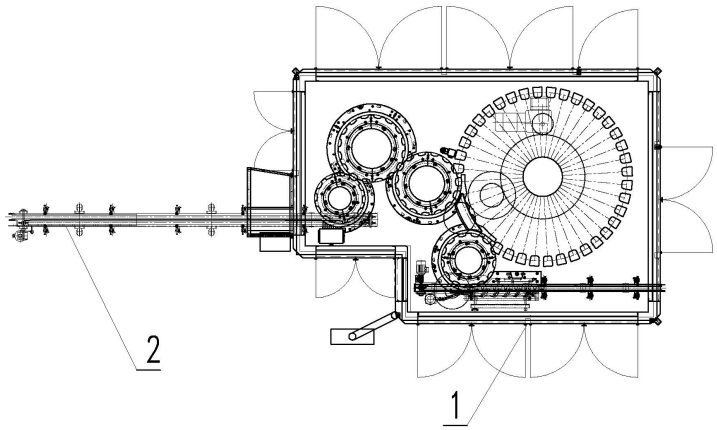
如果主电源开关关闭，所有的电源被切断。当 1#黑色手柄的断能开关关闭，那么：

- 所有电机停止运转，并切断电机动力线，但控制回路，PLC，DC24V 仍通电；设备报警停机。

6.1.3 Power and safety disconnects

When the main power disconnects is switched off, all electrical power is removed. When a “red handled” safety disconnect is switched off, then;

- Controlled stop of all the motors immediately, then power from all motors is removed. But power maintained to PLC and DC24V. The machine will alarm and stop.



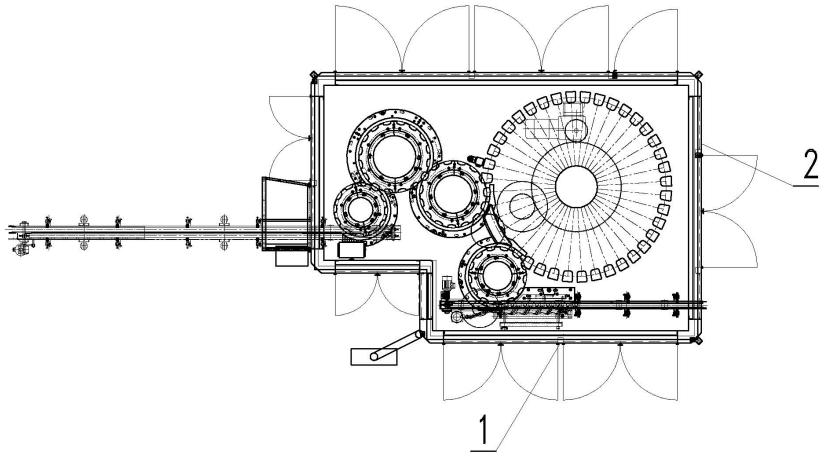
Power & safety disconnects			
Item	Name	Manufacturer	Type & Remark
1	safety disconnect lock black, in-feed side	AB	194E-Y40-1753-6G
2	Safety disconnect lock red, rejecter	AB	194E-Y25-1753-6G

6.1.4 断气开关

如果关闭其中一个断气开关，将会切断压缩空气。

6.1.4 Air disconnects

Turning off one of those air disconnect，the compressed air will be cut off .



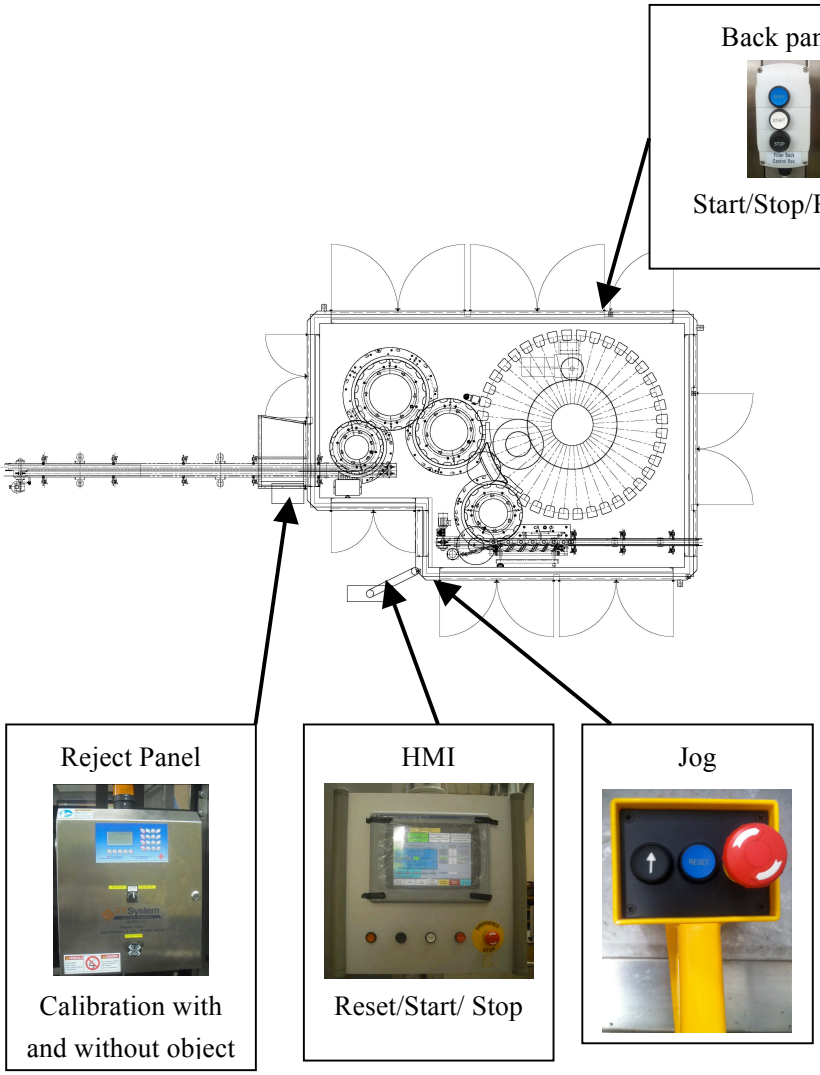
Air disconnects			
Item	Name	Manufacturer	Type
1	Air disconnect: front side	FESTO	HE-1/2-D-MIDI
2	Air disconnect: In-feed side	FESTO	HE-1/2-D-MIDI

6.1.5 HMI 和按钮

本机配备“人机界面”，用户可以通过机器的 HMI 控制界面来设定数值和控制整线，下图表示了 HMI 上的操作按钮、设置按钮、画面和点动开关，如下图所示：

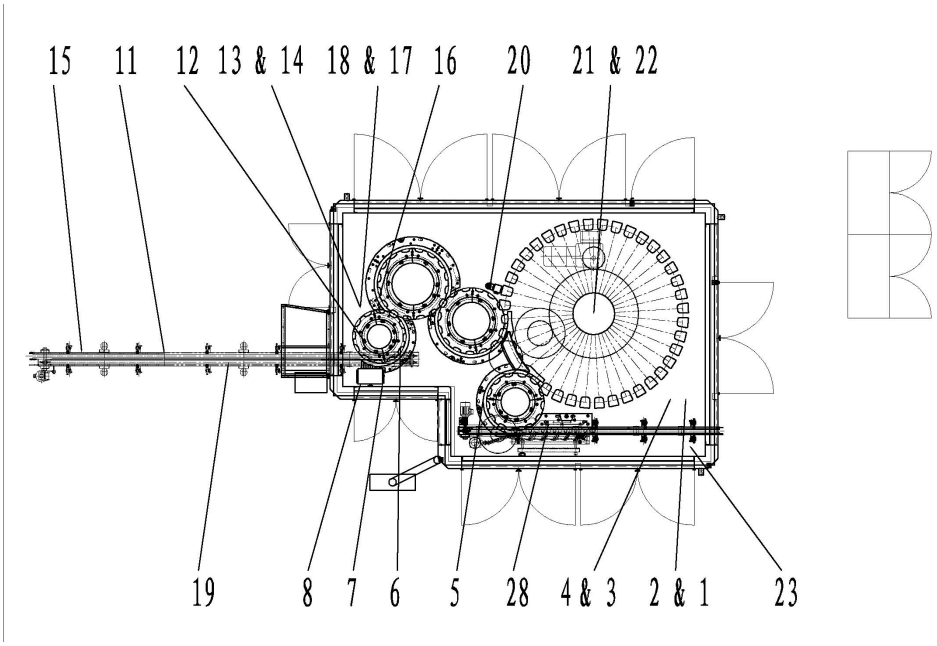
6.1.5 HMI and push buttons

The machine is equipped with “interfaces”, through which users can set all values and operate the whole line. The following chart describes these “interface” such as operating buttons, setting buttons, screen, jogs.

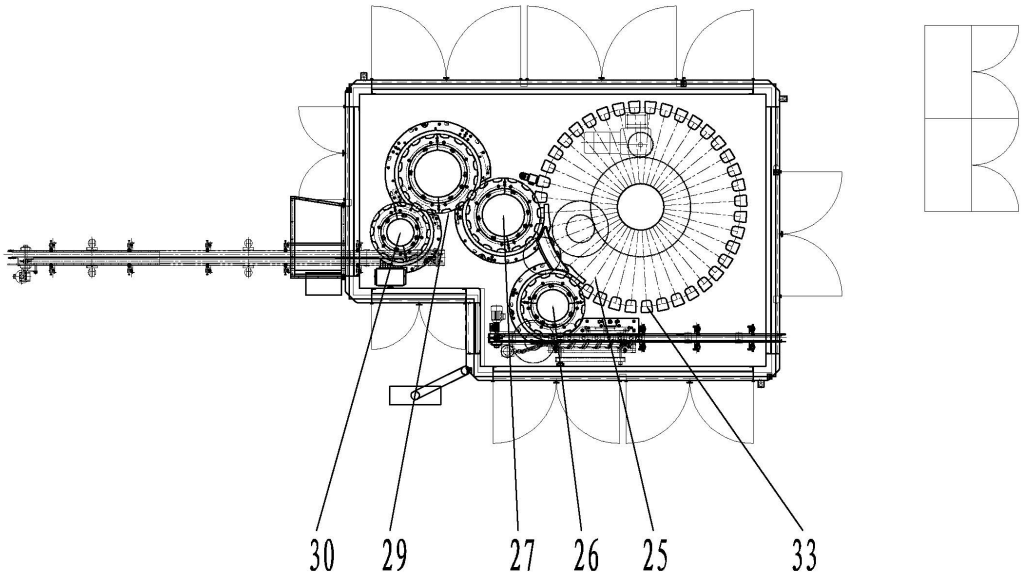


6.1.6 传感器

位于大底板上部的传感器



位于大底板下部的传感器：



6.1.6 Sensor

Sensor above the base:

Sensor under the base.

以下是传感器一览表，用户可以在本手册的第十二章找到关于传感器的功能细节描述。

The sensors list is shown as followings and please find chapter 12 Sensor Description for details about sensor functions.

Sensors list 传感器列表

	Item	Description	Manufacturer	Type
1	42SQ1	Filler Minimum Accumulation Bottle Detection. 灌装机少瓶检测	SICK	WL170-P420
2	42SQ2	Filler Fallen Bottle Detection. 灌装机倒瓶检测	SICK	WL170-P420
3	41SQ1	CIP catch pan extended CIP 盘伸出	FESTO	SME-8-K-LED-24
4	41SQ2	CIP catch pan retracted CIP 盘收回	FESTO	SME-8-K-LED-24
5	42SQ3	Bottle presence in in-feed star-wheel 进瓶星轮有瓶	SICK	WL170-P420
6	47SQ7	Cap star-wheel overload detection 分盖盘过载	ROCKWELL	872C-D4NP12-D4
7	WSQ 18	Rejecter synchronization 剔瓶器同步	P+F	UB300-18GM40-E5-V1-Y
8	43SQ2	Minimum cap presence in airveyor 风道最小盖检查.	SICK	WSE4-3P2130
9	Blank	Blank 空白		
10	Blank	Blank 空白		
11	42SQ5	Down-stream conveyor full 出瓶链后段满	SICK	WL170-P420
12	43SQ5	Cap checking In Capdisc 在分盖盘检测盖子	SICK	WT170-P430
13	44SQ4	Cap star-wheel height upper limit 分盖盘高度上限	ROCKWELL	872C-D4NP12-D4
14	44SQ5	Cap star-wheel height lower limit 分盖盘高度下限	ROCKWELL	872C-D4NP12-D4
15	42SQ7	Down-stream conveyor half full 出瓶链后段半满	SICK	WL170-P420

16	52SQ1/52SQ2	Cap presence on bottle and High Cap 瓶子有盖和高盖检测	SICK	VRF-P TB-01
17	43SQ8	Capper height upper limit 旋盖机高度上限	ROCKWELL	872C-D4NP12-D4
18	44SQ1	Capper height lower limit 旋盖机高度下限	ROCKWELL	872C-D4NP12-D4
19	47SQ3	Reject conveyor full 剔瓶链满	SICK	WL170-P420
20	47SQ4	Product level detection 产品液位检测.	OMRON	E2K-C25ME1
21	43SQ6	Filler height upper limit 灌装机高度上限	ROCKWELL	872C-D4NP12-D4
22	43SQ7	Filler height lower limit 灌装机高度下限	ROCKWELL	872C-D4NP12-D4
23	47PS1	Filler compressed air pressure low limi 灌装机气压低限 t	FESTO	PEV-1/4-B-OD
24	Blank	Blank 空白		
25	47SQ5	Filler electrical zero 灌装机电气零点	ROCKWELL	872C-D4NP12-D4
26	44SQ6	Infeed star-wheel overload detection 进瓶星轮过载检测	ROCKWELL	872C-D4NP12-D4
27	44SQ7	Intermediate star-wheel overload detection 中间星轮过载检测	ROCKWELL	872C-D4NP12-D4
28	44SQ8	Scroll overload detection 进瓶螺杆过载检测	ROCKWELL	872C-D4NP12-D4
29	47SQ6	Capper electrical zero 旋盖电气零点	ROCKWELL	872C-D4NP12-D4
30	47SQ1	Out-feed star-wheel overload detection ction 出瓶星轮过载检测	ROCKWELL	872C-D4NP12-D4
31	Blank	Blank 空白		
32	Blank	Blank 空白		
33	FM#01-40	Magnetic Flow meters 电磁流量计	E&H	5BH15-1G3A1GB041A1

6.2 HMI 级别	6.2 HMI level

Display Navigation 菜单导航	以下表格列举的是 HMI 菜单的主要的结构，操作员可以通过 HMI 来控制机器。控制的第一级别是主画面。通过主画面，操作员可以进入第二级的控制菜单。所有的子菜单通过快速返回键，可以方便的回到主画面上。 The below lists main structure of menus within the HMI screens, which provide machine control for the filler. First level of control is the main screen. This screen has targets which allow the operator to navigate to the second level of screens. All sub-screens have returns to main screen targets for rapid escape functionality.	
第一级 1st Level		
Main screen 主画面	1	Mode 模式
	2	User Account 用户账号
	3	PackML State&Performance PackML 状态机
	4	Machine Warnings 机器警告
	5	Machine Alarms 机器报警
	6	Recipe 配方
	7	Reset 复位
	8	Hold 保持
	9	Start 启动
	10	Stop 停止
	11	Filler Jog Speed SP 灌装机点动速度
	12	Manual Control 手动控制
	13	CIP Setting CIP 设置
	14	A uto Setting 自动设置
	15	Report 报告
	16	Overview 总览
	17	Config 配置
	18	LPD
第二级 2nd Level		
User account 帐户管理	1	Log in 登陆
	2	Log out 注销
	3	Current user 当前用户
	4	User rights 用户权限
第三级 3st Level		
PackML State&Performance	1	Reset 复位
	2	Hold 保持
	3	Start 启动

PackML PlackML 状态	4	Stop 停止					
	5	Reset Current Mode Times 复位当前模式时间					
	6	Reset All Mode Times 复位全部模式时间					
第四级 4st Level							
Machine Warnings 机器警告	1	Filter 过滤					
	2	Filter Active Events 过滤事件					
	3	Sort By Time 根据事件分类					
	4	Group By Category 根据种类分组					
第五级 5st Level							
Machine Alarms 机器报警	1	Filter 过滤					
	2	Filter Active Events 过滤事件					
	3	Sort By Time 根据事件分类					
	4	Group By Category 根据种类分组					
第六级 6st Level							
Recipe 配方	1	Change 更改配方					
	2	Save 保存配方					
	3	Copy 拷贝配方					
	4	Delete 删除配方					
	5	Save Current Recipe 保存当前配方					
	6	Reset All Recipe Times 复位全部配方时间					
	7	Recipe Parameter Setting 配方参数设置	1	Filler Bottle Speed(bpm) 灌装自动速度			
			2	Target Volume 目标容量			
			3	Product Density（g/ml）产品浓度			
			4	Lower tolerance(ml) 误差允许下限			
			5	Upper tolerance(ml)误差允许下限			
			6	Material pressure (bar) 物料压力			
			7	CappingSpeedFactor (%) 旋盖速度因素			
			8	In-feed conveyor refer toMain(%) 进瓶链速度（相对于主机）			
			9	Rejecter conveyor refer toMain(%) 剔瓶链速度（相对于主机）			
			10	CapDisk Height(mm) 分盖盘高度			
			11	Cappper Height(mm)旋盖机高度			
			12	Filler Height(mm)灌装机高度			
第七级 7th Level							
Manual Control 手动控制	1	VFD Control 手动控制	1	In-feed Conveyor 进瓶链	Setup 设定	Frequency 频率	Start/stop 启动/停止
			2	Capper Over-speed Motor 旋盖高速电机			
			3	Main Motor 主电机			

			4	Reject Conveyor 剔瓶链电机				
	2	Encoders Control 编码器控制	1	Filler Height 灌装高度	Current Value 当前值		Zero Reset 清零	Status 状态
			2	Capper Height 旋盖高度	Current Value 当前值		Zero Reset 清零	Status 状态
			3	CapStarwheel Height 分盖盘高度	Current Value 当前值		Zero Reset 清零	Status 状态
			4	Homing Start on 启动回原点	Filler Rotate Encoder Location State 灌装旋转编码器状态:			Status 状态
	3	Motor Valve Control 电机阀控制	1	Main Air 主气阀				
			2	Stop Bottle Valve 阻瓶阀				
			3	Capping blow Motor 旋盖电机				
			4	Cap Blowing Valve 吹盖阀				
			5	CIP/SIP Extend CIP/SIP 伸出				
			6	Cap infeed Stop 停盖阀				
第八级 8th Level								
CIP setting CIP 设置	1	Cleaning Timer: 清洗时间：						
	2	Exhausting Timer 剩余时间：						
	3	CIP Speed: (bpm) CIP 速度（bpm）：						
	4	Exhausting Flush 剩余圈数						
	5	CIP Pressure CIP 压力						
	6	Filler_CIPHeight(mm) 灌装机 CIP 高度（mm）						
	7							
	8							
第九级 9th Level								
Auto setting 自动设置	1	Infeed&Filler Control 进瓶和灌装控制	1	Bottle Infeed Block off 停止进瓶				
			2	Output Reset 产量清零				
	2	Voluntary Reject 主动剔除	1	Filler Head 灌装头	From	To	Counts	Disable
			2	Capper Head 旋盖头				
第十级 10th Level								
Config 配置	1	Height configurat	(1)	Raise 上升				
			(2)	Lower 下降				

		ion 高度配置	(3)	Over Zero enable 过零点
			(4)	High /low limit(cap star wheel/cap turret/filler turret) 高限/低限
			(5)	TOP Height 最高点
			(6)	Work Height 工作高度
	2	Flow meter configuration 流量计配置	(1)	Running pulses 计算脉冲
			(2)	Corrected pulses 脉冲校正
			(3)	Measured weight 称重校正
			(4)	Last pulses 最终脉冲
			(5)	Target volume(ml) 目标重量
			(6)	Product density(g/ml) 产品密度
			(7)	Lower tolerance(ml)灌装误差允许下限
			(8)	Upper tolerance(ml)灌装误差允许上限
			(9)	Pulses corrected 脉冲校正
			（10）	Confirm all 确认全部
			(11)	Save Current Recipe 保存当前配方
	3	Detection setting 传感器设置	(1)	Cap presence and skewed cap detection 无盖歪盖高盖检测
			(2)	Product Level Sensor detection 瓶子液位检测
			(3)	Product Level Flowmeter detection 流量计液位检测
			(4)	In-feed conveyor sensor detection 进瓶链传感器检测
			(5)	Caps in Cap starwheel checking 分盖盘有盖检测
			(6)	Product pressure check for running(lower limit/upper limit)产品压力检测（上限/下限）
			(7)	LPD Controller Communication Bypass LPD 通讯无效
			(8)	Reblend Controller Communication Bypass
	4	Filler head control 灌装头控制	(1)	Status 状态
			(2)	Fault 故障
			(3)	Enable all heads 启动全部灌装头
	5	Machine Para Setting 机器参数设置	(1)	EM00:EM_R200_ParametersInitialization
			(2)	EM03:CM06_CapStopValve
			(3)	EM04:CM02_FT_Rejector
			(4)	EM00:EM_R202_FucAlrming2ndWarning
			(5)	EM02:EM_R200_LowLevel...
			(6)	EM03:EM_R200_NoCapBadCap...
第十一级 11th Level				
Report 报告	1	Status 状态报告	(1)	Main motor 主电机
			(2)	Overspeed motor 高速电机
			(3)	In-feed motor 进瓶电机

			(4)	Reject motor 剔瓶电机
			(8)	Bottle stop 停瓶
			(9)	CIP/SIP
			(10)	Cap stop 停盖
			(11)	blank
			(12)	Main air supply 总气阀
			(13)	Blowing cap 吹盖
	2	Nozzles 灌装头		Level fault nozzles 流量计液位不合格
	3	Caps 盖子		Broken caps 坏盖
	4	Nozzle filling angle 灌装头灌装角度		
第十二级 12th Level				
Overview 总览	(1)	Out-feed speed(m/min) 出瓶速度		
	(2)	Capping speed(%) 旋盖速度		
	(3)	Infeed speed(m/min) 进瓶速度		
	(4)	Manual speed(bpm) 手动速度		
	(5)	Auto speed(bpm) 自动速度		
	(6)	Product pressure (bar) 产品压力		
	(7)	BPM Capacity(bpm) BPM 能力		

6.3 HMI 控制屏

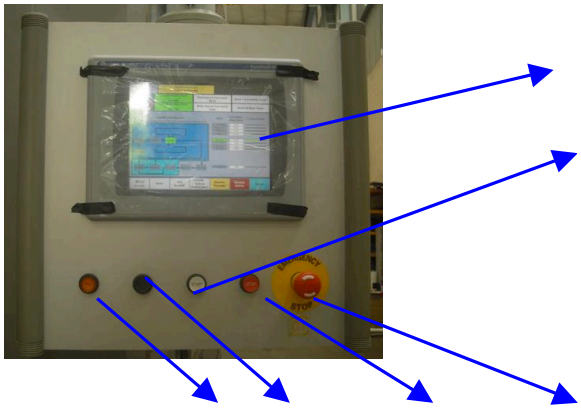
用户可以在本手册的第十三章“用户控制界面”找到HMI控制荧屏的细节内容。

6.3 HMI Screen

Check chapter 13 of this manual for more detailed information.

6.4 控制面板

6.4 Operator panel



6.5 点动手柄

6.5 Jog handle

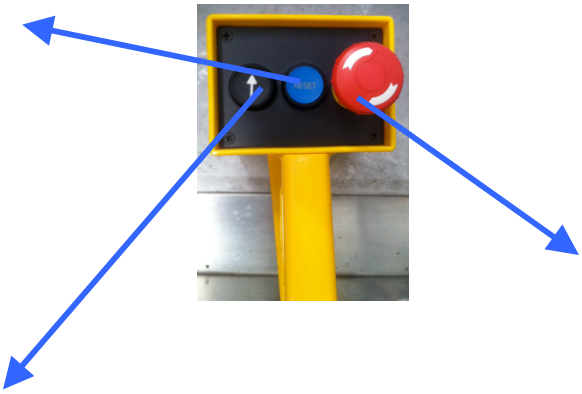
Reset

Start

Emergency stop

Stop

Jog



6.6 后部控制面板

6.6 Back panel

6.7 剔除器面板

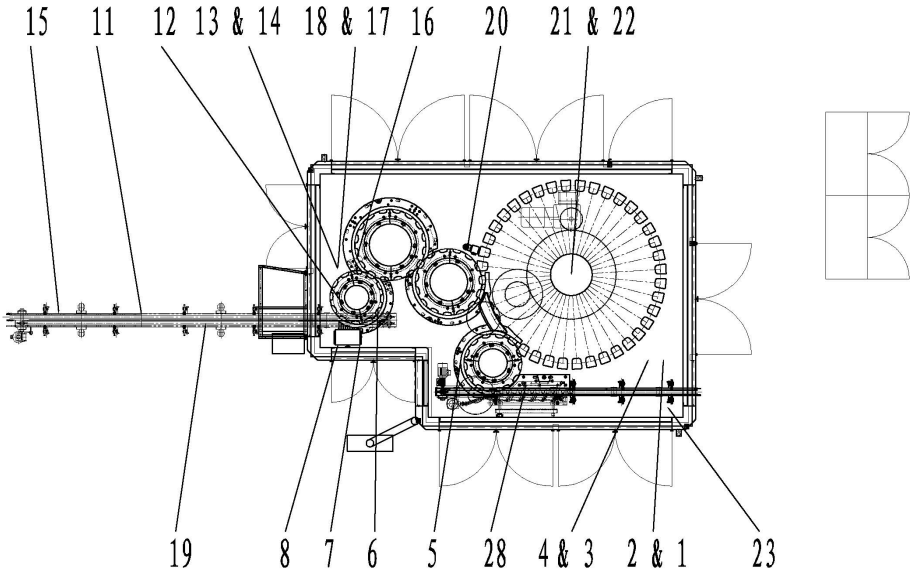
不允许通过控制剔除器面板来更改一些剔除器的设置。在一般情况下，也不需要对设置进行调整。如果有需要调整，请参考说明书文件里的“参数设置” 部分。

6.7 Rejecter panel

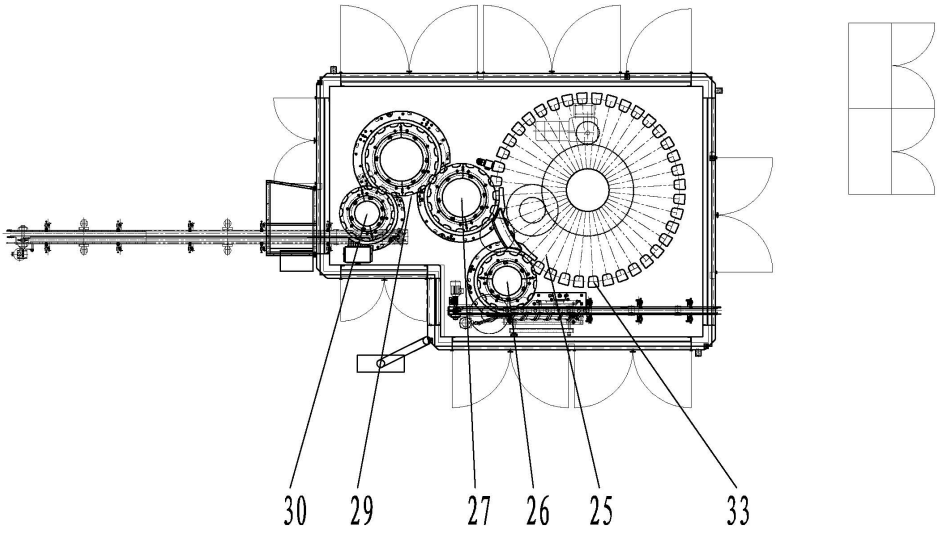
Change the setting of the rejecter through rejecter panel is not permitted. Usually, there is no need to modify the setting. If it is necessary, please check the Parameters Setting of this manual for

7. 传感器的功能描述

大底板以上传感器



大底板以下的传感器



7. Sensor Description

Sensors above the base.

Sensor below base.

1. 名称：灌装机最小瓶检测传感器（42SQ1）

功能描述：为了保证有充足的瓶子送进灌装机。

逻辑：如果这个传感器检测到没瓶，灌装机将进入 PackML 状态的 Suspended 状态。相应的报警信息将会显示在 HMI 上。当它检测到有瓶，经过一定时间后灌装机自动进入 PackML 状态的 Execute 状态。

位置：此传感器安置在进瓶链上位于机械停瓶装置前。

2. 名称：倒瓶检测传感器（42SQ2）

功能描述：为了检测进瓶链是否有倒瓶，避免倒瓶送进灌装机里。

逻辑：此传感器是与灌装机最小瓶检测传感器一起配合使用的，并且安装在它的下方。如果下方的传感器检测到有瓶子但是上面的传感器没有检测到瓶子，说明有倒瓶。于是，灌装机会停止运转。HMI 报警，报警灯红灯报警。这时，如果想启动机器，必须先排出故障，然后先按下“复位”按钮再按下“开始”按钮。

位置：安装在灌装机最小瓶检测传感器的

1: Name: Filler Minimum Accumulation Bottle.

(Name in electrical drawing: 42SQ1; Filler Minimum Accumulation Bottle Detected)

Description: This sensor is to ensure there is a sufficient accumulation of bottles in front of the filler to be fed into it.

Logic: If there is no bottle presented, PackML of filler will be in suspended state. A corresponding alarm shows on the HMI. If there is a bottle being detected, PackML shows execute state.

Location: This sensor is located on the filler empty bottles in-feed conveyor. It is installed before the mechanical stop device.

2: Name: **Filler Fallen Bottle.**

(Name in electrical drawing: 42SQ2; Filler Fallen Bottle Detection)

Description: This sensor is to detect fallen bottles on the empty bottle conveyor and to prevent them to be fed into the filler.

Logic: This sensor works in combination with the Filler Minimum Accumulation Bottle Detection sensor. The Fallen Bottle sensor is installed under the Minimum Accumulation sensor. If the lower sensor sees a bottle, while the top one does not see one, then it means there is a fallen bottle. When a fallen bottle is detected, the filler stops. A corresponding alarm shows on the HMI, and red flashing light shows on the light tower. To restart the filler it is required

下方。

to acknowledge the fault and to press the reset button and then press start button.

Location: Under the Filler Minimum Accumulation Bottle Detection sensor.

3. 名称：CIP 接水盘伸出检测传感器（41SQ1）

功能描述：为了检测 CIP 的接水盘是否伸出，避免出现机械干扰。

逻辑：如果在 PLC 发出“伸出”信号后过了设定的时间，此传感器还没有检测到，机器将停止并报警。

位置：在接水盘的气缸上，靠近灌装机的那一端。

3: Name: **CIP catch pan extended.**

(Name in electrical drawing: 41SQ1; Catch pan extend detection)

Description: This sensor is to detect when the catch pan is extended to avoid mechanical interferences with the filler.

Logic: If this sensor still doesn't activate after a certain time when PLC send an "extending" signal out, machine will stop and alarm.

Location: On the body of the catch pan pneumatic cylinder, at the end close to the filler.

4. 名称：CIP 接水盘收回检测传感器（41SQ2）

功能描述：为了检测 CIP 的接水盘是否收回，避免出现机械干扰。

逻辑：如果在 PLC 发出“收回”信号后过了设定的时间，此传感器还没有检测到，机器将停机且报警。

位置：在接水盘的气缸上，远离灌装机的那一端。

4: Name: **CIP catch pan retracted.**

(Name in electrical drawing: 41SQ2; Catch pan retract detection)

Description: This sensor is to detect when the catch pan is retracted to avoid mechanical interferences with the filler.

Logic: If this sensor still doesn't activate after a certain time when PLC send a "retracting" signal out, machine will stop and alarm.

Location: On the body of the catch pan pneumatic cylinder, at the end away from the filler.

5. 名称：进瓶星轮有瓶检测传感器，无瓶不灌装（42SQ3）

功能描述：为了检测进瓶星轮里面是否有瓶，启动转换计数器下一步动作。

逻辑：当检测到进瓶星轮有瓶，此信息就会发送到转换计数器。转换计数器就会启动相应灌装头进行灌装，同时也启动了生产线上的其他检测。如果检测到缺瓶，HMI 报警，报警灯橙色灯报警。在自动模式下检测到连续的缺瓶，灌装机停机，HMI 报警，报警灯红灯报警。如果想重新开机，必须先排出故障而且先按下“复位”按钮再按下“开始”按钮。

位置：安装在灌装机的进瓶星轮的护瓶板上。

6. 名称：分盖盘过载检测传感器（47SQ7）

功能描述：为了检测机械过载状况。

逻辑：当分盖盘发生过载，机器将停止，HMI 和报警灯报警。

位置：在分盖盘的上方。

5: Name: Bottle presence in in-feed star-wheel, no bottle/no fill.

(Name in electrical drawing: 42SQ3; Bottle presence in in-feed detected)

Description: This sensor is to detect the presence of bottles in the in-feed star-wheel to initiate the shift register.

Logic: When a bottle is detected to be present in the in-feed star-wheel, the information is fed into a shift register. The shift register is used to initiate the filling at the corresponding nozzle and other checks used on the line. When a bottle is missing, a corresponding alarm shows on the HMI, and orange flashing light shows on the light tower. When on Auto mode and consecutive missing bottles are detected, the filler stops. A corresponding alarm shows on the HMI, and red solid light shows on the light tower. To restart the filler it is required to acknowledge the fault and to press the reset button and then press start button.

Location: Under the fixed guide of the filler in-feed star-wheel.

6: Name: **Cap star-wheel overload.**

(Name in electrical drawing: 47SQ7; Cap star-wheel overload protection)

Description: This sensor is to detect mechanical overload conditions.

Logic: When there is overload happens, the machine stops and make an alarm on both HMI screen and light tower.

7. 名称：剔瓶器同步检测传感器（WSQ18）

功能描述：检测剔瓶系统检测瓶子的界线。

逻辑：当瓶子被剔除器检测到时，灌装机给出相应的瓶子质量的信号（灌装液位水平、有无旋盖）。坏瓶将会被剔除。

位置：安置在剔除器的之前。

8. 名称：风道上最小盖检测传感器（43SQ2）

功能描述：为了检测风道上盖子的数量，启动灌装机和旋盖机。

逻辑：如果检查到缺盖，灌装机器将会发出警告信息。

位置：在送盖风道上，靠近分盖盘。

9. 空白

Location: On the upper part of the cap star-wheel.

7: Name: Rejecter synchronization.
(Name in electrical drawing: WSQ18; Photocell rejecter)
Description: This sensor is for the reject system to detect the edge of the bottle.
Logic: When the bottle is seen by the rejecter, the filling machine gives a signal corresponding to the quality status of this bottle (filling level from level detector, from "no cap" detector). Bad quality bottles are rejected by the rejecter.
Location: Just before the rejecter.

8: Name: **Minimum cap presence in airveyor.**
(Name in electrical drawing: 43SQ2; Minimum cap presence in airveyor)
Description: This sensor is to detect the amount of caps in the cap airveyor to initiate the start of the filler/capper.
Logic: If the sensor detected that there is a cap missing, filler will send out alarm information.
Location: On the airveyor, close to the cap star-wheel.

9: Blank

10: Blank

10. 空白

11. 名称：出瓶链后段半满检测传感器（42SQ7）

功能描述：为了保证出瓶链后段有足够空间来运送瓶子。

逻辑：当传感器检测到出瓶后端半满，灌装机器将会发出警告信息，机器速度降低一半。

位置：在灌装机外部，出瓶链的后段上。

注：此功能已经被取消。

12. 名称：在分盖盘上检查盖（43SQ5）

功能描述：检测分盖-盘上是否有盖子

逻辑：如果灌装机有瓶检测检测到有瓶进入，当瓶子移动到此对应的工位，HMI 上检测按钮被使能后，如果被连续检查到无盖，灌装机将会停机

位置：在分盖盘上方的固定杆上

13. 名称：分盖盘高度上限检测传感器（44SQ4）

11: Name: **Down-stream conveyor half full.**

(Name in electrical drawing: 42SQ7; Down stream conveyor full)

Description: This sensor is to ensure there is space to accept bottles onto the down-stream conveyor.

Logic: When the sensor detects that the downstream conveyor is half-full, a corresponding alarm shows on the HMI and half the machine speed.

Location: On the down-stream conveyor, outside of filler frame.

Note: This function has been canceled.

12: Name: Cap checking In Capdisc

(Name in electrical drawing: 43SQ5; Cap checking In Capdisc)

Description: This sensor is to detect the presence of a cap in the cap disc.

Logic: When filler bottle presence sensor has detected that the bottle has moved to the corresponding position, but there is continuously no cap feed-in (with detect button on HMI be activated), the machine will be stoped.

Location: On the fixed guide of the cap star-wheel.

13: Name: **Cap star-wheel height upper limit**.

(Name in electrical drawing: 44SQ4; Cap star-wheel height upper limit)

功能描述：为了保护分盖盘上升时不超出机械量程。此传感器也可以用作高度零点的设置设定点。

逻辑：一旦到达上限，它将阻止机器往上再升。

位置：安装在分盖盘旁边的轴上。

Description: This sensor is to protect the equipment not to exceed mechanical highest limit when machine moving up. Sensor is used also for height zero position setting.

Logic: Once reached, the sensor prevents any movement further up.

Location: On a shaft, next to the cap star wheel.

14. 名称：分盖盘高度下限检测传感器（44SQ5）

功能描述：为了保护分盖盘下降时时不超出机械量程。

逻辑：一旦降到最低，它将阻止机器往下降。

位置：安装在分盖盘旁边的轴上。

14: Name: **Cap star-wheel height lower limit.**

(Name in electrical drawing: 44SQ5; Cap star-wheel height lower limit)

Description: This sensor is to protect the equipment not to exceed lowest limit when machine moveing down.

Logic: Once reached, the sensor prevents any movement further down.

Location: On a shaft, next to the cap star wheel.

15. 出瓶链后段满检测传感器（42SQ5）

功能描述：为了保证出瓶链后段有足够空间来运送瓶子。

逻辑：当传感器检测到空间不足后(过了设定时间后)，HMI 报警。灌装机停机。要重新开机必须排出故障，并且先按下“复位”按钮，再按下“开始”按钮。

15: Name: Downstream conveyor full-filler shut down

(Name in electrical drawing: 42SQ5; Cap presence catch cap)

Description: This sensor is to ensure there is space to accept bottles onto the down-stream conveyor.

Logic: When the sensor is activated (after a set time), a corresponding alarm shows on the HMI. The filler is stopped and an orange flashing light shows on the light tower. The filler stops and restarts

位置：在灌装机外部，出瓶链的后段上。

16. 瓶子上有无盖和高盖检测（52SQ1/52SQ2）

功能描述：检测瓶子是否有盖子和是否高盖。

逻辑：如果灌装机有瓶检测检测到有瓶进入，当瓶子移动到此工位，如果被检查到瓶子无盖或者高盖，灌装机给出相应的瓶子质量信号（旋盖无盖或者高盖）。坏瓶将会被剔除。

位置：在旋盖机和分盖盘交接处。

17. 名称：旋盖机高度上限检测传感器（43SQ8）

功能描述：为了保护旋盖机上升时不超出机械量程。此传感器也可用于高度零点设置。

逻辑：一旦升到最高，它将阻止机器再往上升。

位置：安装在旋盖机旁边的轴上。

automatically.

Location: On the down-stream conveyor, after output of the filler.

16. Name: Cap presence on bottle and high cap.

(Name in electrical drawing: 52SQ1/52SQ2)

Description: The sensor is to detect whether there is no cap or high cap.

Logic: If there is a bottle feed-in, and the cap is missing or cap is not proper screwed, filler sends out corresponding signal and the unquanlified bottle will be rejected out.

Location: Connection part between capper and cap star-wheel.

17. Name: **Capper height upper limit.**

(Name in electrical drawing: 43SQ8; Capper height upper limit)

Description: This sensor is to protect the equipment not to exceed highest limit when capper is moving up. Sensor is used also for height zero position setting.

Logic: Once reached, the sensor prevents any movement further up.

Location: On a shaft next to the capper.

18: Name: **Capper height lower limit.**

(Name in electrical drawing: 44SQ1; Capper height lower limit)

Description: This sensor is to protect the equipment not to exceed the lowest limit

18. 名称：旋盖机高度下限检测传感器（44SQ1）

功能描述：为了保护旋盖机下降时不超出机械量程。此传感器也可用于高度零点设置。

逻辑：一旦降到最低，它将阻止机器再往下降。

位置：安装在旋盖机旁边的轴上。

19. 名称：剔除链满检测传感器（47SQ3）

功能描述：为了保证剔瓶链上有足够的空间来容纳瓶子。

逻辑：当此传感器检测到空间不足后，过了设定的一段时间后，HMI 报警。灌装机停机，报警灯红灯亮报警。要重新开机必须排出故障，并且先按下“复位”按钮，再按下“开始”按钮。

位置：安装在剔除链上，在剔除系统后。

20. 名称：产品液位检测传感器（47SQ4）

功能描述：检测瓶子里面灌装的液位，也

when capper is moving down. Sensor is used also for height zero position setting.

Logic: Once reached, the sensor prevents any movement further down.

Location: On a shaft next to the capper.

19 Name: **Reject conveyor full.**

(Name in electrical drawing: 47SQ3; Reject conveyor full)

Description: This sensor is to ensure there is space to reject bottles onto the reject conveyor.

Logic: When the sensor is activated (after a set time), a corresponding alarm shows on the HMI. The filler is stopped and a red solid light shows on the light tower. To restart the filler it is required to acknowledge the fault and to press the reset button and then press the start button.

Location: On the reject conveyor, after the reject system.

20:Name:Product level, leak measurement.

(Name in electrical drawing: 47SQ4; Product level detection)

Description: This sensor is to measure the amount of product filled into the bottle, once the fill process is completed. It is mainly to ensure the bottle does not have a leak.

Logic: When a filled bottle is detected to be under filled, while the MagFlow delivered

是检测瓶子没有渗漏。

逻辑：当瓶子内的灌装液体被检测到低于标准的液位，而电磁流量计显示的信号是产品的正确体积，那么 HMI 会报警，相应的瓶子也会被剔除。如果故障持续出现，灌装机将停止，报警灯红色灯报警。若要重新开机，必须先得排出一切故障，然后按下“开始”按钮。

位置：安装在灌装机里面，位于瓶子送进中间星轮之前。

21. 名称：灌装机高度上限检测传感（43SQ6）

功能描述：为了保护灌装机上升时不超出机械量程。此传感器也可用于高度零点设置。

逻辑：一旦升到最高，它将阻止机器再往上升。

位置：安装在灌装机机旁边的轴上。

22. 名称：灌装机高度下限检测传感器（43SQ7）

the right amount of product, a corresponding warning shows on the HMI and relevant bottle is rejected. In case of consecutive faults, the filler is stopped and a solid red light shows on the light tower. To restart the filler it is required to acknowledge the fault and to press the start button.

Location: In the filler, just before intermediate starwheel.

21: Name: **Filler height upper limit.**

(Name in electrical drawing: 43SQ6; Filler height upper limit)

Description: This sensor is to protect the equipment not to exceeed the highest limit when filler moving up. Sensor is used also for height zero position setting.

Logic: Once reached, the sensor prevents any movement further up.

Location: On a shaft next to the filler.

22: Name: **Filler height lower limit.**

(Name in electrical drawing: 43SQ7; Filler height lower limit)

Description: This sensor is to protect the equipment not to exceed the lowest position when filler moving down. Sensor is used also for height zero position setting.

Logic: Once reached, the sensor prevents any movement further down.

Location: On a shaft next to the filler.

23: Name: **Filler compressed air pressure**

功能描述：为了保护灌装机下降时不超出机械量程。此传感器也可用于高度零点设置。

逻辑：一旦降到最低，它将阻止机器再往下降。

位置：安装在灌装机机旁边的轴上。

23. 名称：灌装机气压低限检测传感器（47PS1）

功能描述：检测机器运行允许的最小气压。

逻辑：56Y1 电磁阀打开后，如果气压低于设定的压力值持续 2s，机器将报警停机。HMI 会报警提示。

位置：安装在安全泄气阀之后的气路。

注意：

24. 空白

25. 名称：灌装机机械零点检测传感器（47SQ5）

low limit

(Name in electrical drawing: 47PS1; Filler compressed air pressure low limit)

Description: This sensor is to detect the minimum air pressure required for the equipment to run.

Logic: 56Y1 solenoid valve open, if air pressure is lower than set value more than 2s, the machine will alarm and stop. Alarm is reported on HMI.

Location: Install on air passage after safety valve.

24 Blank

25: Name: **Filler mechanical zero.**

(Name in electrical drawing: 47SQ5; Filler original location detection)

Description: This sensor, in combination with the capper electrical zero sensor, is to bring the filler and the capper to the electrical zero position to do maintenance or to reset the electrical zero. Electrical zero is when the filler head 1 and capper head 1 are both in line with their in-feed star-wheel center line. This happens in maximum 2 turns of the filler turret.

Logic: The mono-block will rotate until the filler and the capper are in their electrical zero position and will stop. At this point the encoder measuring the angle position can be reset.

Location: Next to the filler drive gear.

功能描述：此传感器与旋盖机的电气零点检测传感器配合使用。可以在机器维护时或需重置电气零点时，调整电气零点。当灌装机的 1 号头和旋盖机的 1 号头都位于它们进瓶星轮的中心线上时，这就是电气零点。

逻辑：主机旋转，直到灌装机和旋盖机都在电气零点上时才停下来。在这一点上，编码器测量的角度位置可以重设。

位置：在灌装机驱动齿轮旁边。

26. 名称：进瓶星轮过载检测传感器（44SQ6）

功能描述：检测机械过载状态。

逻辑：当进瓶星轮过载被传感器检测到，机器将停止运转，HMI 报警，报警灯红色灯报警。若要开机，必须排出故障然后先按下“复位”按钮，再按下“开始”按钮。

位置：位于进瓶星轮驱动的轴下方。

27. 名称：中间星轮过载检测传感器（44SQ7）

26: Name: **In-feed star-wheel overload**

(Name in electrical drawing: 44SQ6; Filler in-feed star-wheel overload protection)

Description: This sensor is to detect mechanical overload conditions.

Logic: When there is overload happens, the sensor will activate, the machine stops, alarm is reported on HMI screen, a red solid light shows on the light tower. To restart the filler it is required to acknowledge the fault and to press the reset button and then press start button.

Location: On the lower part of the in-feed star-wheel drive shaft.

27:Name:**Intermediate star-wheel overload**

(Name in electrical drawing: 44SQ7; Filler medium star-wheel overload protection)

Description: This sensor is to detect mechanical overload conditions.

Logic: When there is overload happens, the sensor will activate, the machine stops, alarm is reported on HMI screen, a red solid light shows on the light tower. To restart the filler it is required to acknowledge the fault and to press the start button.

Location: On the lower part of the intermediate star-wheel drive shaft.

28: Name: **Scroll overload**

(Name in electrical drawing: 44SQ8;

功能描述：检测机械过载状态。

逻辑：当中间星轮过载被传感器检测到，机器将停止运转，HMI 报警，报警灯红色灯报警。若要开机，必须排出故障然后按下“开始”按钮。

位置：位于中间星轮驱动的轴下方。

28. 名称：进瓶螺杆过载检测传感器（44SQ8）

功能描述：检测机械过载状态。

逻辑：当进瓶螺杆过载被传感器检测到，机器将停止运转，HMI 报警，报警灯红色灯报警。若要开机，必须排出故障然后先按下“复位”按钮，再按下“开始”按钮。

位置：位于进瓶螺杆驱动的轴下方。

29. 名称：旋盖机机械零点检测传感器（47SQ6）

功能描述：此传感器与灌装机的电气零点检测传感器配合使用。可以在机器维护时或需重置电气零点时，调整电气零点。当灌装机的 1 号头和旋盖机的 1 号头都位于

In-feed conveyor overload protection)

Description: This sensor is to detect mechanical overload conditions.

Logic: When there is overload happens, the sensor will activate, the machine stops, alarm is reported on HMI screen, a red solid light shows on the light tower. To restart the filler it is required to acknowledge the fault and to press the reset button and then press start button.

Location: On the lower part of the scroll drive shaft.

29: Name: **Capper mechanical zero**

(Name in electrical drawing: 47SQ6; Capper original location detection)

Description: This sensor, in combination with the filler electrical zero sensor, is to bring the filler and the capper to the electrical zero position to do maintenance or to reset the electrical zero. Electrical zero is when the filler head 1 and capper head 1 are both in line with their in-feed star-wheel center line. This happens in maximum 2 turns of the filler turret.

Logic: The mono-block will rotate until the filler and the capper are in their electrical zero position and will stop. At this point the encoder measuring the angle position can be reset.

Location: Next to the capper drive gear.

30: Name: **Out-feed star-wheel overload**

它们进瓶星轮的中心线上时，这就是电气零点。

逻辑：主机旋转，直到灌装机和旋盖机都在电气零点上时才停下来。在这一点上，编码器测量的角度位置可以重设。

位置：在旋盖机驱动齿轮旁边。

30. 名称：出瓶星轮过载检测传感器（47SQ1）

功能描述：检测机械过载状态。

逻辑：当进瓶螺杆过载被传感器检测到，机器将停止运转，HMI 报警，报警灯红色灯报警。若要开机，必须排出故障然后按下“开始”按钮。

位置：位于出瓶星轮驱动的轴下方。

31. 空白

32. 空白

(Name in electrical drawing: 47SQ1; Cap Out-feed star-wheel overload protection)

Description: This sensor is to detect mechanical overload conditions.

Logic: When there is overload happens, the sensor will activate, the machine stops, alarm is reported on HMI screen, a red solid light shows on the light tower. To restart the filler it is required to acknowledge the fault and to press the start button.

Location: On the lower part of the out-feed star-wheel drive shaft.

31: Blank

32: Blank

33.FM(01-40)Name:**Magnetic Flow meters**

(Name in electrical drawing: FM#01-40)

Description: The MagFlow meters are used to measure the quantity of product to be filled in a bottle. The output can also be used to ensure the quality of the production.

Logic: Record per head, the time to reach the set level (volume of product), and the actual level reached (amount of product). This data can be transferred via the PLC to an outside data collecting system. When setted product volume flow through flowmeter, each fu=illing valve will be closed by corresponding flowmeter (through high speed counter). In case that product volume does not reach requirement inside

33. 名称：电磁流量计(FM#01-40)

功能描述：用来测量灌装后的瓶子内部的产品容量，以保证生产质量。

逻辑：记录每一个灌装头的灌装达到设置的产品体积的时间和灌装的实际体积。这些数据通过 PLC 到达外部数据收集系统。当预设的产品体积通过电磁流量计之后，每一个灌装头由相对应的流量计关闭（通过高速计数器）。万一在预定的角度里，灌装产品的体积没有达到要求，PLC 将强制关闭灌装头。

万一灌装液位低于设定的最小的液位或者是出现灌装溢出，HMI 会报警，报警灯红色灯报警。相应的瓶子旋盖后会被剔除。但是灌装机不停机。

万一检测到连续的故障，HMI 会报警，灌装机停机，报警灯红灯报警。若要重新开机，必须排除故障，然后先按下“复位”按钮，再按下“开始”按钮。

位置：安装在灌装机旁边。

angle, PLC will force filling valve to be closed.

Each filling nozzle is closed by the corresponding flow meter (via a High Speed Counter Card) when a preset level of product has been delivered by the MagFlow. In case the product set level has not been reached in a given time, (preferably an angle) then that filling nozzle is closed by the PLC.

In case a minimum set level has not been reached or overflow is detected, a corresponding alarm shows on the HMI, and red flashing light shows on the light tower (for a set time). The corresponding bottle is capped but is registered to be rejected. The filler does not stop.

In case of consecutive faults, corresponding alarm shows on the HMI. The filler is stopped and a solid red light shows on the light tower. To restart the filler it is required to acknowledge the fault and to press the reset button and press start button.

Location: Next to the filling nozzles.

8. 报警信息及问题处理

8.1 报警信息

8. Alarm message and trouble shooting

8.1 Alarm message

NO:	ID	Value	Category	Message (Language 1 - English)
1	0	0	0	
2	1	1	2	HMI / DI StopBotton
3	2	1	0	E-Stop Pressed 1
4	3	1	0	E-Stop Pressed 2
5	4	1	0	E-Stop Pressed 3
6	5	1	0	E-Stop Pressed 4
7	6	1	0	E-Stop Pressed 6, Line Control
8	7	1	0	E-Stop Pressed 6
9	8	1	0	
10	9	1	0	E-Stop Pressed 8
11	10	1	0	Safety Lock 1
12	11	1	0	Safety Lock 2
13	12	1	0	Safety Lock 3
14	13	1	0	Safety Lock 4
15	14	1	0	
16	15	1	0	Safety Lock 6
17	16	1	0	Safety Lock 7
18	17	1	0	Safety Lock 8
19	18	1	0	Safety Lock 9
20	19	1	0	Safety Lock 10
21	20	1	0	Safety Lock 11
22	21	1	0	Safety Lock 12

23	22	1	0	Safety Lock 13
24	23	1	0	Safety Lock 14
25	24	1	0	Safety Lock 15
26	25	1	0	Safety Lock 16
27	26	1	0	Filler compressed-air Low Limit
28	27	1	1	Capper outfeed starwheel overload
29	28	1	2	Infeed Fallen bottle
30	29	1	1	Infeed Starwheel Overload
31	30	1	1	Inermediate starwheel overload
32	31	1	1	Filler Infeed Scroll overload
33	32	1	1	Main motor Overload
34	33	1	1	VFD For Main motor Fault
35	34	1	1	Infeed motor Overload
36	35	1	1	VFD For Infeed motor Fault
37	36	1	1	Filler Height Adj motor Overload
38	37	1	1	
39	38	1	1	
40	39	1	1	Capper overspeed motorOverload
41	40	1	1	VFD For Capper overspeed motor Fault
42	41	1	1	
43	42	1	1	
44	43	1	1	Capper Height Adj motor Overload
45	44	1	1	
46	45	1	1	
47	46	1	1	Capstarwheel Height Motor Overload

48	47	1	1	
49	48	1	1	Filler Reject Conveyor motor Overload
50	49	1	1	VFD For Reject Conveyor motor Fault
51	50	1	1	Alarm_DripTrayRetract_DelayTime_Error
52	51	1	1	Alarm_DripTrayExtent_DelayTime_Error
53	52	1	1	Alarm_NoCapBadCapOnBottle
54	53	1	1	Alarm_LowLevel_detectedbySensor
55	54	1	1	Alarm_LowLevel_detectedbyFL
56	55	1	9	Consecutive_MinCapsDetection
57	56	1	9	Consecutive_BottleSupplyNotOK
58	57	1	1	Consecutive_Missing_ThreeCaps in cap starwheel
59	58	1	1	ProdPressureOutOfRange
60	59	0	0	
61	60	0	0	
62	61	0	0	
63	62	0	0	
64	63	0	0	
65	64	0	0	
66	65	0	0	
67	66	0	0	
68	67	0	0	
69	68	0	0	
70	69	0	0	
71	70	0	0	
72	71	1	1	di_DISC_FillerSafetyDisconnect1

73	72	1	1	di_DISC_FillerSafetyDisconnect2
74	73	1	1	di_DISC_FillerSafetyDisconnect3
75	74	1	1	di_DISC_FillerSafetyDisconnect4
76	75	1	1	di_AUX_CapDiscOverlaod
77	76	1	1	di_DISC_FillerSafetyDisconnect6
78	77	1	1	Machine Init Homing Timeout
79	78	1	1	Downstream Conveyor Full
80	79	1	1	PEC_RejectConveyorFull
81	80	1	1	BottlePresenceIninfeedDetect When CIP
82	81	1	1	FT system Fault
83	82	1	1	LPD StartReq Fail
84	83	0	0	Supply Communication Failure
85	84	0	0	Supply GCAS Does Not Match Product GCAS
86	85	0	0	Supply Pump Failure
87	86	0	8	Supply Tank Low Level
88	87	0	6	Start Requested, Supply Transfer Path Not Correct
89	88	0	8	Capsorter Not Ready
90	89	0	0	Discharge Conveyor Not Running
91	90	1	2	EVENT_Remote_Stop_Command
92	91	1	1	EVENT_Remote_Abort_Command
93	92	0	8	Remote Suspend Command
94	93	0	8	Feeding System Fault
95	94	1	1	FTAlarm
96	95	0	0	MissCap_In_CapDisc
97	96	1	1	FTSerialFault

98	97	1	8	Remote Suspend Blocked
99	98	1	9	Starved oldugundan suspend

8.2 警告信息

8.2 Warning message

NO:	ID	Value	Category	Message (Language 1 - English)
1	0	1	0	Low Infeed Materials
2	1	1	0	
3	2	1	0	
4	3	1	0	Downstream Conveyor HalfFull
5	4	1	0	
6	5	1	0	Filler Height Upper Limit
7	6	1	0	Filler Height Lower Limit
8	7	1	0	Capper Height Upper Limit
9	8	1	0	Capper Height Lower Limit
10	9	1	0	CapStarwheel Height Upper Limit
11	10	1	0	CapStarwheel Height Lower Limit
12	11	1	0	Warning_NoCapBadCapOnBottle
13	12	1	0	Warning_LowLevel_detectedbySensor
14	13	1	0	
15	14	1	0	Warning_LowLevel_detectedbyFL
16	15	1	0	No Cap detected of Capper Head 01
17	72	1	0	No Cap detected of Capper Head 02
18	17	1	0	No Cap detected of Capper Head 03
19	18	1	0	No Cap detected of Capper Head 04
20	19	1	0	No Cap detected of Capper Head 05
21	20	1	0	No Cap detected of Capper Head 06
22	21	1	0	No Cap detected of Capper Head 07

23	22	1	0	No Cap detected of Capper Head 08
24	23	1	0	No Cap detected of Capper Head 09
25	24	1	0	No Cap detected of Capper Head 10
26	25	1	0	No Cap detected of Capper Head 11
27	26	1	0	No Cap detected of Capper Head 12
28	27	1	0	No Cap detected of Capper Head 13
29	28	1	0	No Cap detected of Capper Head 14
30	29	1	0	No Cap detected of Capper Head 15
31	30	1	0	No Cap detected of Capper Head 16
32	31	1	0	Lowlevel detected by flowmeter of nozzle 01
33	32	1	0	Lowlevel detected by flowmeter of nozzle 02
34	33	1	0	Lowlevel detected by flowmeter of nozzle 03
35	34	1	0	Lowlevel detected by flowmeter of nozzle 04
36	35	1	0	Lowlevel detected by flowmeter of nozzle 05
37	36	1	0	Lowlevel detected by flowmeter of nozzle 06
38	37	1	0	Lowlevel detected by flowmeter of nozzle 07
39	38	1	0	Lowlevel detected by flowmeter of nozzle 08
40	39	1	0	Lowlevel detected by flowmeter of nozzle 09
41	40	1	0	Lowlevel detected by flowmeter of nozzle 10
42	41	1	0	Lowlevel detected by flowmeter of nozzle 11
43	42	1	0	Lowlevel detected by flowmeter of nozzle 12
44	43	1	0	Lowlevel detected by flowmeter of nozzle 13
45	44	1	0	Lowlevel detected by flowmeter of nozzle 14
46	45	1	0	Lowlevel detected by flowmeter of nozzle 15
47	46	1	0	Lowlevel detected by flowmeter of nozzle 16

48	47	1	0	Lowlevel detected by flowmeter of nozzle 17
49	48	1	0	Lowlevel detected by flowmeter of nozzle 18
50	49	1	0	Lowlevel detected by flowmeter of nozzle 19
51	50	1	0	Lowlevel detected by flowmeter of nozzle 20
52	51	1	0	Lowlevel detected by flowmeter of nozzle 21
53	52	1	0	Lowlevel detected by flowmeter of nozzle 22
54	53	1	0	Lowlevel detected by flowmeter of nozzle 23
55	54	1	0	Lowlevel detected by flowmeter of nozzle 24
56	55	1	0	Lowlevel detected by flowmeter of nozzle 25
57	56	1	0	Lowlevel detected by flowmeter of nozzle 26
58	57	1	0	Lowlevel detected by flowmeter of nozzle 27
59	58	1	0	Lowlevel detected by flowmeter of nozzle 28
60	59	1	0	Lowlevel detected by flowmeter of nozzle 29
61	60	1	0	Lowlevel detected by flowmeter of nozzle 30
62	61	1	0	Lowlevel detected by flowmeter of nozzle 31
63	62	1	0	Lowlevel detected by flowmeter of nozzle 32
64	63	1	0	Lowlevel detected by flowmeter of nozzle 33
65	64	1	0	Lowlevel detected by flowmeter of nozzle 34
66	65	1	0	Lowlevel detected by flowmeter of nozzle 35
67	66	1	0	Lowlevel detected by flowmeter of nozzle 36
68	67	1	0	Lowlevel detected by flowmeter of nozzle 37
69	68	1	0	Lowlevel detected by flowmeter of nozzle 38
70	69	1	0	Lowlevel detected by flowmeter of nozzle 39
71	70	1	0	Lowlevel detected by flowmeter of nozzle 40
72	71	1	0	Consecutive_Missing_OneCap in starwheel

73	0	1	0	Consecutive_Missing_TwoCaps in starwheel
74	73	1	0	Capsorter Warning
75	74	1	1	Warning_LPD_PLC_Com
76	75	1	1	Warning_Reblend_PLC_Com
77	76	1	0	Capsorter No Auxiliary Alarm
78	77	1	0	Capsorter Thermal Trip Alarm
79	78	1	0	Capsorter No Air Alarm
80	79	1	0	Capsorter Sorter External Disk 7U1 Inv. Fault Alm
81	80	1	0	Capsorter Sorter Internal Disk 6U1 Inv. Fault Alm
82	81	1	0	Capsorter Sorter Jammed Alarm
83	82	1	0	Capsorter Min Level Hopper Alarm
84	83	1	0	Capsorter Alarm Hopper Abnormal
85	84	1	0	Capsorter Safety Guard Output Open Sorter Alarm
86	85	1	0	Filler Height Not OK
87	86	1	0	Waiting for LPD
88	87	1	0	
89	88	1	0	AUX_FTSerialFault
90	89	1	0	AUX_FTAlarm

8.3 疑难解答

8.3.1 一般问题处理

8.3.1.1 过载离合器太紧或者太松

- **进瓶螺杆**

拧紧或是松开相应的弹簧，以此来调节过载装置，如下图所示：

8.3 Trouble shooting

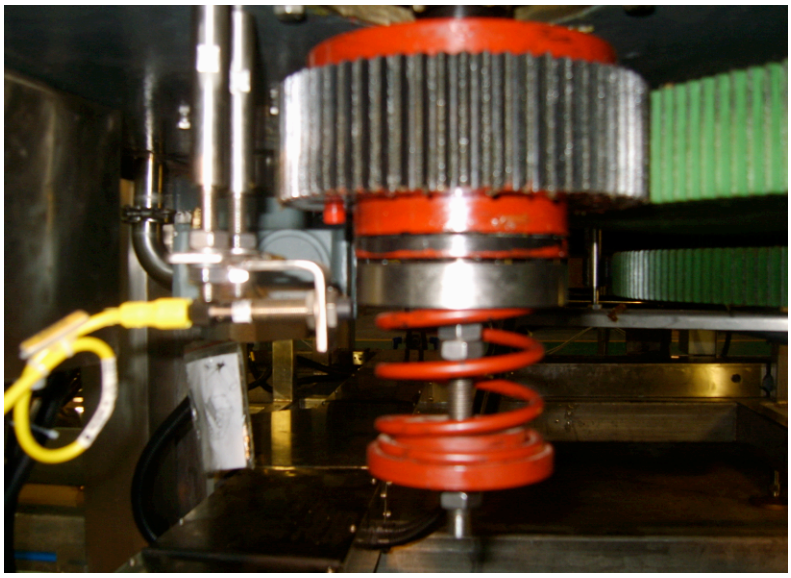
8.3.1 General troubles

8.3.1.1 Overload clutch too strong or too weak

- **Scroll**

Adjust the strength of the overload by tightening or loosening the corresponding spring as shown below.

8.3.2

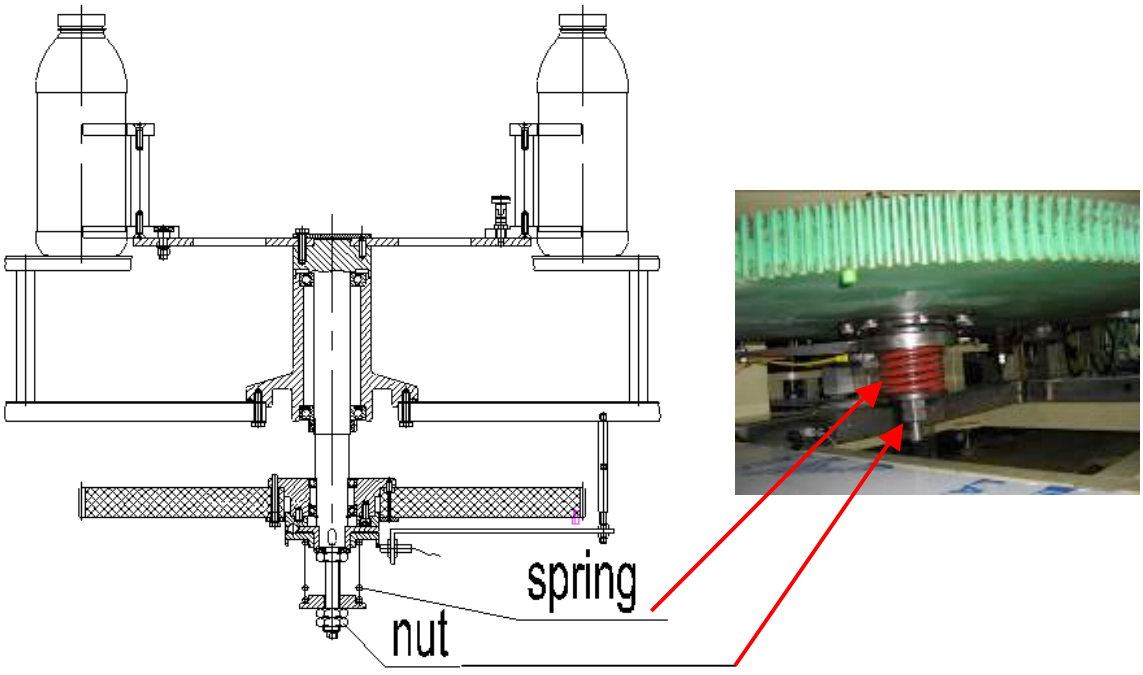


- **进瓶星轮或是中间星轮**

拧紧或是松开相应的弹簧，以此来调节过载装置，如下图所示：

- **In-feed star-wheel or intermediate star-wheel**

Adjust the strength of the overload by tightening or loosening the corresponding spring as shown below.



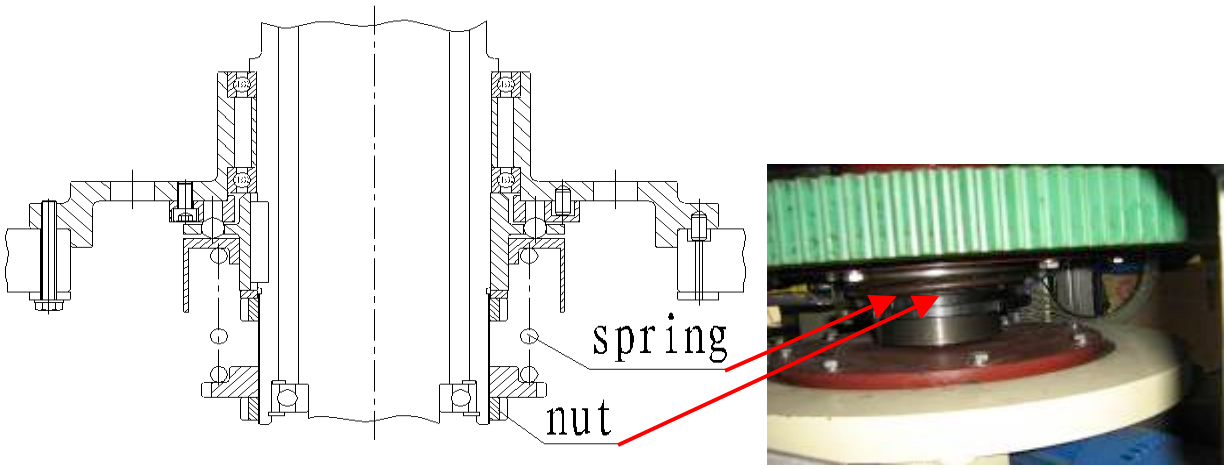
- **出瓶星轮**

- **Out-feed star-wheel**

Adjust the strength of the overload by

拧紧或是松开相应的弹簧，以此来调节过载装置，如下图所示：

tightening or loosening the corresponding spring as shown below.



8.3.2 特殊问题处理

8.3.3 Abnormal cases

现象 1：		Phenomena 1	
有产品从灌装嘴不断往下滴		There is product dripping from filling nozzles.	
潜在原因分析	1．灌装嘴里的密封圈损坏	Potential causes	1. Seal inside the filling nozzle is broken.
	2．灌装嘴内部区域有异物		2. There is foreign material inside the filling nozzle
	3．灌装产品压力过大		3. The pressure of the filling material is too strong.
	4．弹簧力度过小（无气状态）		4. The strength of the spring is too weak(under air-release)
针对以上原因的解决方法	1．更换密封圈	Relative solution	1. Change the seal
	2．清洗灌装嘴		2. Clean the filling nozzle
	3．核对产品压力		3. Check the product pressure
	4．更换弹簧		4. Change the spring

现象 2：		Phenomena 2	
有产品从灌装头前面的孔溢出		There is product overflowing from the hole in front of the filling nozzle.	
潜在原因分析	1．灌装嘴里的隔膜损坏	Potential causes	1. The diaphragm inside the filling nozzle is broken.
	2．隔膜静密封位置松开		2. The static seal position of diaphragm is loose.

针对以上原因的解决方法	1. 更换隔膜	Relative solution	1. Change the diaphragm
	2. 上紧螺钉		2. Tighten the bolt

现象 3：		Phenomena 3	
有液体进入到产品分配器的指示器里		There is solution inside the indicator of product distributor.	
潜在原因分析	密封圈损坏	Potential causes	The seal inside the product distributor is broken.
针对以上原因的解决方法	更换密封圈	Relative solution	Change the seal

现象 4：		Phenomena 4:	
流量计不工作		Flowmeter doesn't work.	
潜在原因分析	流量计损坏。	Potential causes	The flowmeter is broken.
针对以上原因的解决方法	更换流量计。	Relative solution	Change the flowmeter.
只需拧开上下两个卡箍，就能拆下流量计。 注意：请不要把卡箍里面的密封圈拆下。 关于流量计的问题，用户可以查找附件的 Enddress+Hauser 流量计的说明书，或者是登陆它的网站来寻求帮助：www.service.endress.com		If you want to loose the flowmeter, you only need to unscrew the upper and lower tri-clamps. Check the Endress+Hauser trouble shooting list from Endress+Hauser documentation attached to this manual or log on www.service.endress.com to seek help.	

9. 安装调节和维护

9.1 机械零点

9. Setting adjustment for new size and maintenance

9.1 Mechanical zero after

每一个齿轮的定位栓都有颜色的区别。把所有相同颜色的定位栓对应排成直线，那么机器的机械零点就对齐了。

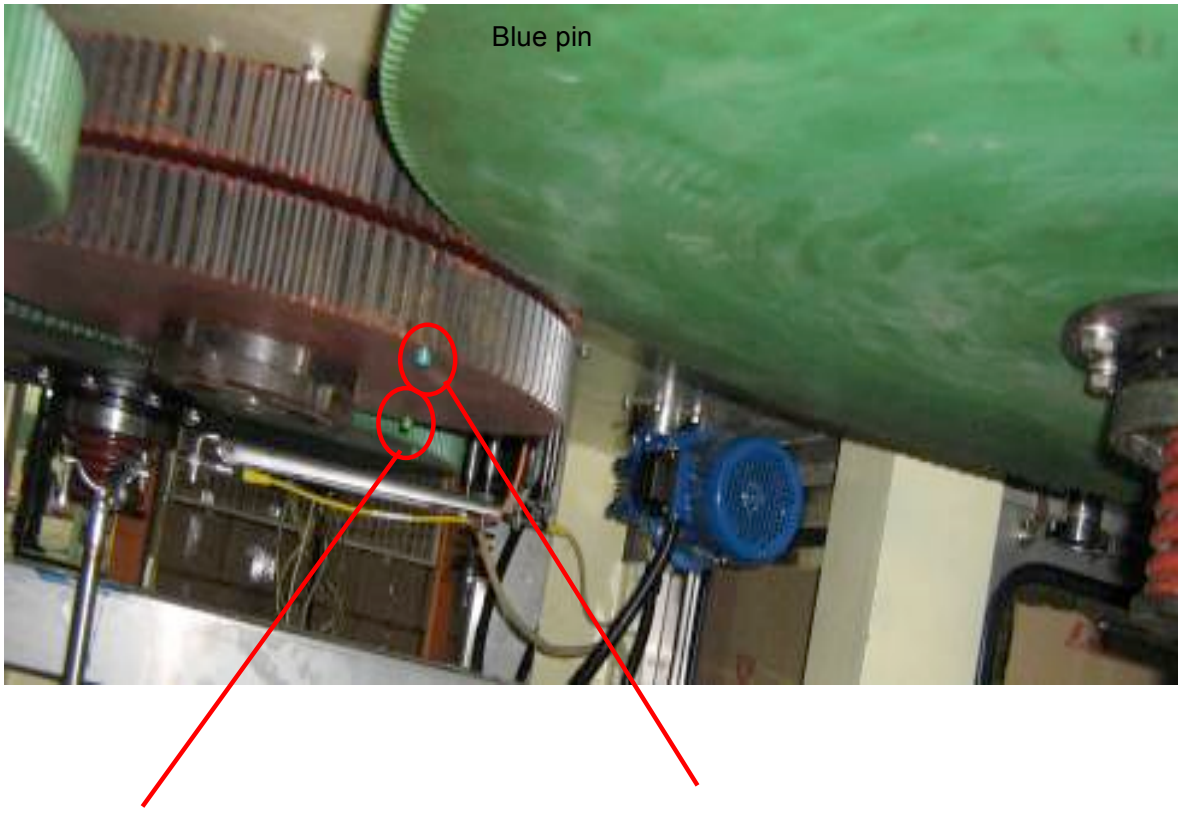
注意：如果拆卸个别齿轮时，必须在齿轮啮合处打上记号，以便重新安装时，保证同步。

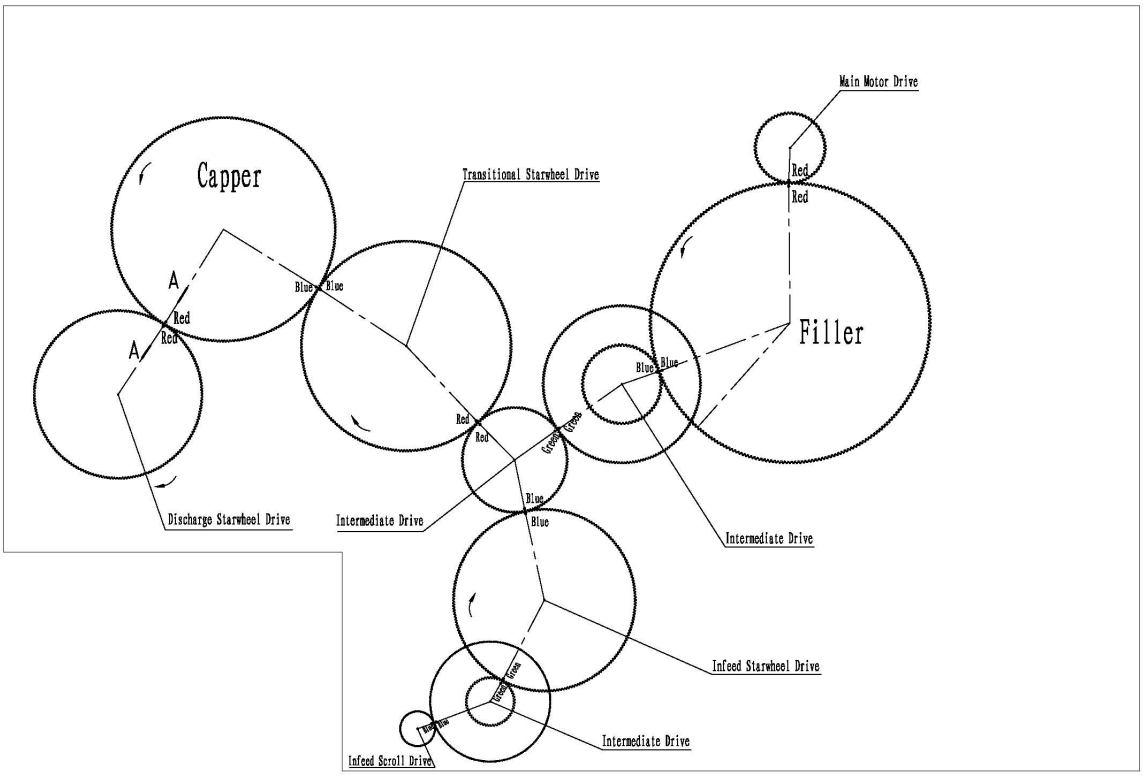
maintenance

Each gear is set with colored pins. The machine is in mechanical zero when all these pins are aligned per color.

Attention: To remove individual gear, you need to mark meshing position in order to install conveniently as well as ensuring synchronization.

een pin





当所有相同颜色的定位栓对齐后，1 号灌装头与进瓶星轮和灌装机的中心线是对齐的。

同样的，旋盖机的 1 号旋盖头是和中间星轮和旋盖机的中心线是相对应的。

When in mechanical zero, the filler head 1 is aligned with the in-feed star-wheel / filler centerline. The bottle corresponding to the filler head 1 is transferring out of the star-wheel onto the filler.

Similarly the capper head 1 is aligned with the intermediate star-wheel / capper centerline. The bottle corresponding to the capper head 1 is transferring out of the intermediate star-wheel onto the capper.

9.2 电气零点

电气的零点要通过机械零点来调节。当机械需要齿轮拆卸下来维护时，必须按照原位装回。

拆下中间齿轮，旋转灌装机和旋盖机到相应的机械零点，这时启动下面的两个电子传感器，调节主编码器并设定零点值。

9.2 Electrical zero after maintenance

The electrical zero is set by fabrication; the re-adjustment is supposed to be done only when machine needs maintenance of gears dismantling.

Remove the intermediate gear, turn the filler and capper respectively to mechanical zero and then start the two “electrical sensor” underneath frame. Adjust the encoder of main drive and set its value to zero.

9.3 高度调节

旋盖机的高度调节范围有 0 至 250mm。两个电子眼可以限制升高到最高点或降低到最低点。

9.3 Height adjustment for new size

The capper height adjusting range is 0~250mm. Two photocells are limiting the maximum and minimum positions.

9.4 流量计的标定

9.4.1 简介

当灌装嘴打开时，液体流过流量计。基于不同液体的特点，液体流动的速度会有所不同。流量速度用每升的脉冲来表示。在本图表中用 K 来表示。

9.4 Calibration of the flow meter

9.4.1 Introduction

When a nozzle opens, the liquid starts to flow through the flow meter.

Depending on the liquid characteristics, the rate of flow will be different.

The rate of flow is expressed in impulsions per liter. It is shown as K on the

根据流过流量计的产品的数量，流量计会产生相应的脉冲。 K

脉冲会由高速计数器来计算。

当达到设定的脉冲值的时候，高速计数器会发出信号来关闭灌装嘴的电磁阀。

由于 PLC 的扫描时间和其他机械的变化，灌装嘴的关闭时间会延迟。

因此体积的测定会高于目标体积的的设定值,多出的体积用Δ表示。

脉冲如下计算 I=K*V

流过流量计的体积：Vd = I / K

延迟多出的体积Δ＝Vm - Vd

体积测量值为 Vm= (I / K) + Δ

graph.

The flow meter generates pulses corresponding to the amount of product that Volume (ml)
goes through the flow meter.

Pulses are counted by a high speed Measured volume
counter card. (HSCC)

When the high speed counter card as counted a set limit of pulses, it sends a signal to close the electro-valve of the nozzle.

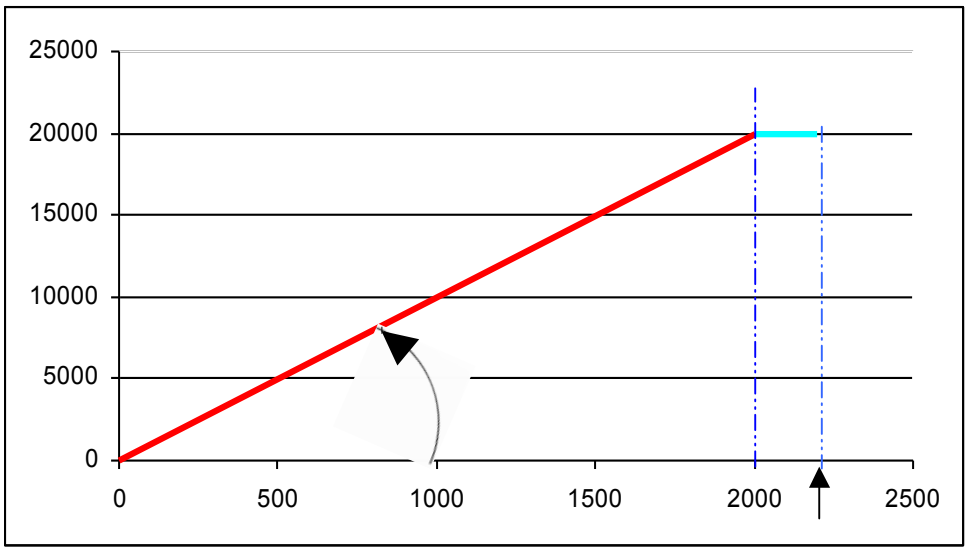
Due to PLC scan time and other mechanical variations, the nozzle closes with a time delay.

The volume measured is therefore higher than the targeted volume by an amount D.

The # of impulsions is calculated per the following function: I = K * V

The volume delivered by the flow meter is therefore: Vd = I / K

The volume due to the delay is DΔ = Vm – Vd The volume measured is Vm = (I / K) + ΔD



K

Example: Volume (ml)

K for water = 10000

I = 20000

V_d = I/K = 20000/10000 = 2 liters or 2000 ml

V_m = 2010 ml.

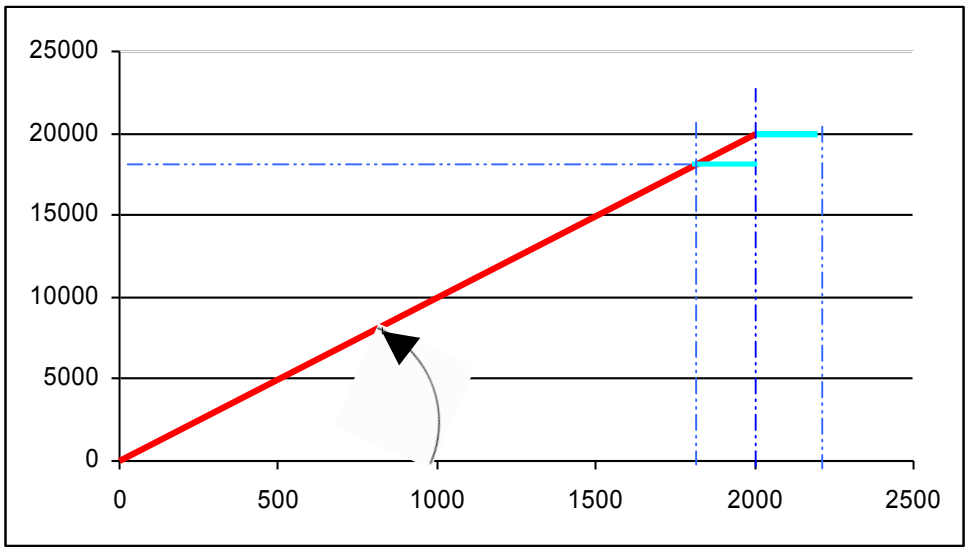
Δ = 2010 – 2000 = 10 ml

9.4.2 误差的弥补

为了弥补延时出现的误差,务必要减少脉冲的数量。

9.4.2 Compensation for the error

To compensate for the delay, it is necessary to reduce the number of impulsions.



The new # of impulsion is $I_n = K * (V - \Delta)$

Example

I_n = 10000 * (2 - 0,010) = 19900

9.4.3 灌装头的标定

以下是关于产品配方的参数。

产品

产品的密度

9.4.3 Calibration of the filling heads

In the recipe there are the following parameters about the product:

Product reference

Product density (g/ml)

目标体积

每个灌装头的脉冲

运行机器，开启选择性剔瓶功能，剔除至少 9 个瓶子。称瓶子的总重，再减去空瓶重量，最后把这些值取一个平均值。

进入 HMI 相关的标定的界面。

里面会显示以下的数据（举个例子）

Target volume (ml)

# of impulses per filling head

To calibrate a filling head, run the line and using the selective reject function, reject at least 9 bottles from the filling head to be calibrated. Weigh those bottles, deduct the empty bottle weight, and take the average weight of all those measures.

Go to the corresponding calibration screen on the HMI.

- The following information will show: (data are example values)

运行脉冲值 Runing Pulses	标定脉冲值 Calibrated pulses	称重 Weight
10000	10000	1000

在相关的地方输入平均称重值（比如 1010g）

Enter the average measured weight in the corresponding cell: (for example 1010 g)

运行脉冲值 Runing Pulses	标定脉冲值 Calibrated pulses	称重 Weight
10000	10000	1010

系统会计算脉冲值和纠正值

The system will calculate the pulses and correction values

运行脉冲值 Runing Pulses	标定脉冲值 Calibrated pulses	称重 Weight
10000	9900	1010

按下屏幕上的“确认”键，这样配方里和屏幕上显示当前显示的数值会改为确认的值。

Push the Confirm button on the screen; bring the new values into the recipe and into the current values on the screen.

运行脉冲值 Runing Pulses	标定脉冲值 Calibrated pulses	称重 Weight
9900	9900	1000

如上所述，你也可以通过取灌装后的瓶子称重的平均值来检验标定。如果错误仍然存在，把新的平均称重值再次输入到HMI，然后加载。

At this point you may want to verify the calibration by taking the average weight of bottles filled with the new settings, as described above. In the case there is still an error, then re-enter the new average weight on the HMI screen and make a new up-load.

10. 瓶型的更换

10.1 瓶子和盖子的清理

10.1.1 瓶子的清理

参照第十三章节，当产品灌完时，学习如何把瓶子从生产线上清理出来。

使用点动手柄把瓶子从机器里取出来。

10.1.2 产品的清理

参照第十三章节，当产品灌完时，学习如何把产品从灌装机里清理出来。

10.1.3 盖子的清理

见理盖机说明书

10. Size and brand changeover

10.1 Emptying bottles and caps

10.1.1 Emptying of packing material

See Chapter 13 running the equipment to learn to automatically empty the bottles from the line at production run-out.

Use the jog button to remove bottles that are still in the machine.

10.1.2 Emptying product from the line

See Chapter 13 running the equipment to learn to automatically empty the product from the filler at production run-out.

10.1.3 Emptying caps from the line

See the specification of cap sorter

10.2 选择配方

参照第十三章节，学习如何选择一个新的配方。

当用户选择一个新的配方值时，机器会自动调整高度、灌装数量、灌装速度、进瓶链和出瓶链的速度。

10.2 Selection of a new recipe

See the Chapter 13 running the equipment to learn how to select a new recipe.

When selecting a new recipe, the height adjustment of the machine is automatic, as well as the filling quantity, the filling speeds, the in-feed and out-feed conveyors speed.

10.3 瓶型更换部件（只争对达意隆瓶型件）

更换瓶形时，以下部件需要更换：

- 进瓶螺杆和螺杆后挡板；
- 进瓶星轮和护瓶板；
- 中间星轮和护瓶板；
- 旋盖机星轮和护瓶板；
- 抓盖头；
- 旋盖臂弹簧；
- 出瓶星轮和护瓶板；
- 分盖盘和护盖栏；

以下是各个部件的拆装步骤：

10.3.1 进瓶螺杆和螺杆后挡板

要取出进瓶螺杆，提起定位销手柄，用两手托着螺杆，然后，从另一侧拉出螺杆。如果要安装新的螺杆，对准定位销的位置，按照以上的相反步骤就可以安上螺杆了。

10.3 Changeover parts (only mean starwheel from TL, starwheel from other supplier does not include below scope)

The following size parts need eventually to be changed:

- the scroll and scroll back plate,
- the in-feed star-wheel and counter guides,
- the intermediate star-wheel and counter guides,
- the capper size parts and counter guides,
- the capper chuck,
- the capper arm spring,
- the out-feed star-wheel and counter guides,
- the cap star-wheel and cap guides

The disassembly procedures are shown as below:

10.3.1 Scroll and scroll back plate change

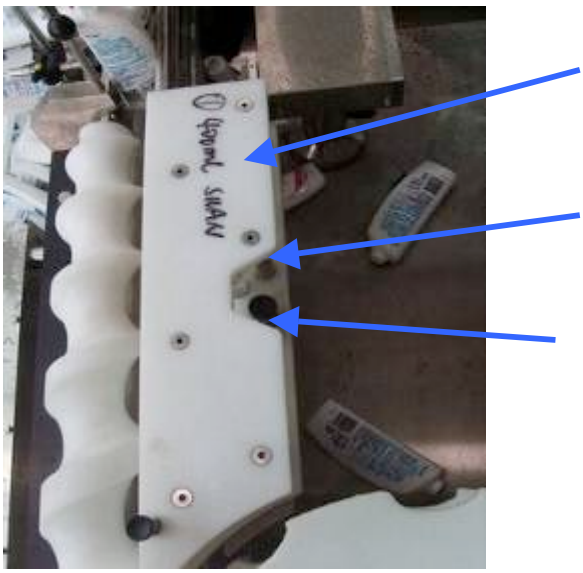
To remove the scroll, lift the pin handle. Hold the scroll firmly with two hands and pull it out. Repeat the scroll removing operation in the reverse order to install the new scroll.

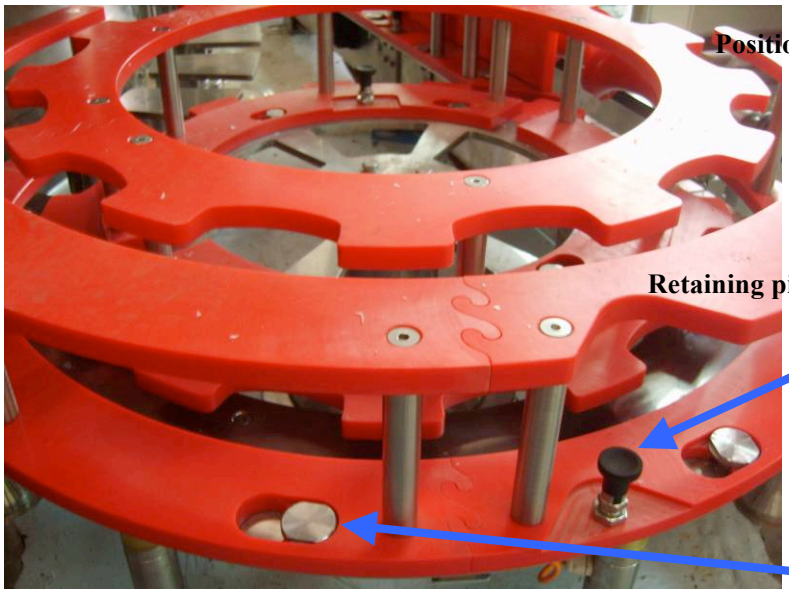
需要取出螺杆后挡板时，如下图，提起和转动后挡板的定位销，提起和转动上滑板的定位销，把上面的护板取出，再把整块后挡板推向右边，把它和限位销脱离，取出部件。

如果要安装此部件，请根据以上的相反步骤来操作。

To remove the scroll back plate and turn the back plate position pin, lift and turn the slide plate position pin, slide the plate away from the star-wheel, slide the total back plate assembly to the right to disengage it from the retaining pins and lift the assembly away.

To install follow the above procedure in reverse.





10.3.2 进瓶星轮和护瓶板的更换

首先提起并转动定位销，把星轮向逆时针的方向扭转，把它从限位销上分离出来，取出星轮。

要取出护瓶板也是按照以上的程序操作。

10.3.3 中间星轮和护瓶板的更换

中间星轮和护瓶板的更换按照进瓶星轮和护瓶板更换的步骤来执行。

10.3.2 The change of in-feed star-wheel and counter guides

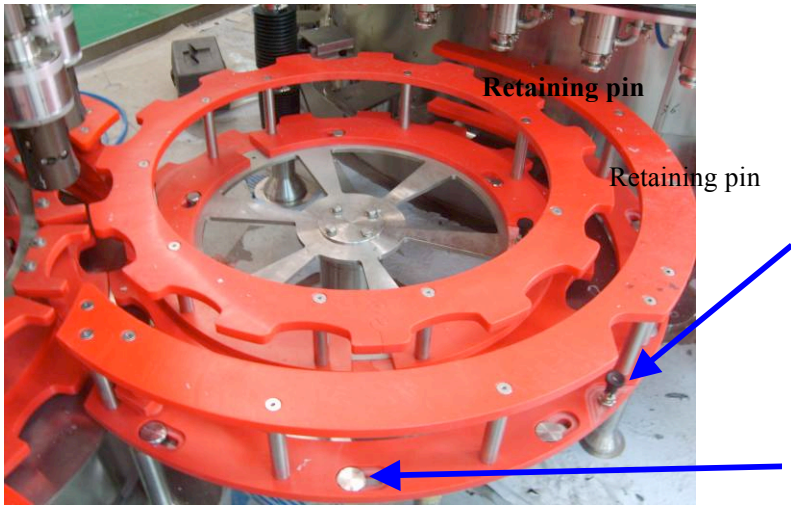
To remove the in-feed star-wheel, lift and turn the position pin at first, and then turn the star-wheel anti-clockwise to disengage it from the retaining pins and finally move the star-wheel away.

To remove the counter guides follow the same procedure as for the star-wheel.

10.3.3 The change of the intermediate star-wheel and counter guides

To remove the intermediate star-wheel and counter guides follow the same procedure as for the in-feed star-wheel.

Position pin

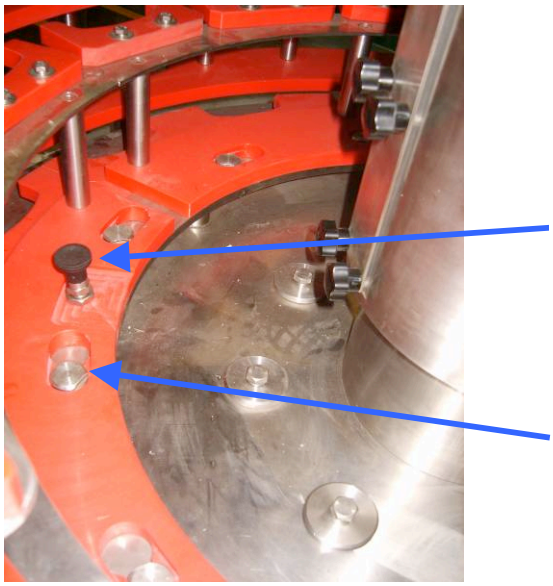


10.3.4 旋盖机星轮和护瓶板的更换

旋盖机星轮和护瓶板的更换按照进瓶星轮和护瓶板更换的步骤来执行。

10.3.4 The change of the capper star-wheel and counter guides

To remove the capper star-wheel and counter guides follow the same procedure as for the in-feed star-wheel.



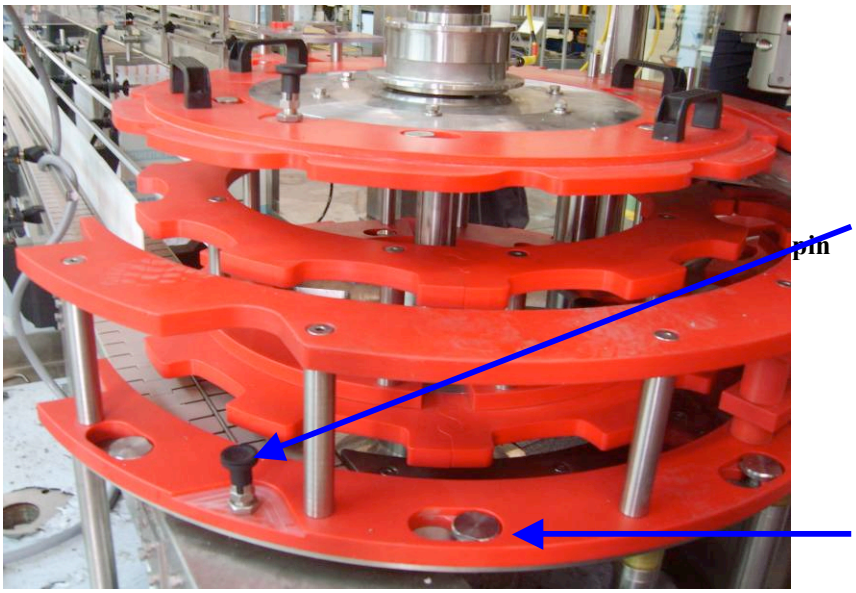
10.3.5 出瓶星轮和护瓶板的更换

出瓶星轮和护瓶板的更换按照进瓶星轮和护瓶板更换的步骤来执行。

10.3.5 Change of out-feed star-wheel and counter guides

To remove the out-feed star-wheel and counter guides follow the same procedure as for the in-feed star-wheel.

Position pin



10.3.6 分盖盘和护盖板的更换

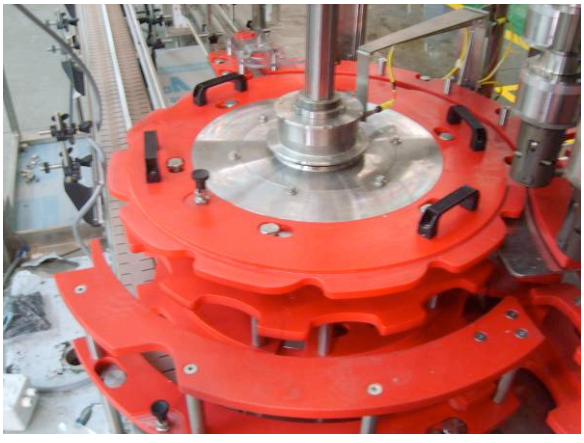
拧开分盖盘上面的梅花螺钉，就可以取出分盖盘。

转动护盖板上面的定位销，就可以把护盖板取出。

10.3.6 The change of the cap star-wheel and cap guide guides

Loose all of the quincunx bolts and move cap star-wheel out.

Turn all the retaining pins on the cap guide and move the cap guide out.



10.3.7 抓盖头的更换

拆下抓盖头，在抓盖头上螺纹轴的孔中插入一个工具防止其转动,使用合适的扳手扭

10.3.7 Change of capper chuck

To remove a capper chuck, prevent the rotation by inserting a tool in the hole

开抓盖头。在扭开旋盖头时要注意适当的握住抓盖头的方法,防止其掉落.

I 部件的调整和设定

下面部件以及设定需要最终的调整(请看 Mid Ranges 的说明书)

--进瓶输送链导板

--进瓶光电开关高度

--螺杆轴高度

--进瓶螺杆位置

--液位检测传感器

--剔除器

--合格瓶子出瓶链导板

--踢瓶输送链导板

provided for in the threaded shaft above the chuck. Use an appropriate spanner tool to unlock the chuck. Be careful to properly hold the chuck while unscrewing it to prevent it to fall.

I Adjustment of parts or settings

The following parts or settings need eventually to be adjusted: (see Mid Ranges manual)

- the in-feed conveyor guides,
- the height of the in-feed photocell,
- the scroll axis height,
- the scroll axis cross machine direction dimension,
- the level check sensor,
- the rejecter,
- the good bottle discharge conveyor guides,
- the reject conveyor guides,

11. 维护

机器的操作、维护和修理都应该由专业人员来操作。

在维护过程中，不要穿戴戒指、手表、手链、项链和手镯等首饰。

必须穿戴好劳保用品（防护手套、护目眼镜和劳保鞋等）。

严禁使用明火或是利器来清洁机器。

严禁在机器附近进食。

11.1 维护过程的安全细则

- **警告：**

1. 关闭机器
2. 把电源开关打到“关闭”的位置并且上锁，防止意外通电。
3. 机器的维护必须由专业人员来执行。

- **保护和安全装置**

1. 不要忽略任何保护和安全装置。
2. 如果机器要点动检查，在点动前，必须通知到所有在场的维护人员，以确保大家的安全。
3. 维护工作完成后，要把安全门关上，把防护栏装上。

- **在 CIP 清洗和消毒的过程中**

1. 保持电气元件和电子部件干燥。

11. Maintenance

The operation, maintenance, and repair of the equipment have to be performed only by those who are qualified.

Do not wear rings, watches, chains, bracelets, etc. during maintenance.

Always wear individual protection devices (protection gloves, goggles and shoes).

Do not use free flames, pointed elements or pins to clean the machine.

Do not smoke and drink besides machine.

11.1 Safety rules during maintenance

- **Warning:**

- Turn OFF the machine.

- Turn the disconnects to the “off” position, Lock the switch to prevent it being turning on.

- Working on the machine must be carried out by authorized professionals only.

- **Protective and safety devices**

- Do not override any protective and safety devices.

- For machine check-ups, if there is any requirement to inch machine, the maintenance personnel must be sure that no other persons are standing around it prior to inching machine.

- After having terminated maintenance work, close the guard doors and refit the protective grates and covers.

2. 电线、控制电柜和塑料部件不能接触酸碱洗剂。
3. 在 CIP 阶段，要检查 HMI 里的设置。
4. 还有一些单独的可视的检查。
5. 这时，维护工作还没有完成。

- **受压元件**

1. 机器和机器部件有时会要处在压缩空气的压力下，例如
2. FT 剔除器气压罐；
3. 气动元件；
4. CIP 部件；
5. 管道系统。

- **整个维护工作必须在机器释压的状态下进行。**
- 如果受压部件必须要打开或者是移动：

1. 使它们降压
2. 排气或是排液
3. 开机操作前把 CIP 的清洗剂冲洗干净

- **焊接或打磨**

维护工作开始之前，把所有的电气元件断开。

- **During CIP cleaning and disinfection**

- Keep electrical and electronic components/assemblies dry.

- Electrical lines, control cabinets, and plastic parts must not come into contact with acid and caustic solutions.

- Certain checks setting must be set on HMI during the CIP phase.

- These are solely visual checks.

- At this time, maintenance work must not be done.

- **Pressurized components**

- The machine and machine components might sometimes be under pressure, e.g.

a) FT rejecter air pressure vessel.
b) Pneumatic components.
c) CIP components.
d) Pipe system.

- It's imperative that the machine be depressurized during maintenance work.

- If pressurized components have to be opened or removed,

a) Depressurize them.
b) Drain the operating gases /liquids.
c) Wash out CIP cleaning agents/disinfectants, before starting any machine operation.

- **Welding and polish**

- Disconnect all electrical components before doing this type of work.

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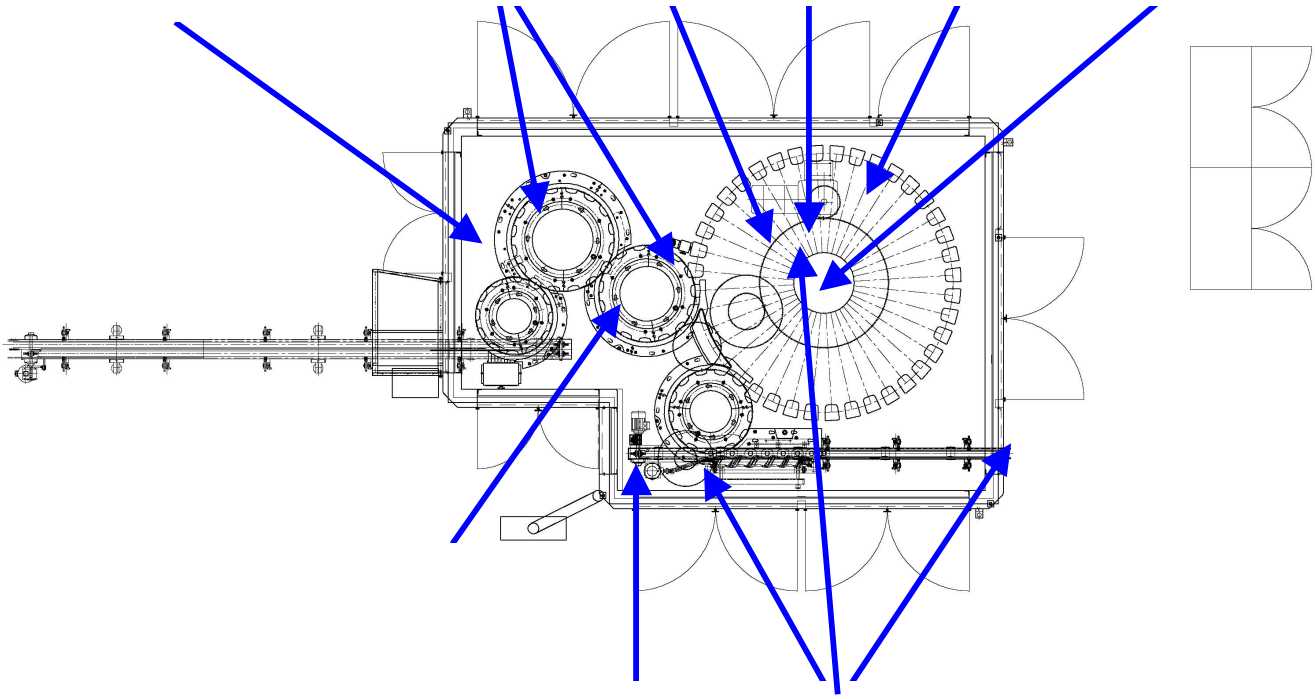
11.2 清洗和维护

每天生产完成后，都要进行常规的清洁。用水冲洗托瓶板、除尘，并用压缩空气吹干。清洁灌装机，把残余物排出，严格遵循 CIP 清洗步骤来清洗灌装机。清洗点和维护点如下图所示：

11.2 Cleaning and check points

For the routine cleaning, after each working day, sweeping the table with water, removing all the dirties, blowing and drying it with compressed air. Clean the filler, drain the residues away, cleaning it according to the CIP procedure rigidly. Refer to below drawing and table for cleaning points.



Techlong filler planned maintenance			
Number	**Work description**	**Frequency**	**Time required**
1	Clean the meshes	1x/week	2h
2	Lubrication of drives and bearing of infeed screw and infeed conveyor	1x/month	30 min
3	Lubricate capper and filling tables cams	1x/ 3	1.5h
4	Check the cardan joint of the infeed scroll		
5	Filling tables - clean, lubricate, check cam followers	1x/year	8h
6	Change the seals in filling heads	1x/ 6	8h
7	Check the oil in gearboxes	1x/ 6	0.5h
8	Change the springs for grabbing heads opening	1x/ 6	0.5h
9	Change the rubber in grabbing heads	1x/ 6	2h
10	Check the main drive gears	1x/ 6	2h
11	Change the seals in the main product distributor	1x/year	8h
12	Change the infeed screw cardanic shaft	1x/year	8h
13	Change the seals in filling heads	Regularly	8h/month

11.3 检查　　11.3 Ispection

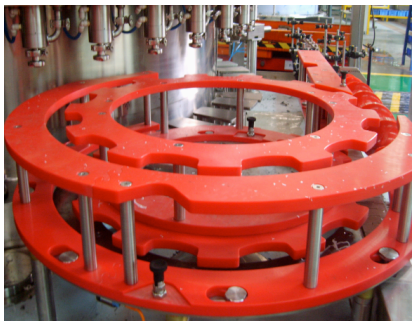
The table below lists all the inspection points which are to be checked periodically in order to guarantee the machine correct operation.

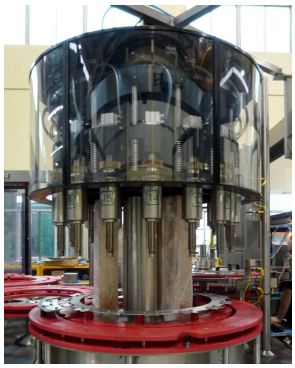
用户要定期对以下列表的检查点进行检查，以保证机器的正常运转。

	Description
1	**Bottle tables**
2	**Manual air dumps**
3	**Filling heads**
4	**Butterfly valves on pipe connected to filling heads**
5	**Cap in-feeding stop air cylinder**
6	**Cap grabbing finger air cylinders**
7	**No cap -no close finger air cylinder**
8	**Flow meters**
9	**Scroll and in-feed conveyor**
10	**FT reject system**
11	**Star wheel clutches**
12	**Guard doors**
13	**Photocells and sensors**

14	**Air combination units on filler and cap sorter**
15	**Rotary parts (e.g., conveyers, cylinders, solenoid valves)**

除了以上检查项目外，每周必须要固定对机器的部分部件进行检测，以保证机器的正常运转。

	1. Bottle table Check if the vertical shaft movement of the bottle table is regular and smooth during the filling phase. To check the movement, pushes the plates downwards. They must return automatically to their original position.	1. 托瓶板 灌装时，检查托瓶板的立轴运动是否规则和平滑。 把托瓶板向下按，它必须能自动回到原位。
	2. Star-wheel movement Check if the bottle carrying star wheel rotates correctly and smoothly. Check the star wheels overload clutches.	2. 星轮的运作 检查星轮是否能正确地平稳地运送瓶子。 检查星轮的进瓶星轮过载离合器
	3. Filling nozzles Check the correct operation and product output of the nozzles by pushing the button placed on each MAC valve. This function also used to fill a bottle for trial.	3. 灌装嘴 检测它是否能正确的运转，按下 MAC 阀上的按钮，检查产品的输出量是否符合要求。 这个操作也可以用于灌装测试。

	4. Product delivery butterfly valves Check if the opening and closing action of the product delivery valve is smooth and there are no leakages. Observe different liquids output amount by different handle position.	4. 产品蝶阀 打开和关闭产品蝶阀，检查是否运作平滑，是否有渗漏。 当蝶阀手柄处于不同位置时，观察产品不同的流量。
	5. Capper arms movement Check if the vertical movement of the capper arm is regular and not hindered by scraps or wear. To check the movement, move the chuck downwards or upwards to feel if the movement is smooth.	5. 旋盖臂的运作 检查旋盖臂的的立轴运动是否规则和平滑。 向上或向下移动旋盖臂，观察它是否能运作平滑。
	6. CAPPER FINGERS MOVEMENT Check if the movement of the trigger locking fingers placed on each cap locking group is regular and not hindered by scrap hangings or wear. To check the movement pushes the trigger locking gingers inwards.	6. 抓盖手指运动 检查抓盖手指运动是否正常，没有被阻或是有无磨损.

11.4 光电开关和传感器

传感器需要定期检测，而且需要每天对其进行清洁。只有专业人员才能更换和维修传感器。电子眼的反光镜面与电子眼是配对使用的，严禁私自移动其位置。如果要对其进行调整，反光镜面和电子眼需

11.4 Photocellsand sensors

The below table lists all the photocells and sensors which need to be inspected periodically, they need to be cleaned daily. Only qualified technician is authorized to replace or repair the sensors. The reflectors of photocell are locked with position of the photocells, they must not to be moved unless

一起移动。

there is adjustment require with corresponding photocells together.

Sensors list 传感器清单				
	Item	**Description**	**Manufacturer**	**Type**
1	42SQ1	Filler Minimum Accumulation Bottle Detection. 灌装机少瓶检测	SICK	WL170-P420
2	42SQ2	Filler Fallen Bottle Detection. 灌装机倒瓶检测	SICK	WL170-P420
3	41SQ1	CIP catch pan extended CIP 盘伸出	FESTO	SME-8-K-LED-24
4	41SQ2	CIP catch pan retracted CIP 盘收回	FESTO	SME-8-K-LED-24
5	42SQ3	Bottle presence in in-feed star-wheel 进瓶星轮有瓶	SICK	WL170-P420
6	47SQ7	Cap star-wheel overload detection 分盖盘过载	ROCKWELL	872C-D4NP12-D4
7	WSQ 18	Rejecter synchronization 剔瓶器同步	P+F	UB300-18GM40-E5-V1-Y
8	43SQ2	Minimum cap presence in airveyor 风道最小盖检查.	SICK	WSE4-3P2130
9	Blank	Blank 空白		
10	Blank	Blank 空白		
11	42SQ5	Downstream conveyor full- filler shut down 出瓶链后段满	SICK	WL170-P420
12	43SQ5	Cap checking In Capdisc 在分盖盘检测盖子	FESTO	WL170-P430

13	44SQ4	Cap star-wheel height upper limit 盖盘高度上限	ROCKWELL	872C-D4NP12-D4
14	44SQ5	Cap star-wheel height lower limit 分盖盘高度下限	ROCKWELL	872C-D4NP12-D4
15	42SQ7	Down-stream conveyor half full 出瓶链后段半满	SICK	WL170-P420
16	52SQ1/52SQ2	Cap presence on bottle and High Cap 瓶子有盖和高盖检测	SICK	VRF-P TB-01
17	43SQ8	Capper height upper limit 旋盖机高度上限	ROCKWELL	872C-D4NP12-D4
18	44SQ1	Capper height lower limit 旋盖机高度下限	ROCKWELL	872C-D4NP12-D4
19	47SQ3	Reject conveyor full 剔瓶链满	SICK	WL170-P420
20	47SQ4	Product level detection 产品液位检测.	OMRON	E2K-C25ME1
21	43SQ6	Filler height upper limit 灌装机高度上限	ROCKWELL	872C-D4NP12-D4
22	43SQ7	Filler height lower limit 灌装机高度下限	ROCKWELL	872C-D4NP12-D4
23	47PS1	Filler compressed air pressure low limit 灌装机气压低限	FESTO	PEV-1/4-B-OD
24	Blank	Blank 空白	FESTO	PEV-1/4-B-OD
25	47SQ5	Filler electrical zero 灌装机电气零点	ROCKWELL	872C-D4NP12-D4
26	44SQ6	Infeed star-wheel overload detection 进瓶星轮过载检测	ROCKWELL	872C-D4NP12-D4
27	44SQ7	Intermediate star-wheel overload detection 中间星轮过载检测	ROCKWELL	872C-D4NP12-D4
28	44SQ8	Scroll overload detection 进瓶螺杆过载检测	ROCKWELL	872C-D4NP12-D4
29	47SQ6	Capper electrical zero 旋盖电气零点	ROCKWELL	872C-D4NP12-D4
30	47SQ1	Out-feed star-wheel overload detection ction 出瓶星轮过载检测	ROCKWELL	872C-D4NP12-D4

31	Blank	Blank 空白		
32	Blank	Blank 空白		
33	FM#01-40	Magnetic Flow meters 电磁流量计	E&H	5BH15-1G3A1GB041A1

11.5 润滑

润滑对于机器的维护非常重要。定期地适当地对机器进行润滑，能够使机器保持在一个良好的运行状态。

在进行润滑前：

- 严禁把矿物油和合成油混合在一起；
- 严禁把各种不同类型的皂化油混和在一起；
- 在极端的气候条件下，必要的时候要更换不同密度的润滑油。（例如：低温时选用薄的润滑油）
- 在机器调试好之前 50 小时内，不要以最大的速度来运行机器（例如：300 瓶/分）。

注意：废弃润滑油的具体处理方法要根据润滑油的类型来操作。而且必须按照当地的法律、相关规定和润滑油使用期限来及时处理废弃润滑油。

11.5 Lubrication

For a better preventative maintenance, the proper lubrication helps to keep machine in good conditions. Regular lubrication need to apply the whole life of the machine.

Before lubrication operation,

- Do not, by any means, mix mineral oils with synthetic oils.
- Do not, by any means, mix different types of saponified grease.
- - Under extreme climatic conditions, it might be necessary to use grease with a different viscosity (e.g., use thin-bodied oils at extremely low temperatures)
- The machine should not be operated at its maximum speed (i.e. 300 bpm) during the 50 operating hours before it has been completed commissioning.

Note: Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of the disposal.

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Lubrication points 润滑点

Position	Place description	Lubricant type	Frequency	Color standard
1	Lubrication of conveyors bearings (including cap vertical one)	Alvania RL 3	1x/month	White
2	Lubrication of main drive bearing	Alvania RL 3	1x/week	White
3	Check of main drive gearbox oil	PP90 H	1x/month	Blue
4	Lubrication of the main drive gears	Alvania RL 3	1x/month	White
5	Lubrication of capping heads teeth shaft	Alvania RL 3	1x/week	White
6	Lubrication of rollers and chains for infeed screw setting	Alvania RL 3	1x/month	White
7	Lubrication of capper cam	Alvania RL 3	1x/month	White
8	Lubrication of the capping heads guiding bars	Alvania RL 3	1x/ 3 months	White
9	Lubrication of infeed/out feed conveyor drive	Alvania RL 3	1x/month	White
10	Lubrication of the infeed screw drive	Alvania RL 3	1x/month	White
12	Lubrication of infeed conveyou drive gears	Alvania RL 3	1x/week	White

Note: The view on the following shows all lubrication points. They are numbered according to top references:

注：下面的图指示的是全部的润滑点，图中编号根据上表编制。

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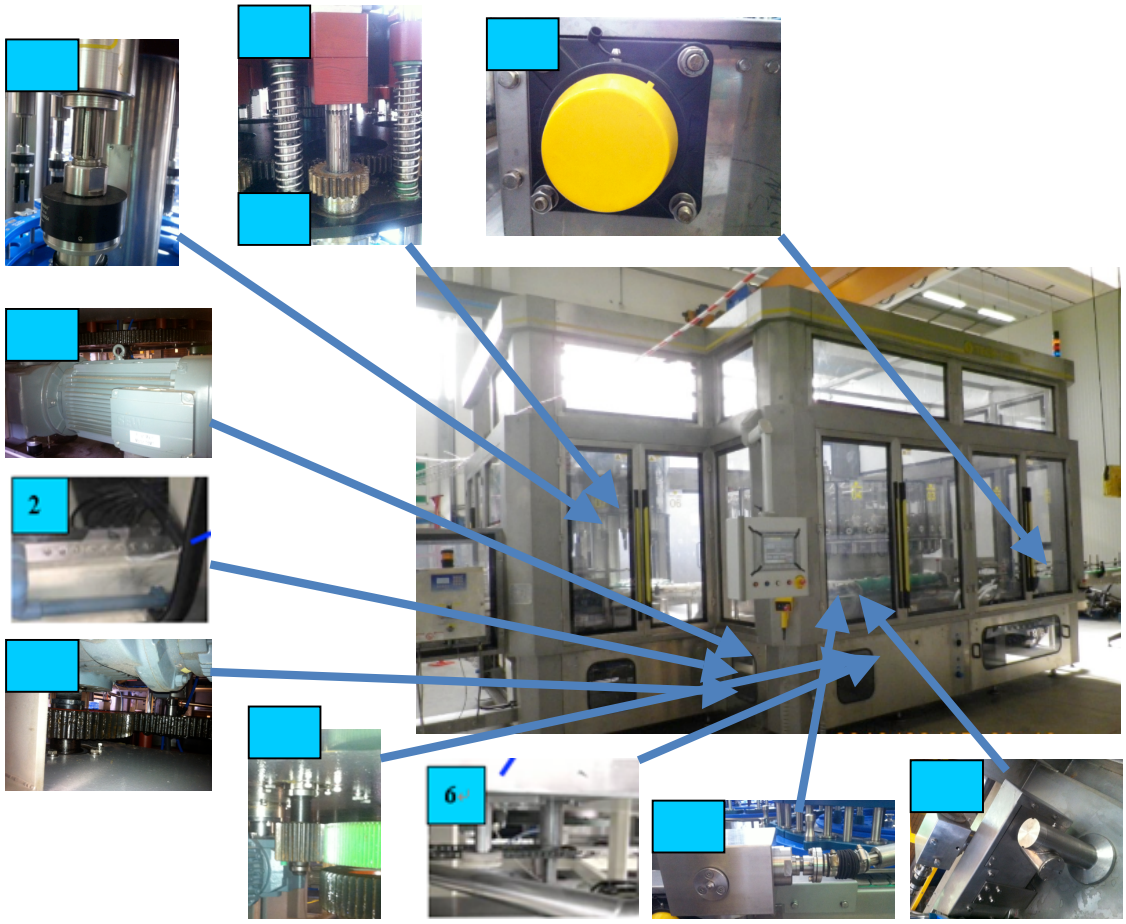

Motor and reducer list 电机和减速器清单

Main drive	**1**	**SEW**	KA87DRE132M4/BE11/HF/M6/A/90°	**5.5Kw**
Capper over speed drive	**1**	**SEW**	KAF47DRE90L4/1.5kW/i=15.86/M5/A/180°	**1.5Kw**
Cap star-wheel height adjustment	**1**	**SEW**	SAF47DRE80M4/BE1/0.75kW/i=47.32/φ25/M6/A/270°	**0.75Kw**
Capper height adjustment	**1**	**SEW**	SAF47DRE80M4/BE1/0.75kW/i=47.32/φ25/M6/A/270°	**0.75Kw**
Filler height adjustment	**1**	**SEW**	DRE90M4BE2/FI/B3/270°	**1.1Kw**
In-feed conveyor drive	**1**	**SEW**	SA37DRE80M4/0.75kW/i=6.8/M6/A/270° -2″	**0.75Kw**
Out-feed conveyor drive	**1**	**SEW**	SA47/T DRE80M4/0.75KW/i=10.8/ϕ25/M2A-270°	**0.75Kw**

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Pneumatic parts list 气动部件清单

	Description	Drawing No.	Serial No.	Manufacturer
Air source				
1	Manual on-off valve	MV01	HE-1/2-D-MIDI	FESTO
2	Pressure-reducing valve	MV02	LFR-1/2-D-7-MIDI-A	FESTO
3	On-off valve	AV03	HEE-1/2-D-MIDI-24	FESTO
4	Pressure switch	PS04	PEV-1/4-B-OD	FESTO
Block bottle				
1	Block bottle cylinder	CL905	DPZ-32-50-P-A	FESTO
2	Solenoid valve	AV903	MSFG-24/42-50/60-OD	FESTO
3	Pressure-reducing valve	MV901	LR-1/4-D-7-MINI	FESTO
CIP				
1	CIP drip tray cylinder	CL805	DNC-50-160-PPV-A	FESTO
2	Solenoid valve	AV803	MSFG-24/42-50/60-OD	FESTO
3	Pressure-reducing valve	MV801	LR-1/4-D-7-MINI	FESTO
Blowing cap				
1	Throttling check valve	MV705	GR-QS-6	FESTO
2	Solenoid valve	AV703	MSFG-24/42-50/60-OD	FESTO

3	Pressure reducing valve	MV701	LR-1/4-D-7-MINI	FESTO
Block cap				
1	Block cap cylinder	CL605	ADVUL-20-10-P-A	FESTO
2	Solenoid valve	AV603	MSFG-24/42-50/60-OD	FESTO
3	Pressure-reducing valve	MV601	LR-1/4-D-7-MINI	FESTO
Capper chuck				
1	Double-piston cylinder	CL505	DPZ-10-25-P-A	FESTO
2	Solenoid valve	AV503	MSFG-24/42-50/60-OD	FESTO
3	Pressure-reducing valve	MV501	LR-1/4-D-7-MINI	FESTO
Capper branch				
1	Pressure-reducing valve	MV401	LR-1/2-D-7-MIDI	FESTO
2	Double-lever roller valve	AV403	M5L220-06-KGS-026B	AirTAC
3	Capper chuck cylinder	CL405	ADVC-50-20-I-P	FESTO
Filler branch				
1	Pressure-reducing valve	MV301	LR-1/2-D-7-MIDI	FESTO
2	Solenoid valve for filling	AV303	916B-PM-613JD	MAC
1	Cut-off valve	MV201	HE-2-QS-8	FESTO
2	Air gun plug	MV202	KS3-1/8-I	FESTO

3	Air gun socket	MV203	KD3-1/4-A	FESTO

11.6 定购备件

当您要向我们定购备件时，请通过电话、传真或邮件的形式和我们联系，并且提供以下信息：

1）机器的型号（铭牌上有注明）；

2）在图纸上找到部件的名称

3）部件的图号、数量和期望发货日期

以下是我们的联系地址：

中国广州萝岗区云埔一路 23 号

联系电话：＋86（0）20—82266688

售后服务部电话：＋86（0）20－82266999

传真：＋86（0）20—82266909

邮箱：service@tech-long.com

tech-long@vip.163.com

以下给您举个例子：

如果您需要定购托瓶板的滚轮，查找说明书附件的图纸找到部件的准确名称和图号。我们可以看到“滚轮”的号码为 24，图号为“TFC4016.64A.02.14.11”。

11.6 How to order spare parts

When ordering spare parts indicate:

1) The machine model as shown on the nameplate;

2) Check the part on the drawing and verify it with the description in the list.

3) Tell us about the part number, the quantity and the delivery date expected by telephone or Fax or e-mail.

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After Sales Tel:+86 (0)20-82266999

Fax: +86 (0)20-82266909

E-mail: service@tech-long.com

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Here is an example about how to order spare parts.

To order the cam follower for the lifting table, you need to look into the drawings attached to this manual to find the details for the part. Then verify the number with the list next to the drawing. In this case, it is part number 24, roller, drawing code is TFC4016.64A.02.14.11.

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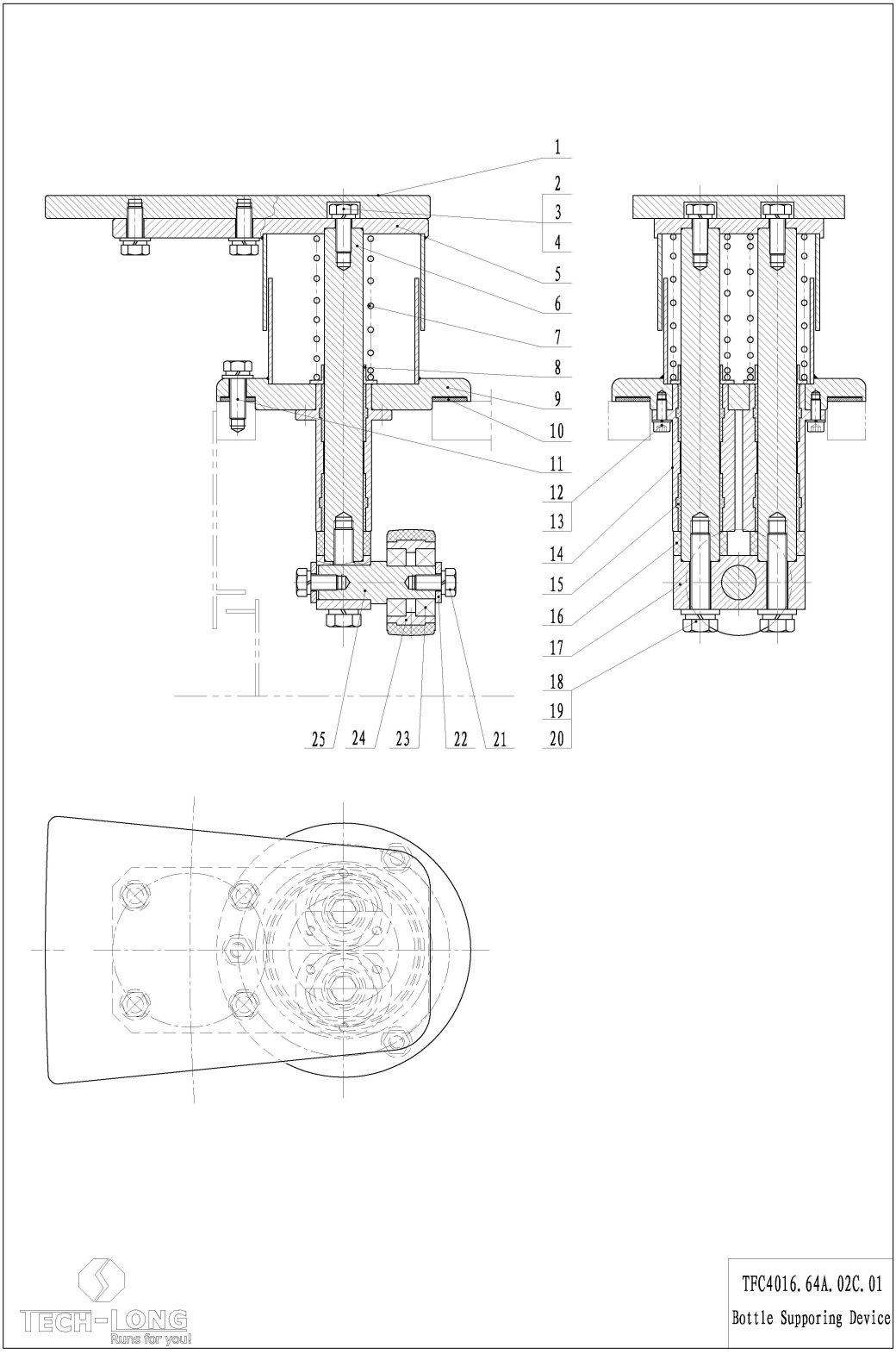

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No.	Code	Description	名称	QTY.	Remark
1	TFC4016.64A.02C.01-01	Supporting Plate	托板	1	
2	GB/T 5783	Screw M8×20	螺钉 M8X20	6	
3	GB/T 93	Washer 8	垫圈 8	11	
4	GB/T 97.1	Spring Washer 8	垫圈 8	7	
5	TFC4016.64A.02C.01.02	Connection Plate	连接板	1	
6	TFC4016.64A.02C.01-03	Shaft	导轴	2	
7	TFC4016.64A.02C.01-04	Spring	压簧	2	
8	TFC4016.64A.02C.01-05	Spring Seat	压簧座	2	
9	TFC4016.64A.02C.01.06	Base Seat	底座	1	
10	TFC4016.64A.02A.14-16	Gasket	垫	1	
11	GB/T 5783	Bolt M8×25	螺栓 M8×25	3	
12	GB/T 70.1	Bolt M5×12	螺栓 M5X12	6	
13	GB/T 93	Washer 5	垫圈 5	6	
14	TFC4016.64A.02B.01-01	Bearing Seat	轴承座	2	
15	JUM-02-20	Bearing	直线轴承	4	
16	TFC4016.64A.02.14-08	Buffer Gasket	缓冲垫	2	
17	TFC4016.64A.02C.01-07	Mounting Block	安装块	1	
18	GB/T 5783	Screw M10×45	螺钉 M10X45	2	
19	GB/T 93	Washer 10	垫圈 10	2	
20	GB/T 97.1	Spring Washer 10	垫圈 10	2	
21	GB/T 5783	Bolt M8×16	螺栓 M8X16	2	
22	TFC4016.64A.02.14-10	Plate	轴端挡板	2	
23	GB/T 276	Bearing 6003-2LS	轴承 6003-2LS	2	
24	TFC4016.64A.02.14.11	Roller	滚轮	1	
25	TFC4016.64A.02C.01-08	Small Shaft	小轴	1	

TFC4016.64A.02C.01
Bottle Supporing Device

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Guangzhou Tech-Long Packaging Machinery Co. , Ltd.

机器名称: 灌装旋盖一体机 Machine's designation:Rotary filler-capper Mono-bloc	型号: TL-FC-4016-64 Model: TL-FC-4016-64
序列号.: Serial No.:	生产日期：Dec 2006 Production date: Dec 2006

	图纸名称和图号 Drawing and Drawing No.	部件图号 Drawing code	名称 Name	数量 Qty.	期望发货日期 Desired delivery date
1	Bottle Table; TFC4016.64A.02C.01	TFC4016.64A.02.14.11	Roller	5	14-Feb-07
2					
3					
4					
5					

12. 运转机器：HMI 操作界面介绍

12.1 主菜单

在主画面中，我们可以查看到机器 PackML 的当前状态和当前模式，还有速度、产量、灌装压力、当前配方、配方容量等。

12. HMI screen description

12.1 Main screen

This main screen shows PackML status and current mode, as well as display machine's status, such as speed, output, filling pressure, current recipe, volume and so on.

Fig 13.0-1

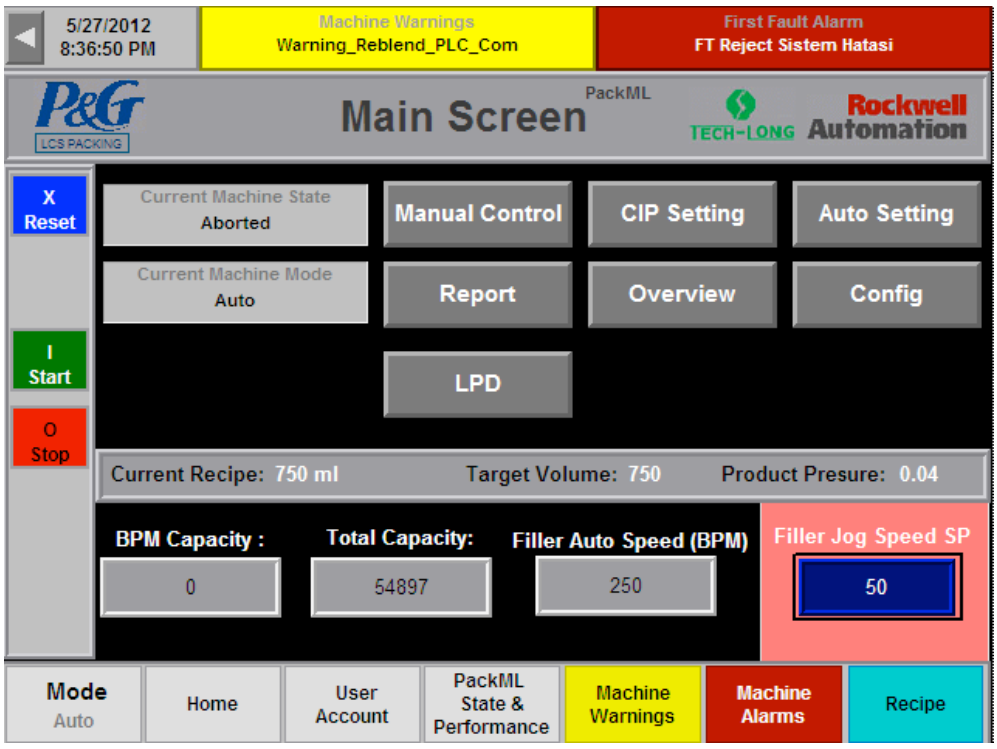


Fig 13.0-2

名称 Item（图 13.0-2）	描述 Description
Mode	Press "Mode" button to enter into sub-screen and select target mode (fig 13.0-1). This sub-screen includes auto, manual, jog, dry run, CIP mode and the current mode. (Note: The current mode could be changed only when PackML is under Idle status.) 点击 Mode（注：Mode 下方显示当前模式，如当前显示 Auto）进入模式选择子菜单（图 13.0-1），在此子菜单可选择自动、手动、点动、干转、CIP 等模式，以及关闭此菜单和显示当前所选择模式。 （注意：只有 PackML 状态在 **Idle** 状态下才可改变模式）
Home	Current screen 当前画面
User Accoun	Enter to user account screen 进入用户管理画面

PackML State & Performance PackML	Enter to PackML status monitoring screen 进入 PackML 状态监控画面
Machine Warnings	Enter to machine warning screen 进入机器警告画面
Machine Alarms	Enter to machine alarms screen 进入机器报警画面
Recipe	Enter to recipe management screen 进入配方管理画面
Manual Control	Enter to manual control screen 进入手动画面
CIP Setting	Enter to CIP setting screen 进入 CIP 画面
Auto Setting	Enter to auto setting screen 进入自动设定画面
Report	Enter to report screen 进入报告画面
Overview	Enter to overview screen 进入总览画面
Config	Enter to configuration screen 进入配置画面
LPD	Enter to LPD screen 进入 LPD 画面
Current Recipe	Display current working recipe name 显示当前工作状态的配方名称
Target Volume	Diplay the current bottle size 显示当前瓶子的容量
Product Presure	Display the current filling pressure 显示当前的灌装压力
BMP Capacity	Display the capacity per minute 显示每分钟的产量
Total Capacity	Display the total capacity 显示总生产数量
Filler Auto Speed (BPM)	Display auto speed 显示自动速度
Filler Jog Speed SP	Filler jog speed setting Note: 1. Data could be changed only when packml is under **idle, held, complete, resetting, clearing, stopped, aborted** status. 2. Outline border of button shows red, indicating that the set data overpasses permitted range. 3. Outline border of button shows orange, indicating that the set data is not allowed to be changed. 4. Outline border of button shows yellow, indicating that the current data is different to the last input data. 5. Maximun jog speed is 50. 灌装点动速度设定 注意： 1、只有 PackML 状态在 **Idle、Held、Suspended、Complete、Resetting、Clearing、 Stopped、 Aborted** 状态下才可改变数据。

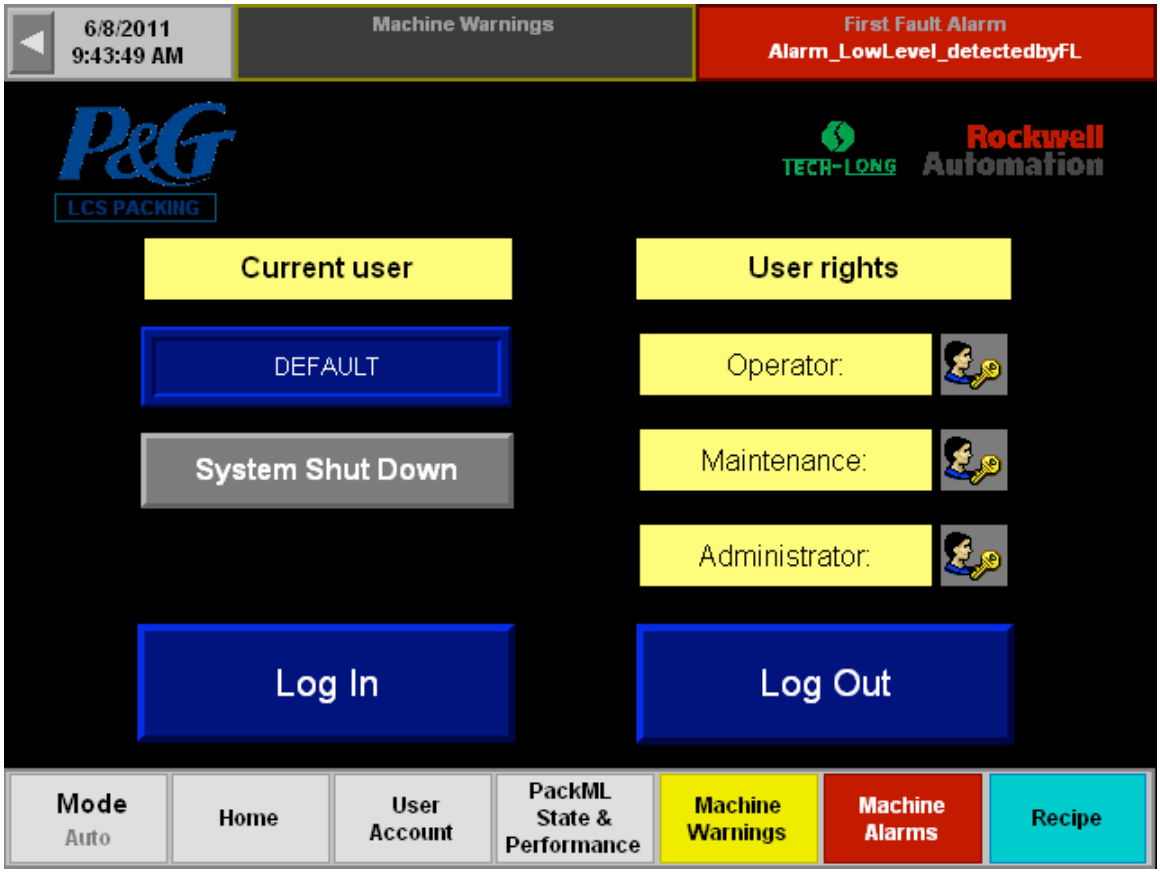
	2、当按钮外框颜色显示为红色，表示设定数据超出范围。 3、当按钮外框颜色显示为橙色，表示数据部不允许更改。 4、当按钮外框颜色显示为黄色，表示此次输入数据与上次不同。 5、点动速度最大值是 50.
Reset	Reset button 复位按钮
Hold	Hold button under CIP mode. CIP 模式下的 Hold 按钮
Start	Start button 启动按钮
Stop	Stop button 停止按钮
Current Machine Mode	Show the current machine mode. 显示机器当前模式
Current Machine State	Show the current machine state 显示机器当前状态
Machine Warnings	Press this button to enter to machine warnings screen; 显示机器警告，以及点击它可直接进入机器警告画面
First Fault Alarm	显示机器第一报警，以及点击它可直接进入机器报警画面 Display the firt fault alarm; press it to enter to machine alarm screen
	Press this button to return to the last screen 点击它可返回上一次显示画面

12.2 用户帐户管理

在输入相应的信息后，用户可以登陆。当前用户的名称和用户的权限将显示在屏幕上。

12.2 User account

When access to secured screens needed, user can log in. Current user name and user rights are shown on the screen.



Item	Explanation
登陆 Log in	当前用户获得权限登陆 Current user will get rights for access to secured screens
登出 Log out	参数设置完毕后，登出保存数据。 After access parameters setting, log out to protect the values.

Default passwords 默认密码:

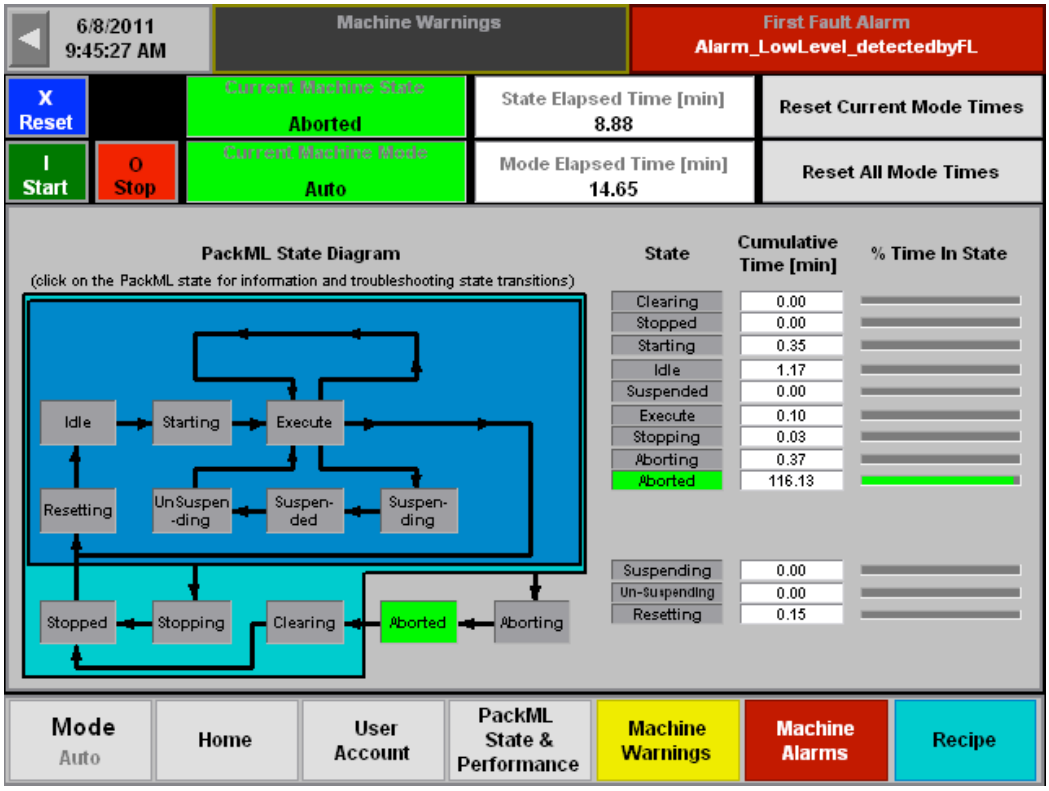
Rights 权限	Username 用户名称	Password 密码
Operator 操作人员	PG	12345
Maintenance 维护人员	Z	V
Advanced 高级用户	TL	123

12.3 PackML 状态

在此画面可监控不同模式下 PackML 状态，以及每个状态和每个模式的累计时间。

12.3 PackML Status

Monitor PackML status and accumulative time of each mode via the bellow screen.

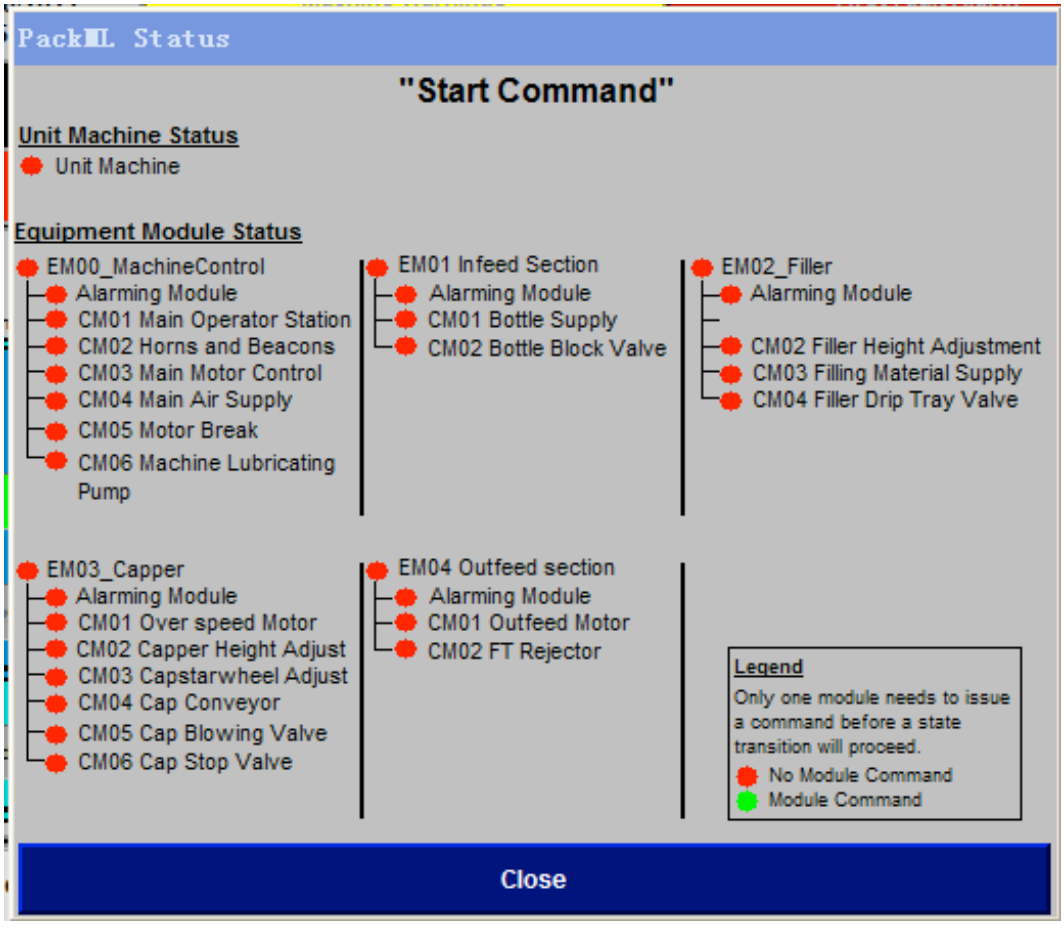


Item 名称	Description 描述
Reset	Reset button 复位按钮
Start	Satrt button 启动按钮
Stop	Stop button 停止按钮
Current Machine Mode	Display machine's current mode 显示机器当前模式
Current Machine State	Display machine's current state 显示机器当前状态
Machine Warnings	Display machine warning information and press it to enter machine warning screen. 显示机器警告，以及点击它可直接进入机器警告画面
First Fault Alarm	Display mahine fist fault alarm and press it to enter machine alarm screen. 显示机器第一报警，以及点击它可直接进入机器报警画面

	Press this button(left) to return to last screen.点击它可返回上一次显示画面
State Elapsed Time [min]	The state elapsed time 状态累计时间【分】
Mode Elapsed Time [min]	The mode elapsed time 模式累计时间【分】
Reset Current Mode Times	Times to reset the current mode 复位当前模式累计时间
Reset All Mode Times	Times to reset all modes 复位所以模式累计时间

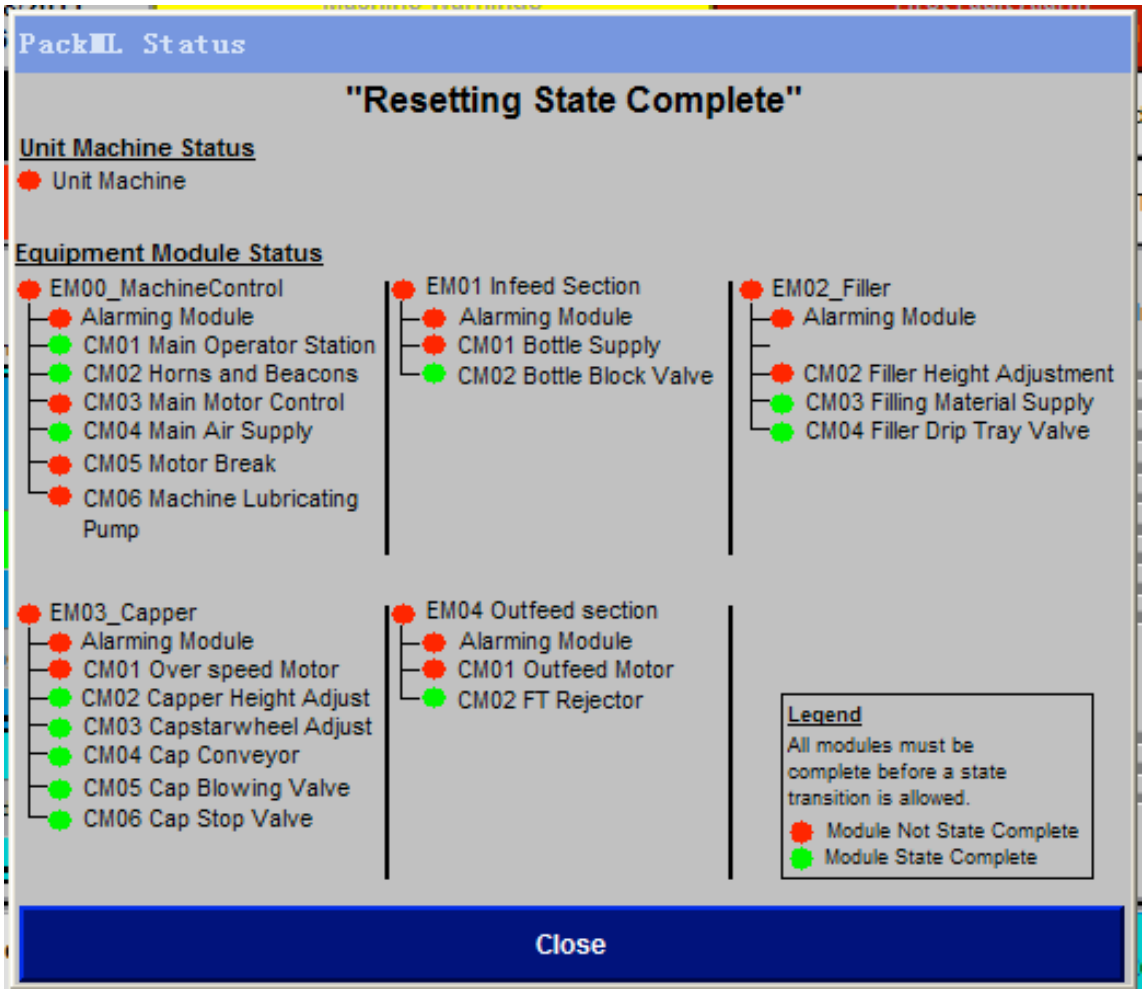
注意 1：当点击相应的 PackML 状态的~ed 状态或者 Idle，Execute 时，将会进入 PackML 状态的命令监控画面，例如点击 Idle 则进入 Start Command 命令监控画面，在此画面可以监控 PLC 程序的每个 CM 和 EM 是否有相应的命令发生。

Note 1：If press PackML ~ed，idle，execute status， then it will enter status monitoring and control screen. For example, when you press “idle”, then enter Start Command screen, through which every CM and EM of PLC be monitored.



注意 2：当点击相应的 PackML 状态的~ing 状态时，将会进入 PackML 状态相应的命令完成状态监控画面，例如点击 Resetting 则进入 Resetting State Complete 命令完成状态监控画面，在此画面可以监控 PLC 程序的每个 CM 和 EM 的命令状态是否完成，只有相应的命令状态完成了，PackML 状态才会向下一个状态转移。

Note 2: If press PackML ~ing, then enter state complete screen. For example, press “resetting” and enter “resetting state complet”screen, through which complete state of CM and EM could be monitored. Only when the corresponding command is completed, PackML state will shift to the next.

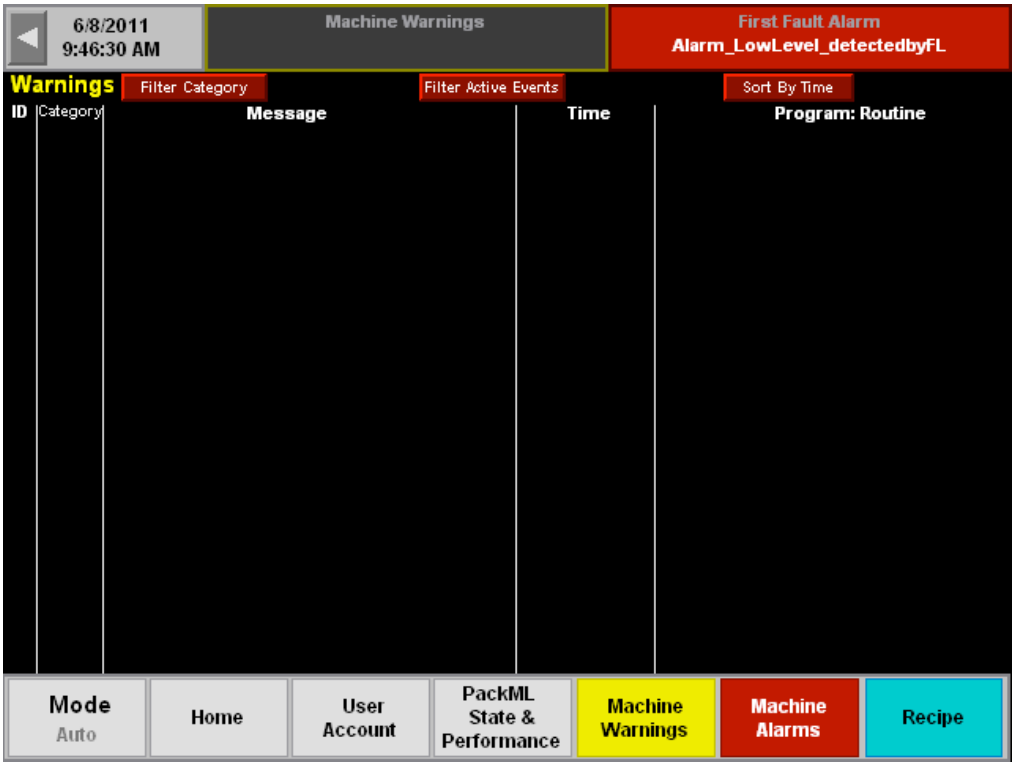


12.4 机器警告

在此画面可显示机器警告事件的 ID 号、等级、消息、时间和事件所属 PLC 的 EM 和 CM 等

12.4 Machine Warnings

This screen shows machine warning's ID no. , category, alarm message, time and EM/CM of PLC.



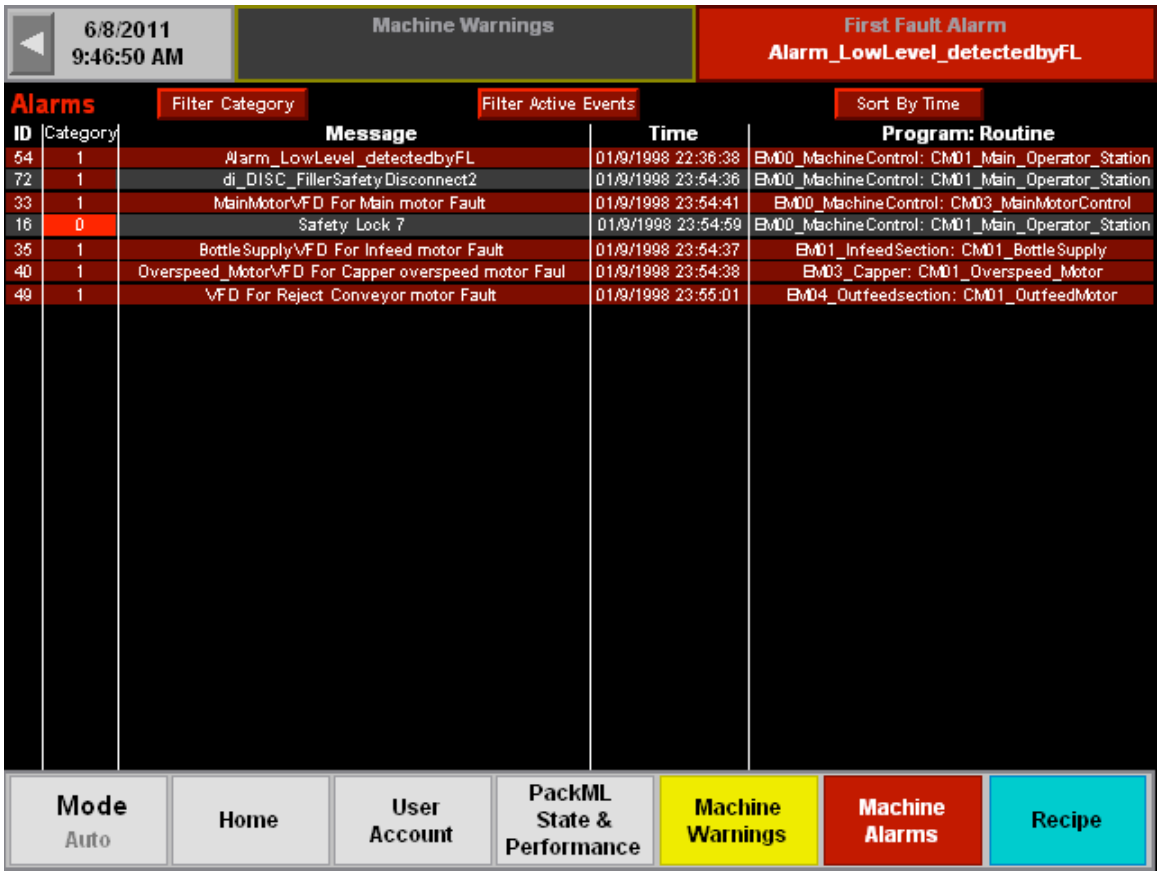
名称 Item	描述 Description
Filter Category	Filt catetgory 过滤等级
Filter Active Events	Filt events' EM and CM of PLC. 过滤事件所属 PLC 的 EM 和 CM
Sort By Time	Sorted by time 按时间排列
Group By Category	Grouped by category 按等级排列
Machine Warnings	Display machine warning and press it to enter machine warning screen.显示机器警告，以及点击它可直接进入机器警告画面
First Fault Alarm	Display machine firt fault alarm and press it to enter machine alarm screen.显示机器第一报警，以及点击它可直接进入机器报警画面
	Press the left button to return to last screen.点击它可返回上一次显示画面

12.5 机器报警

在此画面可显示机器报警事件的 ID 号、等级、消息、时间和事件所属 PLC 的 EM 和 CM 等

12.5 Machine Alarms

This screen shows machine alarm's ID no. , category, alarm message, time and EM/CM of PLC.



名称 Item	描述 Description
Filter Category	Filt catetgory 过滤等级
Filter Active Events	Filt events' EM and CM of PLC. 过滤事件所属 PLC 的 EM 和 CM
Sort By Time	Sorted by time 按时间排列
Group By Category	Grouped by category 按等级排列
Machine Warnings	Display machine warning and press it to enter machine warning screen.显示机器警告，以及点击它可直接进入机器警告画面
First Fault Alarm	Display machine firt fault alarm and press it to enter machine alarm screen.显示机器第一报警，以及点击它可直接进入机器报警画面

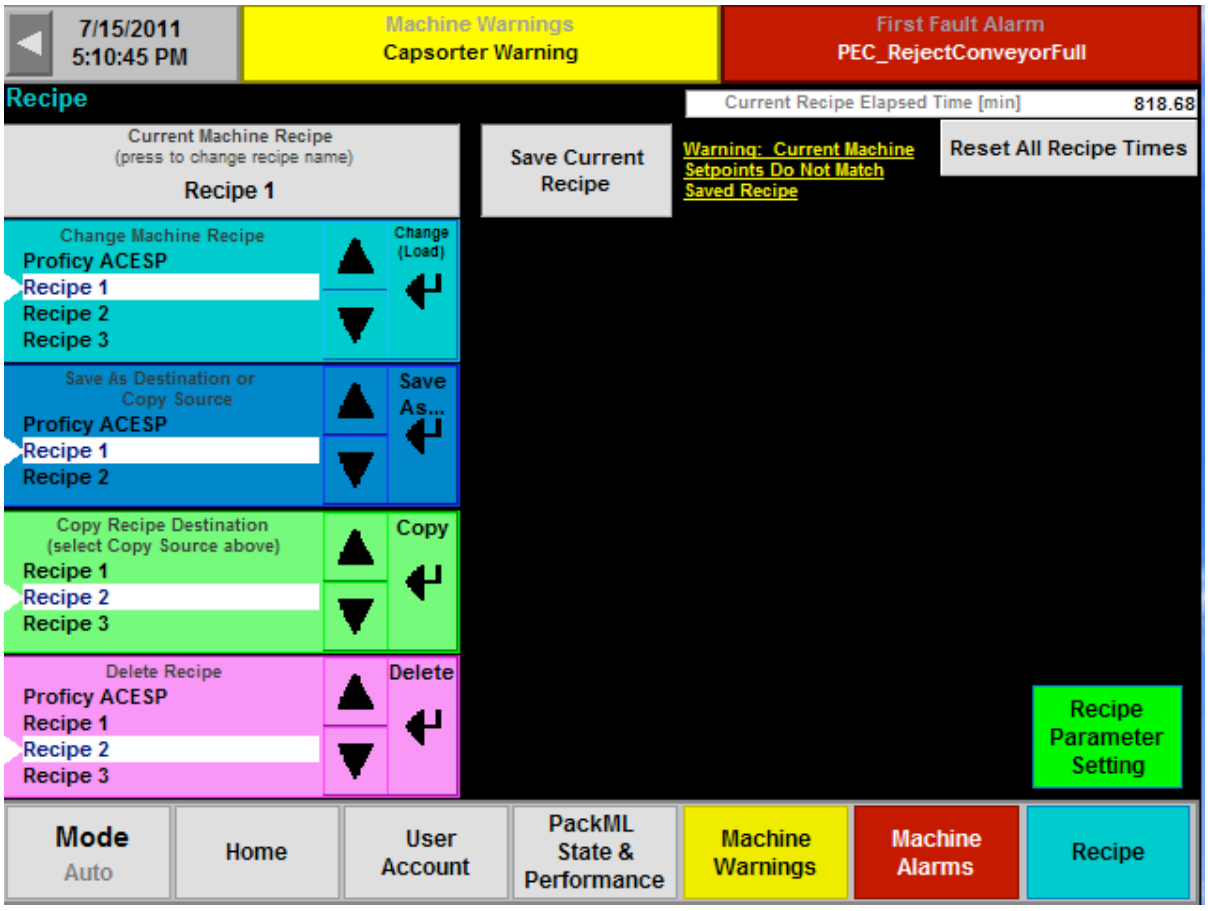
	Press the left button to return to last screen.点击它可返回上一次显示画面

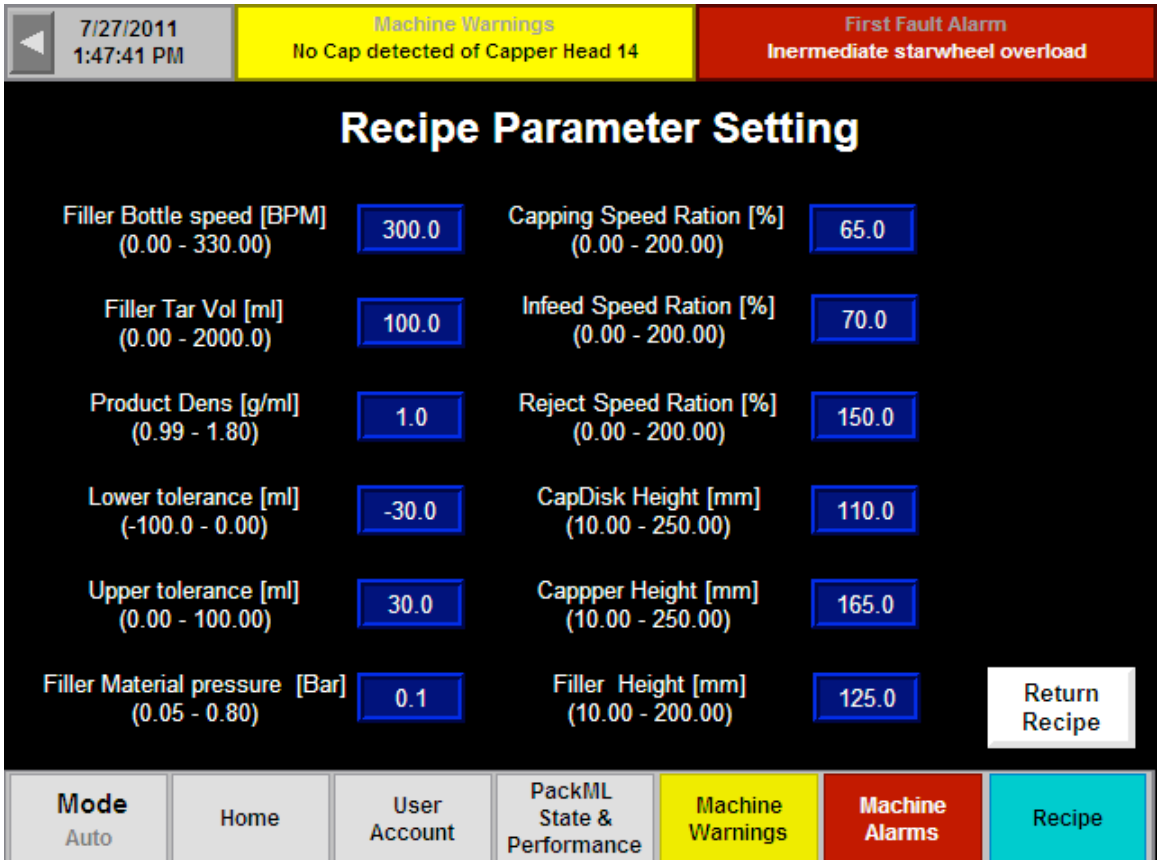
12.6 配方

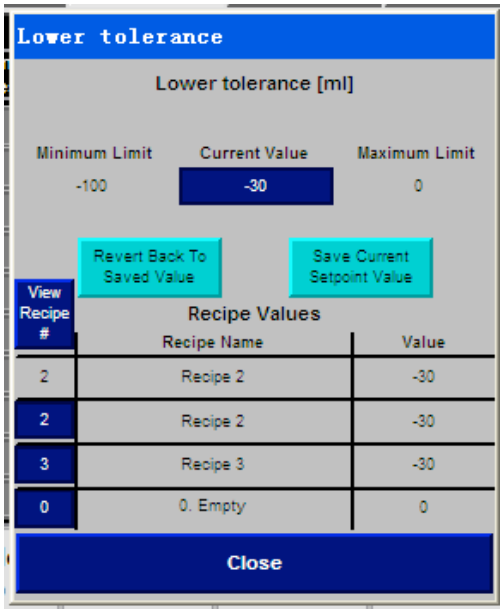
注意 1:配方参数只有 PackML 状态在 Ldle、Complete、Resetting、Clearing、Stopped、Aborted 等状态下才能执行改变，保存，复制，删除等操作。

12.6 Recipe

Note 1: Only PackML is under idle, complete, resetting, clearing, stopped, aborted status, could the recipe parameter be changed, saved, copied and deleted.







Note: this just a tab for example !

NOTE: all of these parameters are recipe parameters; they can only be changed when machine is in one of aborted, stopped and idle states. Each title of parameter include name, value range between which you can set. And if you want to get more information about this parameter, click the title, here will show a jumped out card, this card shows minimum and maximum limit of this parameter also the current value you can see and change here. There are two buttons to let you finish the value setting or abandoning.(1,if you don't want to change the value at present, click "revert back to saved value" button to go back, otherwise you can save current modification value separately through press "Set Current Setpoint Value" button.) and the list of recipe values shows the different value in four

recipes .you can change the recipe number of any three non-current recipes to see what the value is . Click “view recipe # ” button to see the total recipes information of system . Click “Close” button to close this card!

	类别	描述	Item	Description
1	灌装机速度(bpm)	主电机在自动模式下的速度。（单位：瓶/分钟）	Filler Bottle Speed(bpm)	Speed in bottles per minute for main motor in Auto mode.
2	目标容量	每种瓶型的目标体积	Target Volume	Target volume of each bottle type
3	产品密度	灌装物料的密度	Product Density（g/ml）	Density of filling materials
4	灌装允许误差偏移量(下限）	下限值=目标值-下限偏移量	Lower tolerance(ml)	Off set valve below target filling value
5	灌装允许误差偏移量(上限）	上限值=目标值+上限偏移量	Upper tolerance(ml)	Off set value upper target filling value
6	物料压力	灌装机进料压力	Material pressure (bar)	Pressure of infeed filler material
7	旋盖速度与主机速度因数	设置旋盖与主机运行速度之间的关系	CappingSpeedFactor (%)	Speed ratio setting of capping motor depend on main motor
8	进瓶链与主机速度因数	设置进瓶链与主机运行速度之间的关系	In-feed conveyor refer toMain(%)	Speed ratio setting of infeed motor denpend on main motor

9	剔除链与主机速度因数	设置剔除链与主机运行速度之间的关系	Rejecter conveyor refer toMain(%)	Speed ratio setting of reject conveyor motor depend on main motor
10	分盖盘高度	分盖盘目标高度	CapDisk Height (mm)	Target height of capdisc in one recipe
11	旋盖高度	旋盖机目标高度	Cappper Height (mm)	Target height of capper in one recipe
12	灌装高度	灌装机目标高度	Filler Height (mm)	Target height of filler in one recipe

12.7 配置

机器的参数可以通过这个子菜单来设置，如编码器的值、高度值、流量计的值和机器的原始的数值。

12.7.1 高度配置

分盖盘、旋盖机和灌装机的高度可以在这个子菜单里调整。当前的高度值显示在屏幕上。操作者必须登陆后才能调整目标高度。

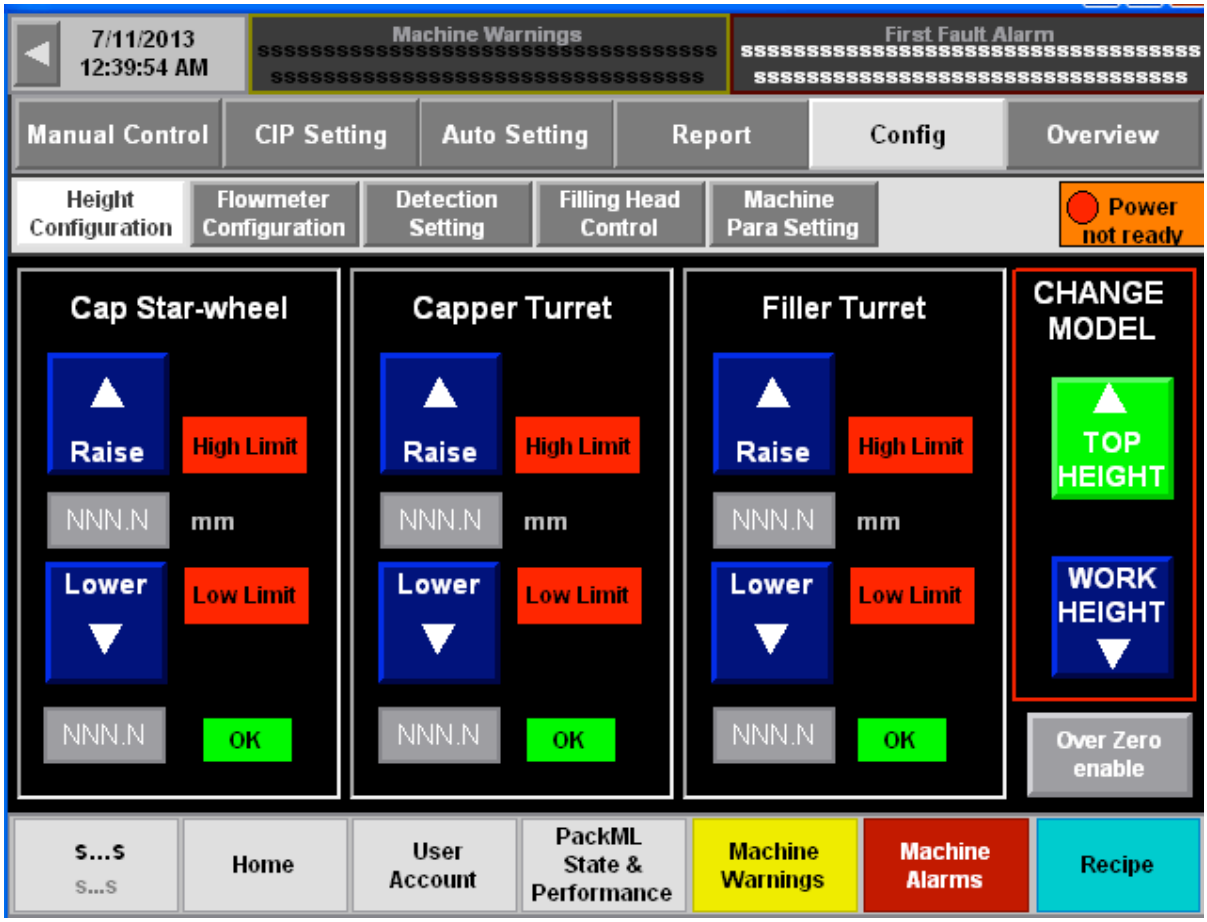
12.7 Configuration

Through config screens, parameters can be set into machine for working conditions, including Encoder value settings, Height values for product brand change over, Flow meter values settings, and Original machine values settings.

12.7.1 Height configuration

This menu allows adjusting height of cap star-wheel, capper turret and filler turret. Current height of units is shown on this screen. To change target (working) height, supervisor must be logged in.

Item	Explanation
Power not ready 动力电源故障	This screen is not ready to be operated when the red light is on. 屏幕上的红灯亮时，控制屏不能操作。
“Over ZERO” button “调节过零点”按钮	When enabled, units can go over zero position. Moving is limited just by High limit sensor. 可以使用此按钮来调节过零点。当然，此动作会受到高度上限传感器限制。
“Raise” 升	Keep pressing to raise unit separately. 一直按压此键，相应的部件会上升。
“Lower” 降	Keep pressing to lower unit separately. 一直按压此键，相应的部件会下降。
High limit 上限	It is not visual until the upper limit sensor is activated. 直到上限传感器被激活后，此状态显示。
Low limit 下限	It is not visual until the lower limit sensor is activated. 直到下限传感器被激活后，此状态显示。
OK	Unit is in target (working) position 部件已经位于指定的工作位置。
TOP Height 最高点	Press this button, Cap Star-wheel and Capper Turret and Filler Turret will raise unit zero height. 按下此按钮，分盖盘和旋盖机、灌装将会上升到零点高度
Work Height 工作高度	Press this button, it will indicate “Confirm”or “Cancel”. If choose “Confirm”, press the button again, Cap Star-wheel and Capper Turret and Filler Turret will lower to work height. 按下此按钮，提示确定或者取消，如果确定，再按下此按钮分盖盘和旋盖机、灌装将会下降到工作高度



12.7.2 流量计配置

12.7.2 Flow meter configuration

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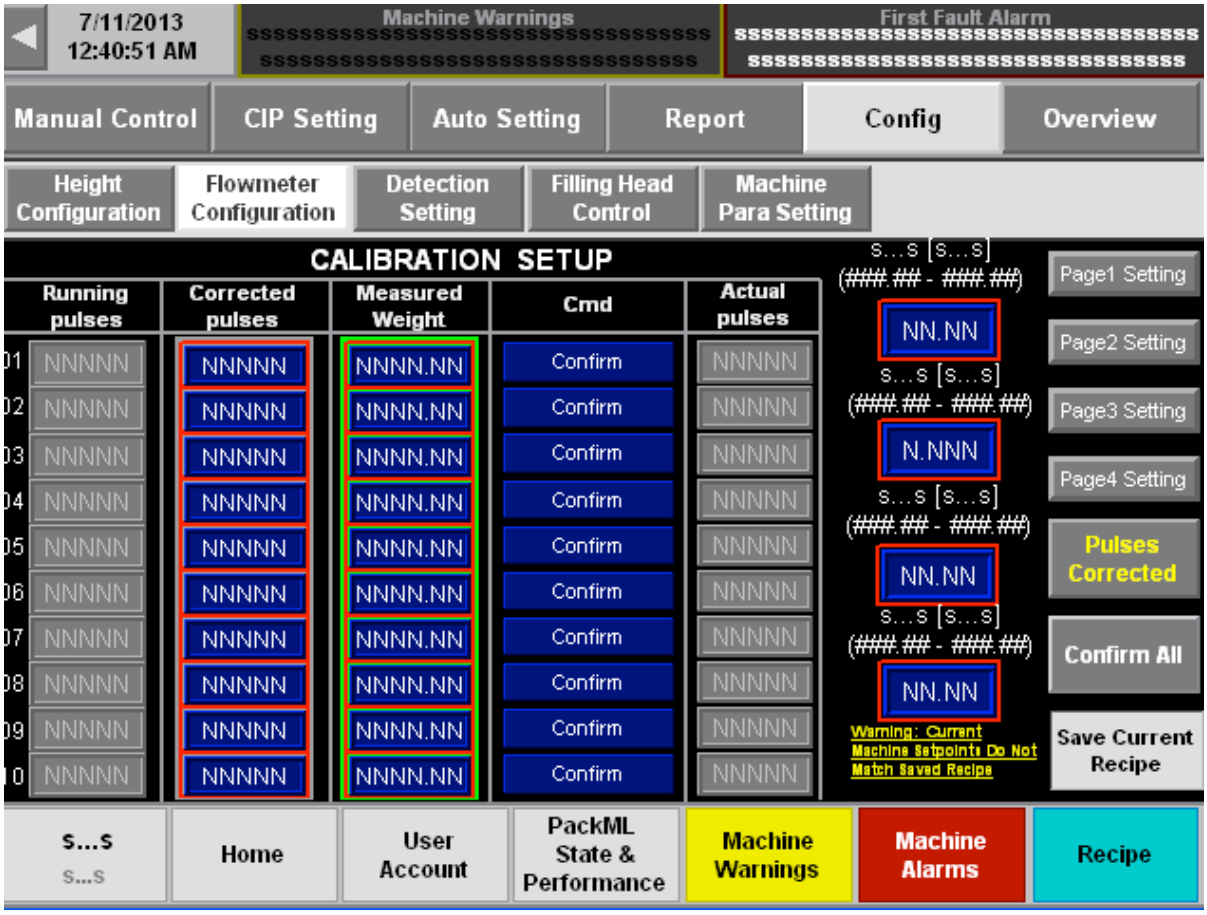

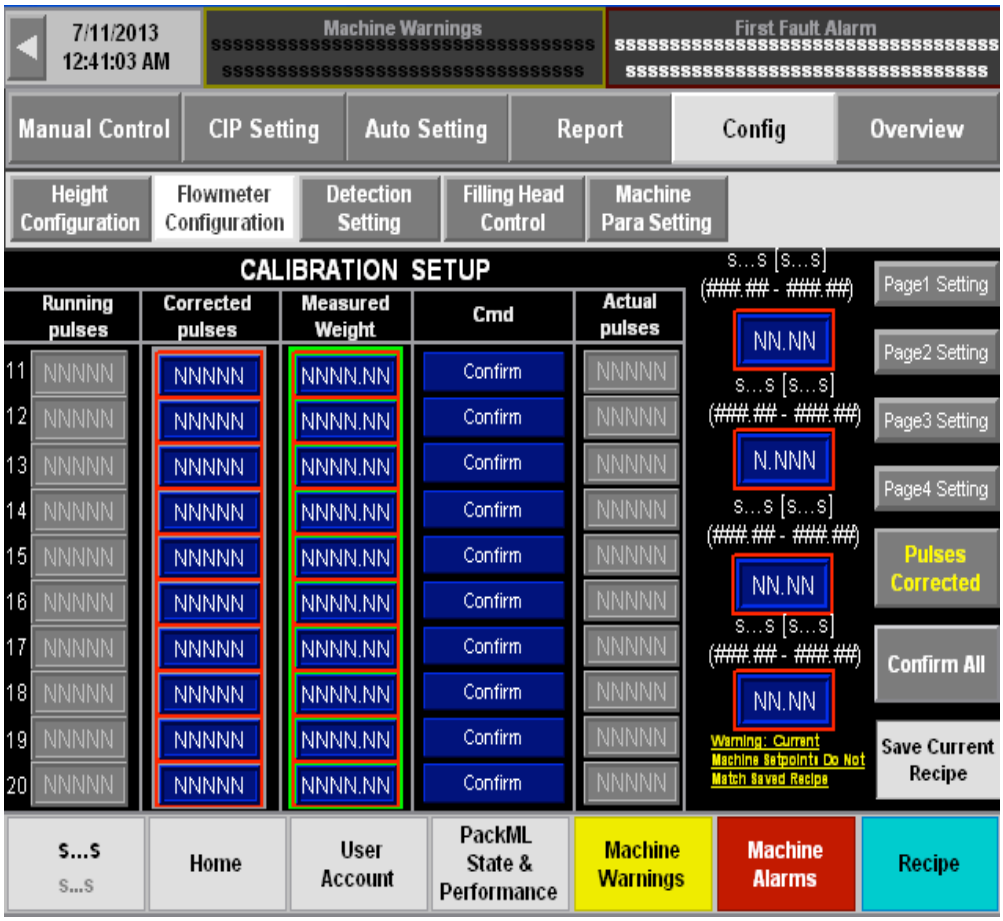
7/11/2013
12:41:03 AM
Machine Warnings
First Fault Alarm
Manual Control
CIP Setting
Auto Setting
Report
Config
Overview
Height Configuration
Flowmeter Configuration
Detection Setting
Filling Head Control
Machine Para Setting
CALIBRATION SETUP
Running pulses
Corrected pulses
Measured Weight
Cmd
Actual pulses
Confirm
S...S [S...S]
(####.## - ####.##)
NN.NN
N.NNN
Page1 Setting
Page2 Setting
Page3 Setting
Page4 Setting
Pulses Corrected
Confirm All
Save Current Recipe
Warning: Current Machine Setpoints Do Not Match Saved Recipe
S...S
Home
User Account
PackML State & Performance
Machine Warnings
Machine Alarms
Recipe

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Website: www.tech-long.com PC: 510530
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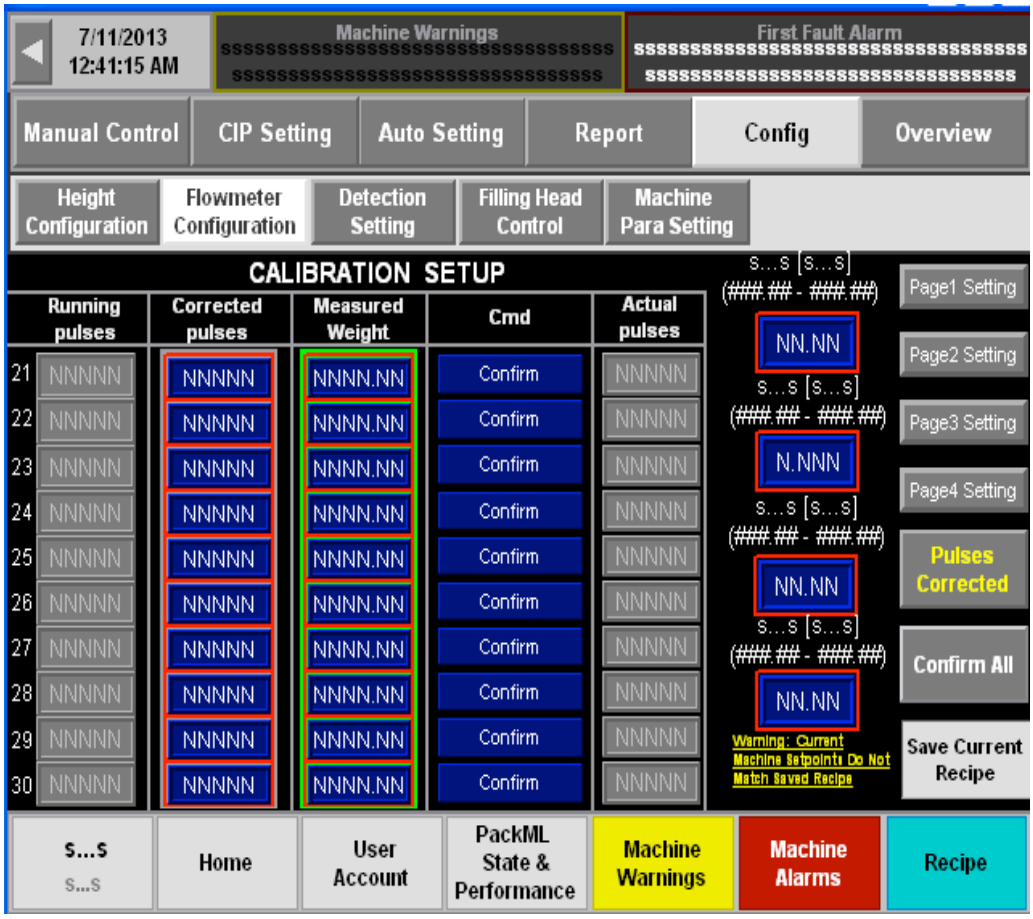
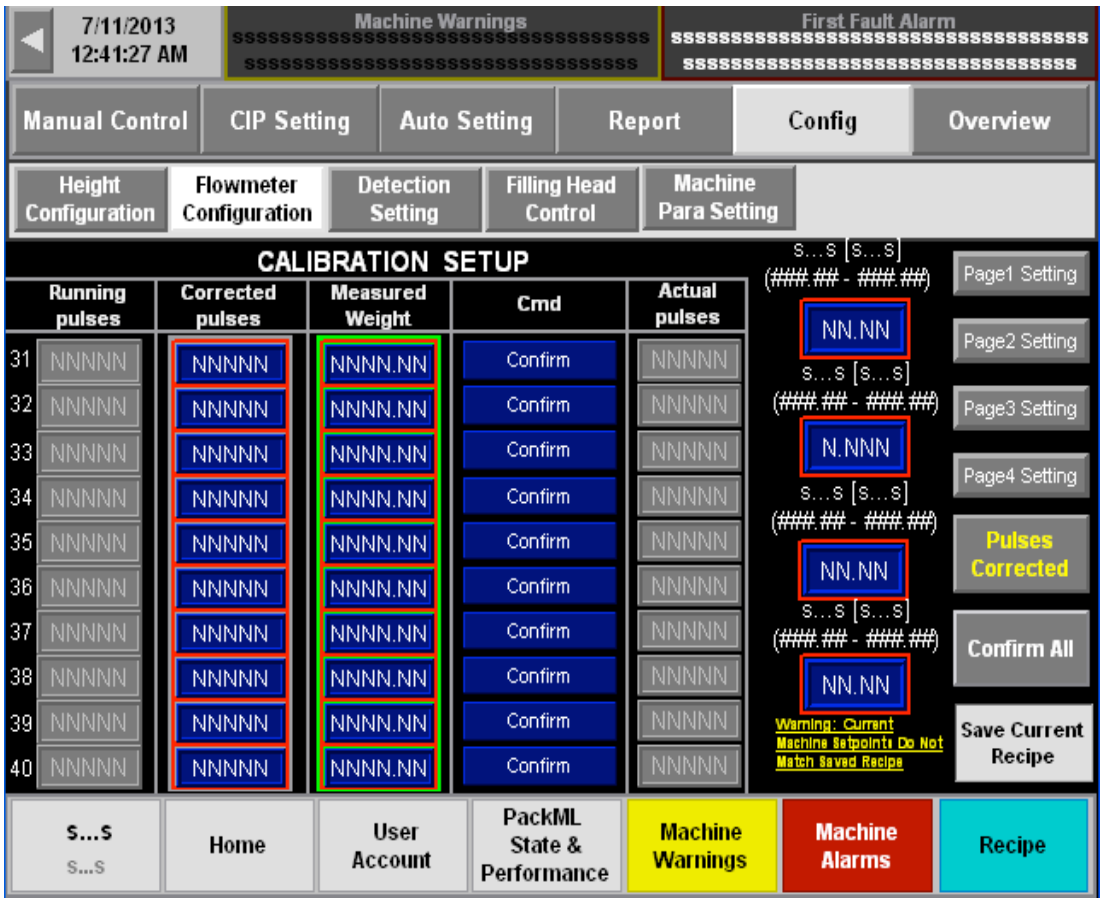




Item	描述 Description
目标容量 Target Volume	输入当前产品的目标容量[ml] Input target volume for current production. [ml]
产品密度 Product Density	输入每种产品的密度值[g/ml] Input density value as per the product. [g/ml]
灌装重量微调 Filling weight adjustment	用户在此输入框输入所有灌装头需要增加的重量，系统会自动在原目标值的基础上加上增加重量的脉冲。 Operator input the target weight which all the filling nozzles need to increase. Afterwards, system can automatically adds the pulse of the increasing weight depending on the original target value.
灌装误差允许的最低限	如果瓶子内的灌装体积误差小于误差最低限，那么瓶子将会被剔除。

Lower Tolerance(ml)	The bottle is rejected if the filling figure is below lower tolerance.
灌装误差允许的最高限 Upper Tolerance(ml)	如果瓶子内的灌装体积误差大于误差最高限，那么瓶子将会被剔除。 The bottle is rejected if the filling figure is above upper tolerance.
脉冲校正 Pulses Corrected	通过纠正脉冲方式来调整灌装的精度。用户自己计算出各头脉冲，经校正之后，需要重新输入脉冲。 Correct the pulses for adjusting the filling precision.
确认全部 Confirm All	在输入所有的灌装校正数据之后按下“确认全部”键，这些校正数据将被下载到高速计数卡中生效。 Confirm all the data after entering all the filling corrected data.

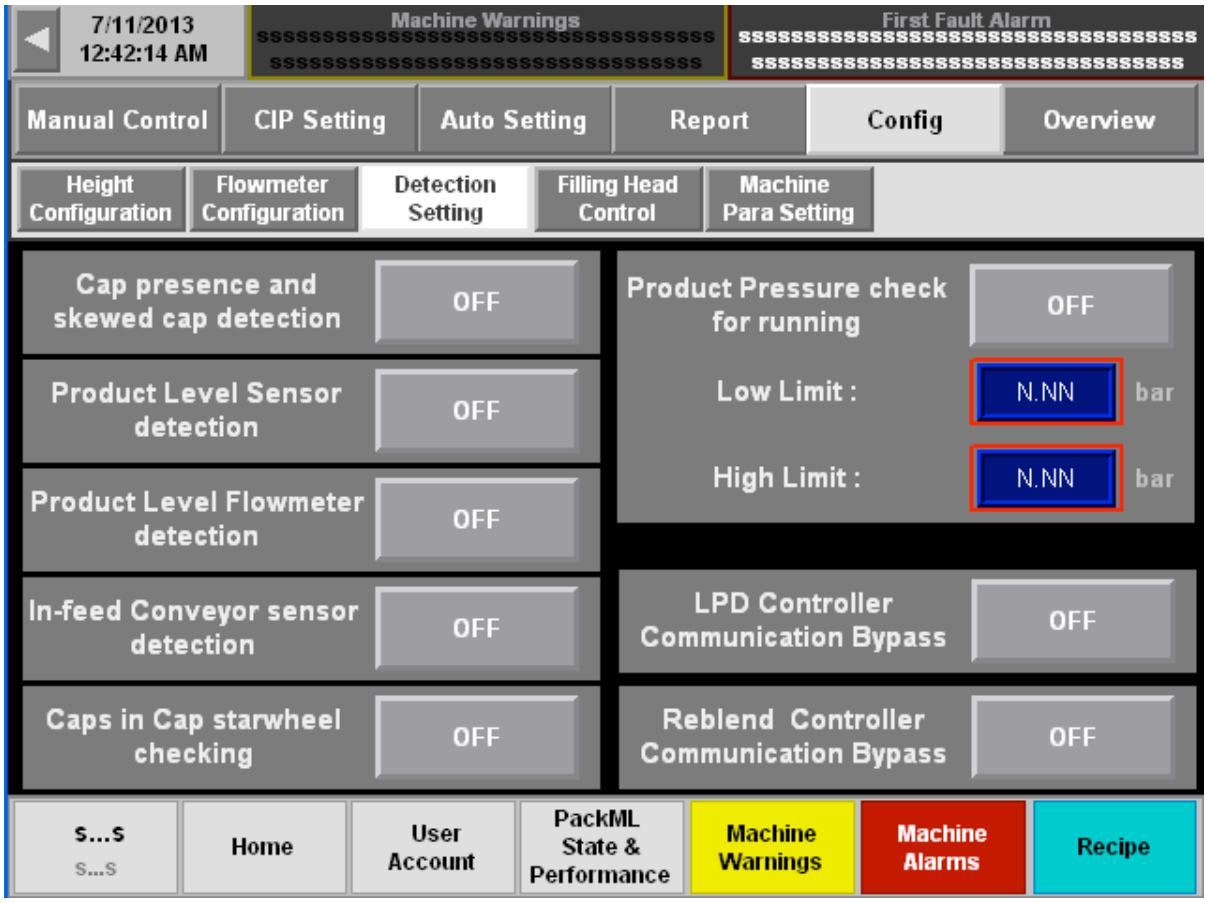
步骤 Steps	1 脉冲纠正	1 Pulse Correction Description
1	取用若干个灌有产品的的瓶子来称重，取平均值，输入到“脉冲校正”里面	Take several bottles of product for weighing. Calculate average weight and then input it into “Pulse corrected”.
2	系统会把数值显示在“脉冲校正”框里，并确认更改。	System did the calculation and automatically shows it in “Calibrated pulses”.
3	重复相应的步骤	Do the same procedure for others heads.
4	进入“配方”菜单把新的数值保存倒 PLC	Go to “Recipe” screen to save new values to PLC memory.
Actual pulses	高数计数器读出的流量计的最终灌装脉冲值。	The final filling pulse value is managed by the high speed counter.

步骤 Steps	2 称重校正	2 Weight Correction Description
1	取用若干个灌有产品的的瓶子来称重，取平均值，输入到“称重校正”里面	Take several bottles of product for weighing. Calculate average weight and then set it into “Measured Weight”.
2	按下“确认”键，系统经过计算，并把相应的灌装头纠正的脉冲值将显示在“运行脉冲”里面	Press “Confirm”, and the corrected pulses value of the relevant filling heads show in the “running pulse”.
3	重复相应的步骤	Do the same procedure for others heads.
4	确定新的灌装容量	Confirm new filled volume.
5	进入“配方”菜单把新的数值保存倒 PLC	Go to “Recipe” screen to save new values to PLC memory.
Actual	此项的数据由流量计计算出	The data is calculated by the flow meter for

pulses	来，仅供参考。	refenrence.

12.7.3 检测设置

12.7.3 Detection setting



在这个子菜单，操作员可以启动或停止各种的检测。

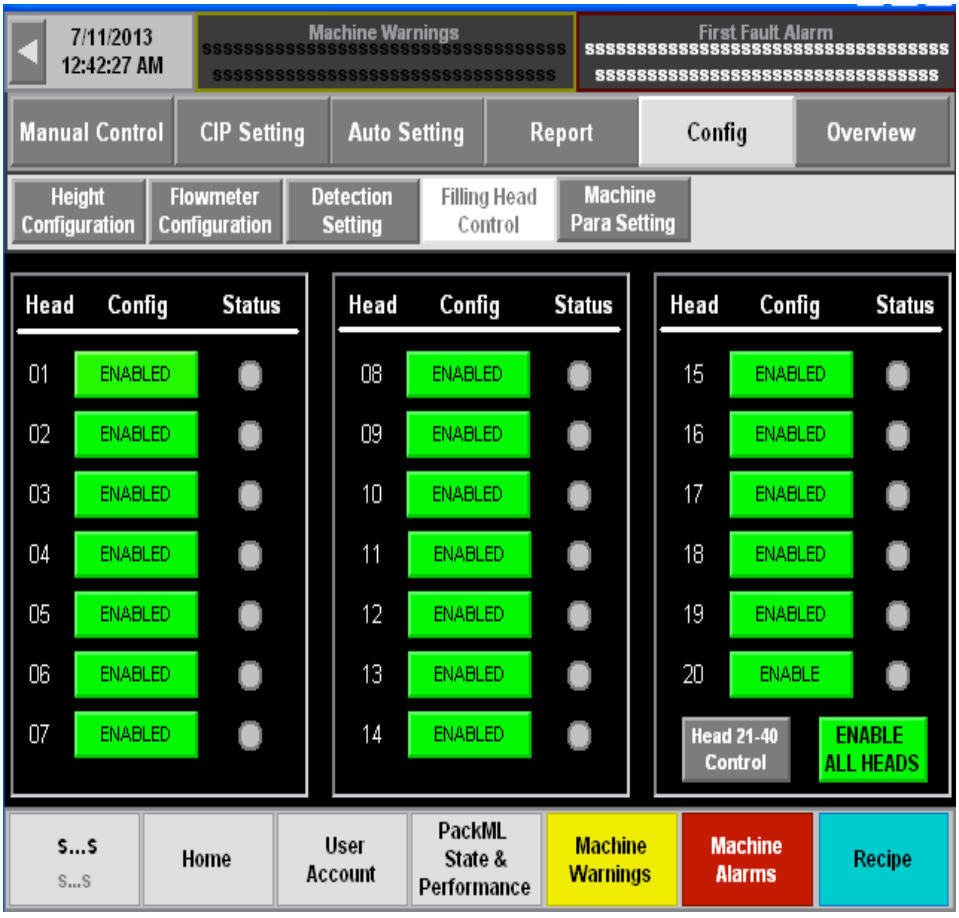
On this screen operator can Enable/Disable detection of various faults.

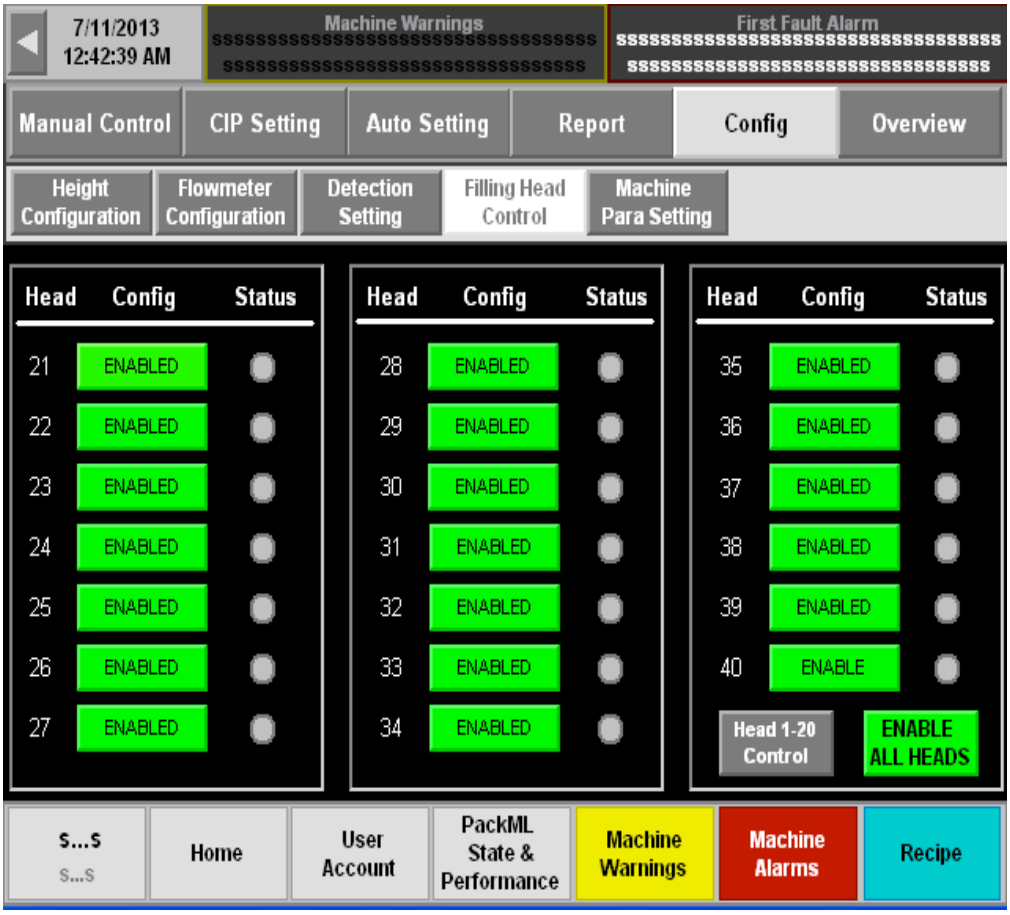
Cap presence and skewed cap detection 无盖歪盖高盖检测	通过按键启动和停止各种检测 Start or stop any kind of detection through button.
Product level Sensor detection 瓶子罐液位检测	
Product level flow meter detection 流量计液位检测	
In-feed conveyor sensor detection 进瓶传感器检测	
Caps in Cap starwheel checking 分盖盘盖检测	

LPD Controller Communication Bypass LPD 通讯无效	
Reblend Controller Communication Bypass	
Product pressure check for running 产品压力检测	
Lower limit 下限	The lower limit for product pressure 产品压力下限
Upper limit 上限	The upper limit for product pressure 产品压力上限

12.7.4 灌装头控制

12.7.4 Head control



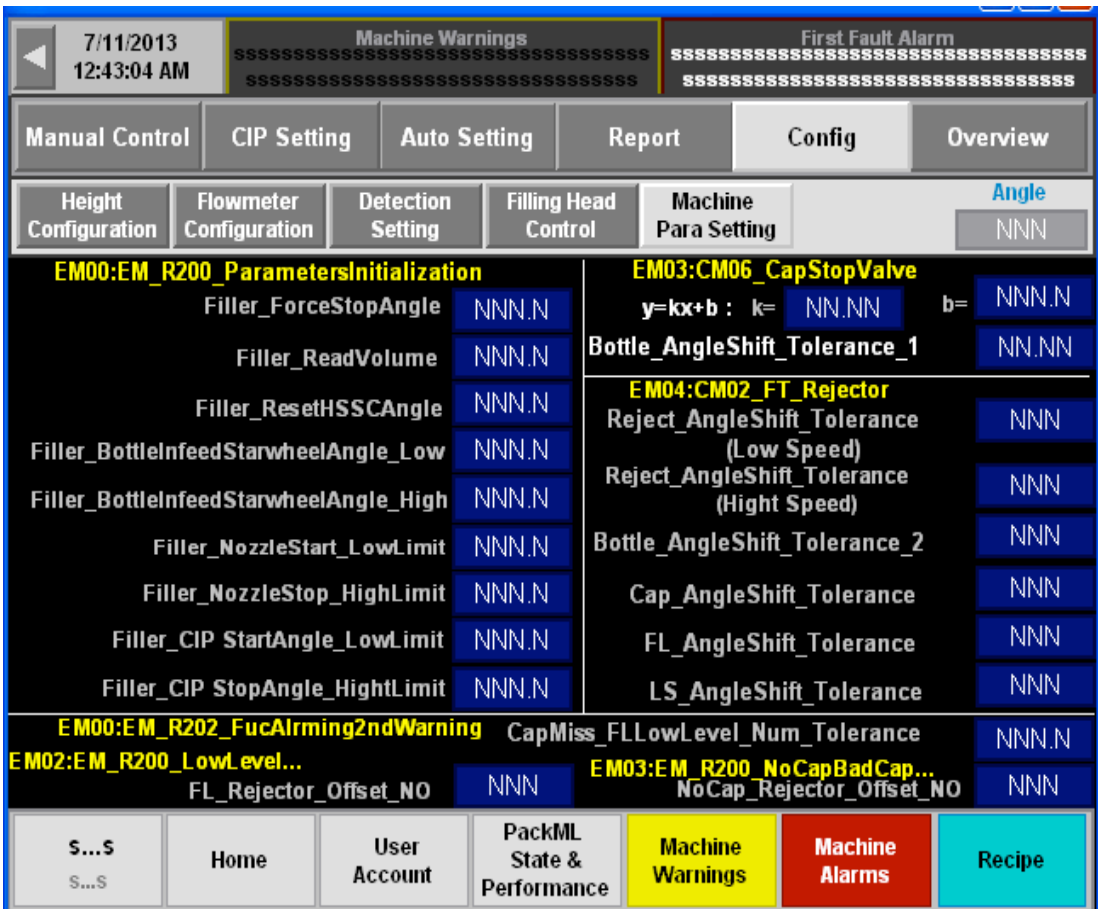


条目	Item	解释	Description
头号	Head	灌装嘴的号码	The number of filling nozzle.
状态	Status	显示此灌装头当前的工作状态，“开”或“关”	Indicating current filling nozzle status, “Enabled” or “Disabled”.
配置	Config Enable/ Disable	灌装头使能或关闭	Enable/disable filling nozzles
关闭所有灌装头	Disable all heads / Enable all heads	关闭/使能所有灌装头	Make all nozzles “off/on”.
灌装头 1-20 控制	Head 1-20 Control	按下此按钮，控制 No.1 至 No.20 灌装头画面	Press this button to enter No.1 to No.20 filling nozzle control screen

灌装头 21-40 控制	Head 21-40 Control	按下此按钮，控制 No.21 至 No.40 灌装头画面	Press this button to enter No.21 to No.40 filling nozzle control screen

12.7.5 Machine Para Setting
设置机器出厂参数

NO.	Parameter	Initial parameter
1	Filler_ForceStopAngle	305
2	Filler_ReadVolume	302
3	Filler_ResetHSSCAngle	6
4	Filler_BottleInfeedStarwheelAngle_Low	330
5	Filler_BottleInfeedStarwheelAngle_High	335
6	Filler_NozzleStart_LowLimit	8
7	Filler_NozzleStop_HighLimit	305
8	Filler_CIP StartAngle_LowLimit	65
9	Filler_CIP StopAngle_HightLimit	120
10	y=kx+b : k=	1.75
11	y=kx+b : b=	500
12	Bottle_AngleShift_Tolerance_1	3
13	Reject_AngleShift_Tolerance (Low Speed)	3
14	Reject_AngleShift_Tolerance (Hight Speed)	5
15	Bottle_AngleShift_Tolerance_2	-3
16	Cap_AngleShift_Tolerance	-3
17	FL_AngleShift_Tolerance	0
18	LS_AngleShift_Tolerance	-3
19	CapMiss_FLLowLevel_Num_Tolerance	7
20	NoCap_Rejector_Offset_NO	4



12.8 总览

用户可以通过这个子菜单看到机器的状态，其中包含了三组信息。

第一组信息来自机器的布局图。操作员能够在布局图上查看到每一个安全门、急停、断能开关的工作状态。没有关闭的安全门或者是关闭的断能开关显示红色。

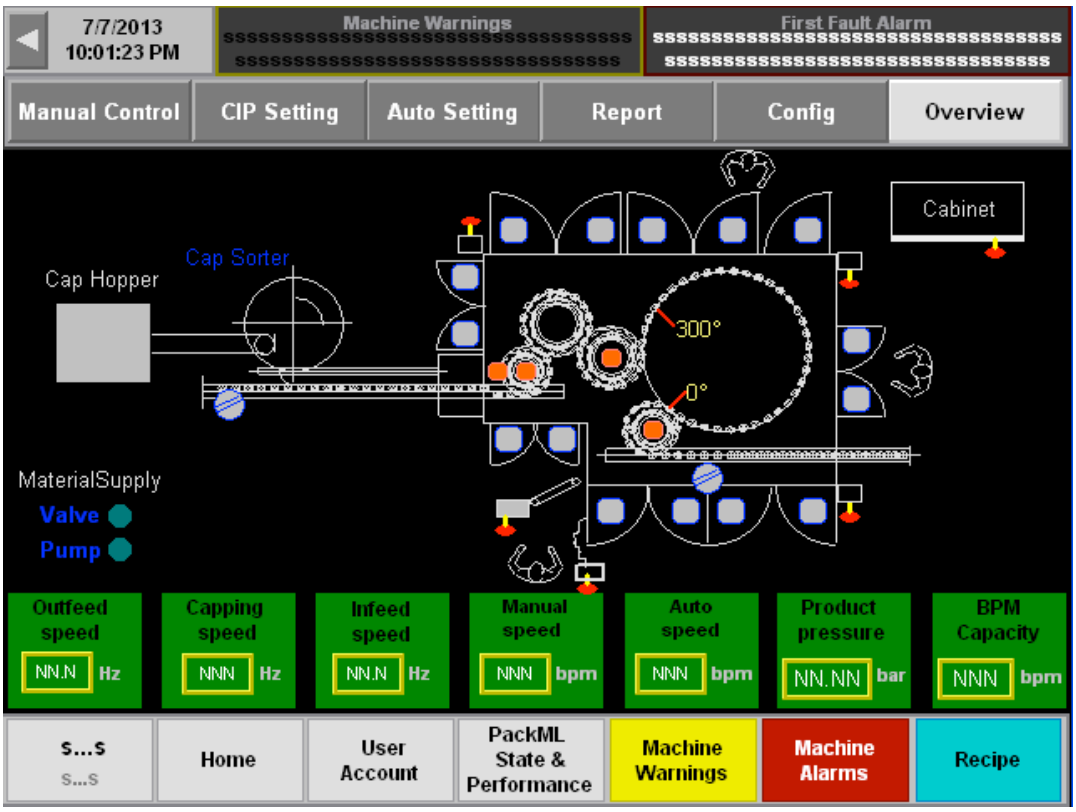
第二组信息来自屏幕的下方的一组数据。它们分别是出瓶速度、旋盖速度、进瓶速度、手动速度、自动速度、产品压力、产量等。

12.8 Overview

This screen gives operator an overview of machine status, which contains 3 groups of information.

The first group information is from machine layout. Operator can check the working state of safety door, e-stop and disconnect switch via the layout. The unclosed safety door or closed disconnect switch shoes red.

The second group is the group of data from bottom menu, including bottle discharge speed, capping speed, bottle infeed speed, manual speed, auto speed, product pressure and capacity and so on.

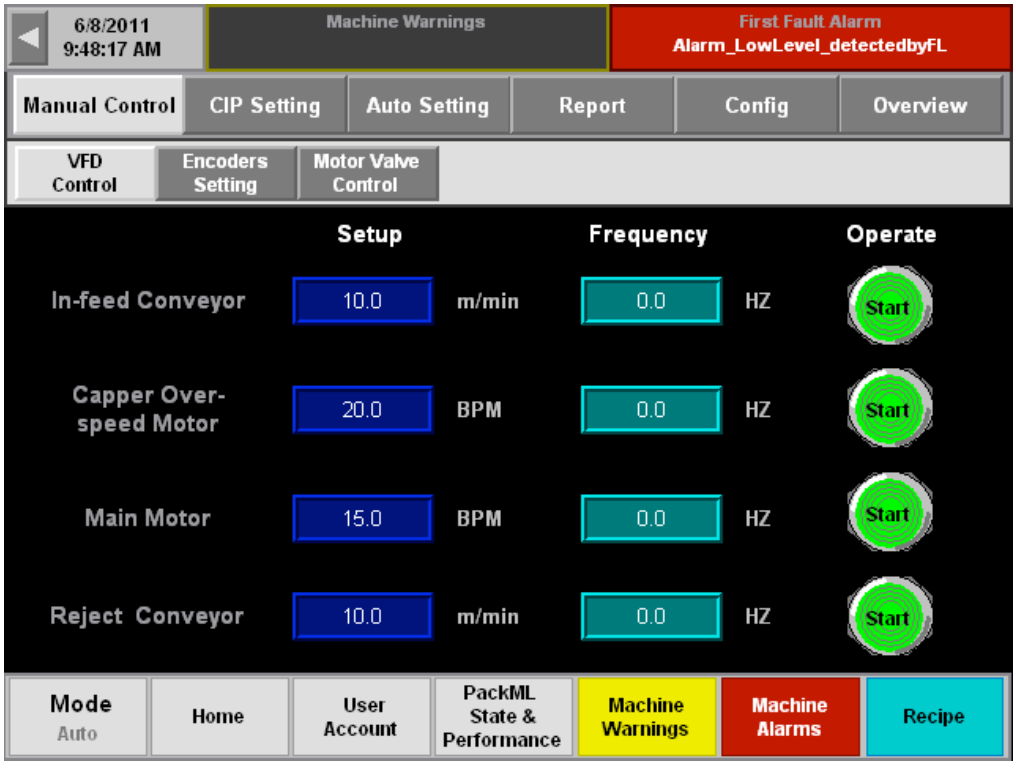


12.9 手动控制

12.9 Manual contrl

12.9.1 VFD 控制

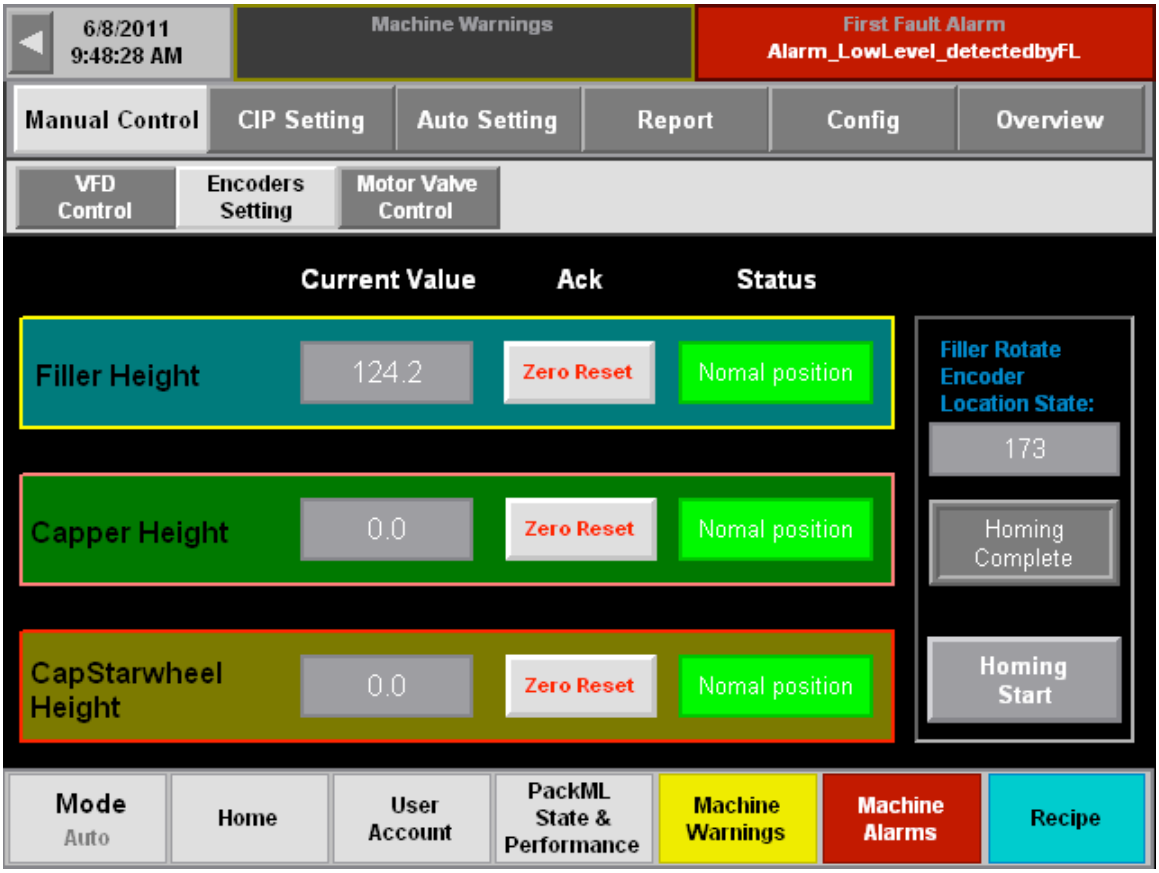
12.9.1 VFD control



Items	Description 描述
Setup Frequency	Speed value seting, including infeed conveyor speed, capper motor speed, main motor speed, rejector conveyor speed setup. 速度值设定,可分别设定进瓶链、旋盖电机、主机、剔除链的速度 Display the frequency, including frequency of infeed conveyor, capper motor, main motor, rejecter motor. 频率显示，可分别显示进瓶链、旋盖电机、主机、剔除链的频率
Start/ Stop	Press start and activate corresponding motor. Press this button again, and then motor will be stopped. 点击相应的 Start，则启动相应的电机，再此点击则停止电机

12.9.2 编码器配置和原始配置

12.9.2 Encoder configuration and original configuration



通过此子菜单，可以设置灌装机的高度零点、旋盖机高度零点、分盖盘高度零点、和灌装机旋转编码器零点。

The zero point of filler height, capper height, capstarwheel height and filler rotate encoder can be set through above submenu.

	描述	Item	Explanation
当前数值	显示出当前的高度	Current Value	Displaying current height
确认	按下“零点重设”键来设置当前的编码器的位置为“0”高度。只有当上限传感器激活的时候，设定 编码器零点。	ACK	Press “Zero reset” button to set current encoder position to “0” height. You can set zero point of encoder only when high limit sensor is active.
状态	显示高度调节的状态	Status	Showing the status of height adjustment.

灌装机旋转编码器位置状态：这是一项辅助功能。当主编码器拆下来维护时，通过此功能可以更方便地找到机器的零点位置。但是除了为了维护机器，我们不推荐使用此项功能。注意：如果传动装置有变动，严禁使用此功能。

Filler rotate encoder location state: This is an assistant function to make easier seeking zero position of machine when main encoder is dismantled for maintenance, it is not recommended to use this function except for maintenance. It’s prohibited to use this function if gears group combination changes.

项目	描述	Item	Explanation
灌装旋转编码器位置状态	显示当前编码器的角度	Filler rotate encoder location state	Showing the current encoder angle.
重新设定零点	按下此键来开始寻找零点位置。	Homing start	Press it to start seeking zero position.

以下是编码器参数

And the following table shows the encoder parameters of the machine:

编码器位置	编码器脉冲（编码器每转）	功能（编码器每转一圈）
主编码器	编码器每转 7200P，灌装主体每转 28800Pulse	灌装主体旋转一圈，主编码器旋转 4 圈

灌装机高度	8192 Pulse	变化 3mm
旋盖机高度	8192 Pulse	变化 3mm
分盖盘高度	8192 Pulse	变化 3mm

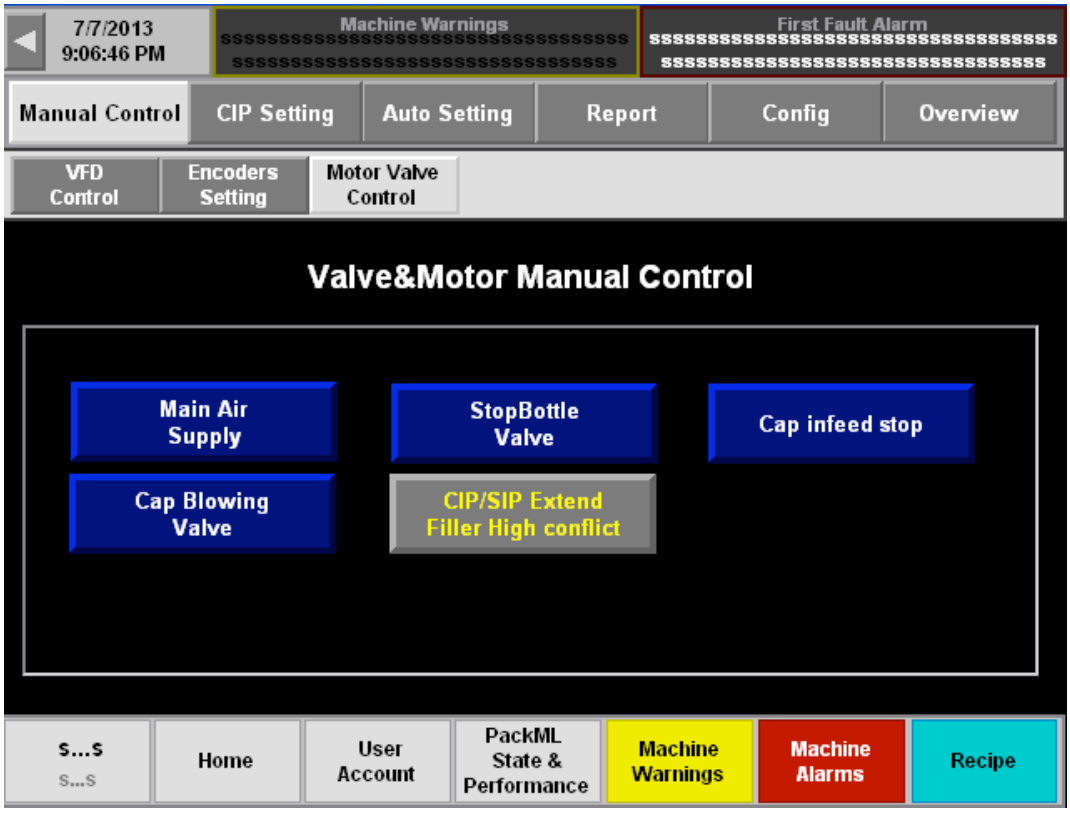
Encoder location	Encoder pulse (per turn)	Function (One turn of encoder)
Main encoder	Per turn of encoder: 7200P，per turn of filler machine 28800Pulse	Main encoder rotate 4 circles, filler machine rotate 1 circle.
Filler height	8192 Pulse	Up or down 3mm
Capper height	8192 Pulse	Up or down 3mm
Cap starwheel height	8192 Pulse	Up or down 3mm

12.9.3 电机手动控制

以下子菜单描述的是下列部件可以通过手动来单独控制。

12.9.3 Motor manual control

The following sub-menu describes that the separated component can be controlled manually.



12.10 报告

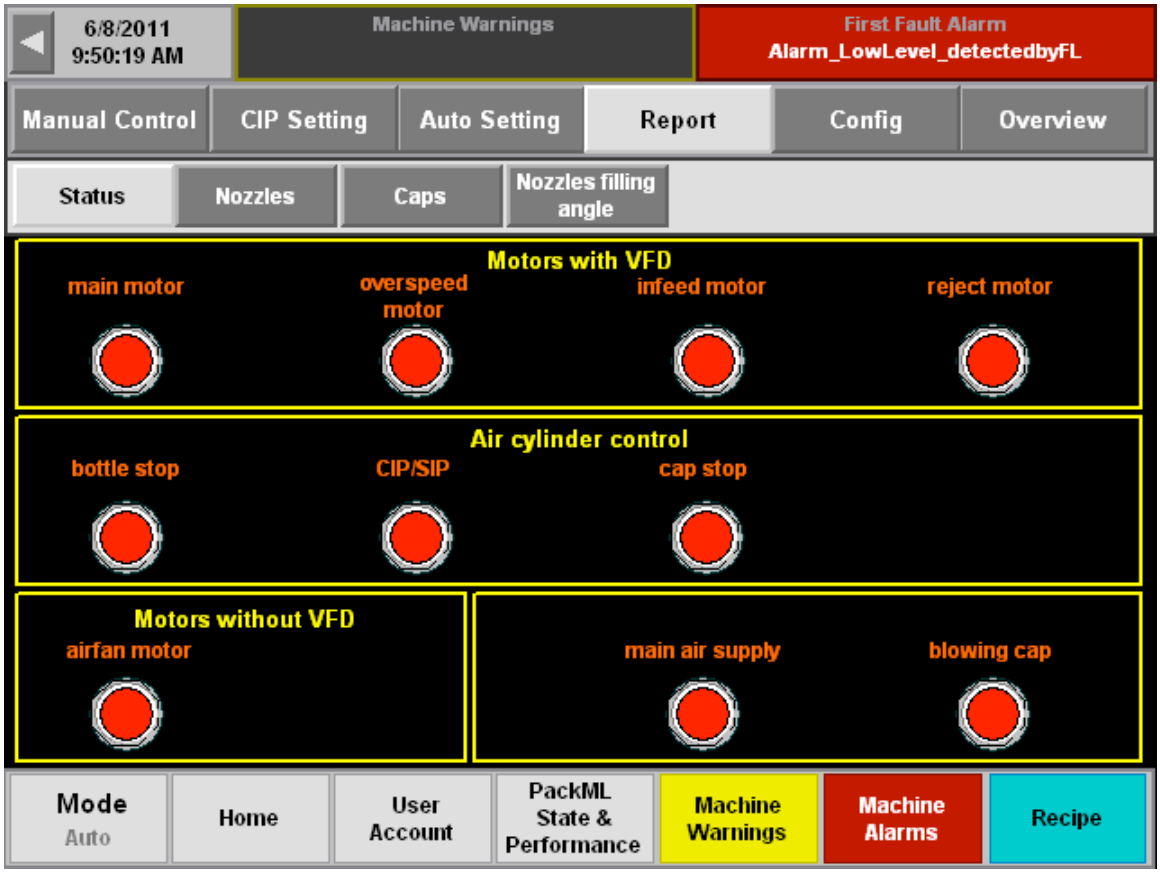
12.10.1 状态报告

在“状态”栏中，可以查看到电机、变频器电机、电磁阀的状态。

12.10 Report

12.10.1 Status

In “status” the status of motors, VFD motors, and solenoid valves are shown. Finally, there is screen with broken caps statistic.

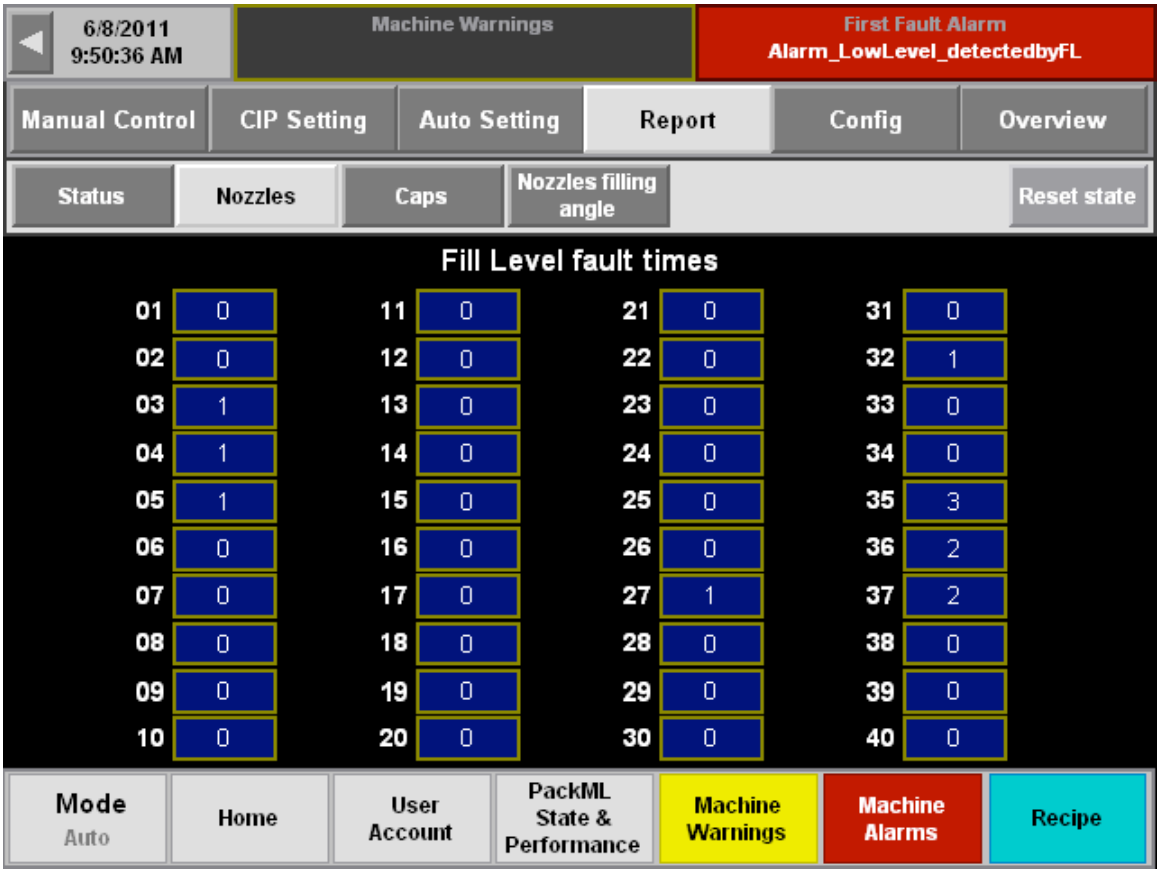


12.10.2 灌装头

以下屏幕显示的是脉冲检测功能检测每个灌装头脉冲不合格的次数，这些数据可以通过“Reset state”按钮清零。

12.10.2 Nozzle

As detected by pulse detection function, Unqualified times of filling nozzle pulse will shown on below screen, those data can be reset by “reset state” button.

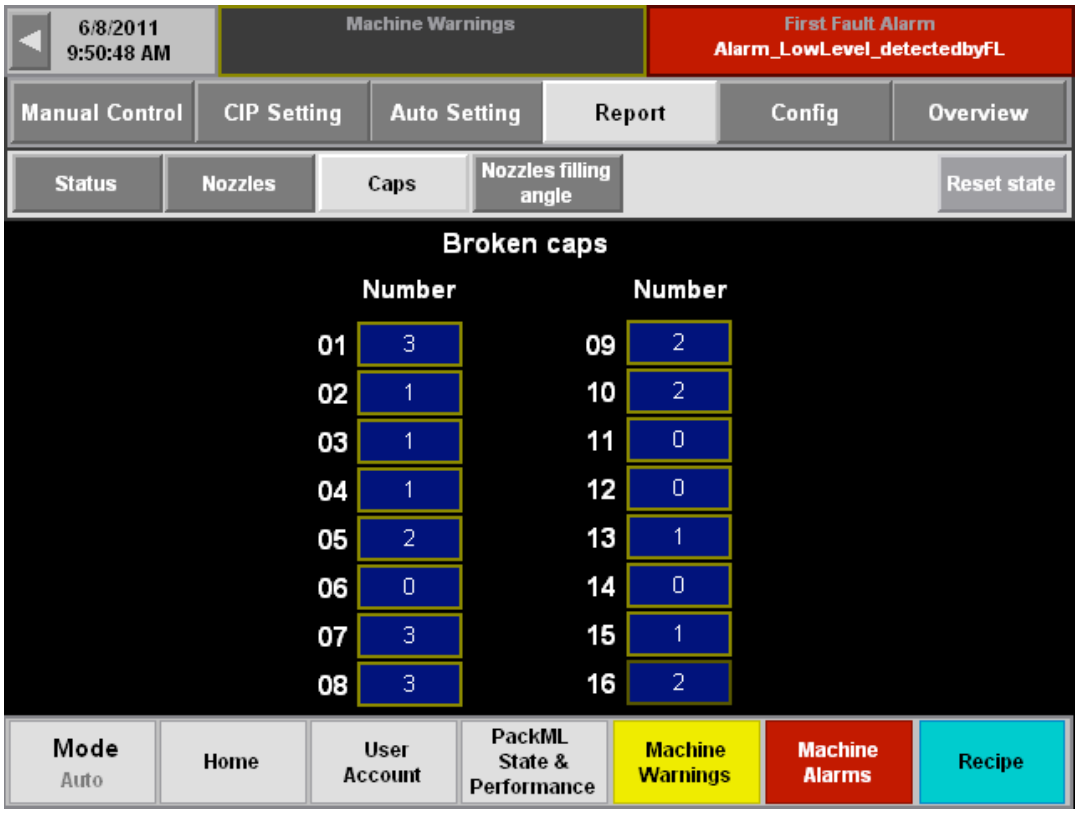


12.10.3 盖子

以下屏幕显示出旋盖头无盖或者高盖的统计数字，这些数据可以通过“Reset state”按钮清零。

12.10.3 Caps

This screen shows statistic of no caps or hign caps for each capper head. Statistic can be reset by “Reset stat.” button.

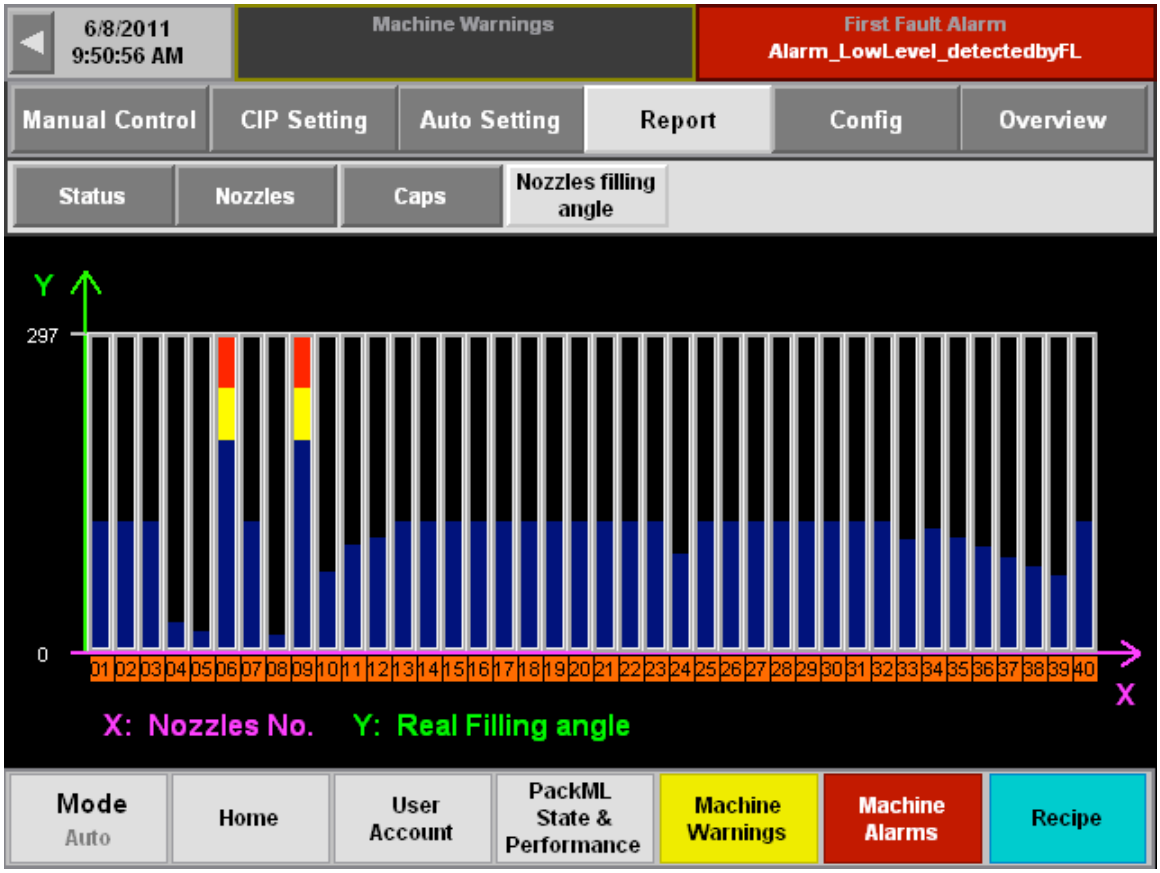


12.10.4 灌装头角度

通过以下图表能观察得到每一个灌装头的灌装角度。在图中，X 轴标示由 1 到 40 号灌装头；Y 轴标示的是灌装角度（范围是 HMI 设定的开始灌装角度和结束灌装角度）。

12.10.4 Nozzles filling angle

The following graph provides an image of filling angle for each individual nozzle. In the graph, Axle X is No.1-40 filling heads; Axle Y shows the filling angle, which is filling start angle and stop angle set on HMI.

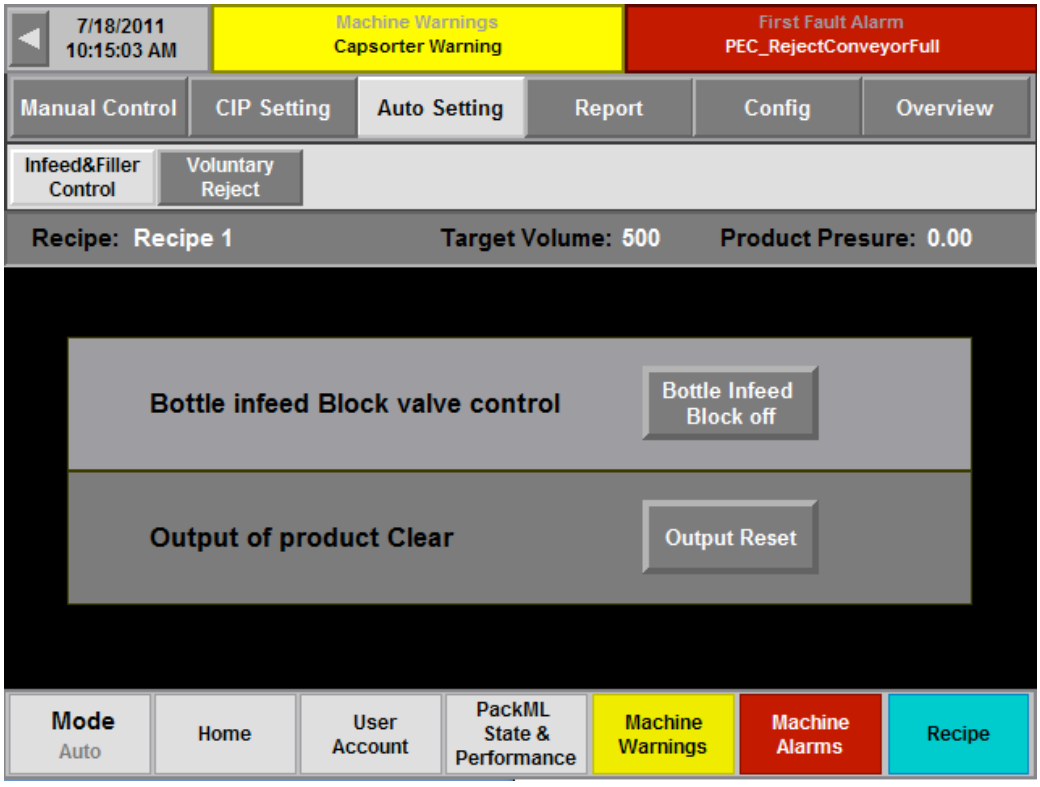


12.11 自动设置

12.11 Auto setting

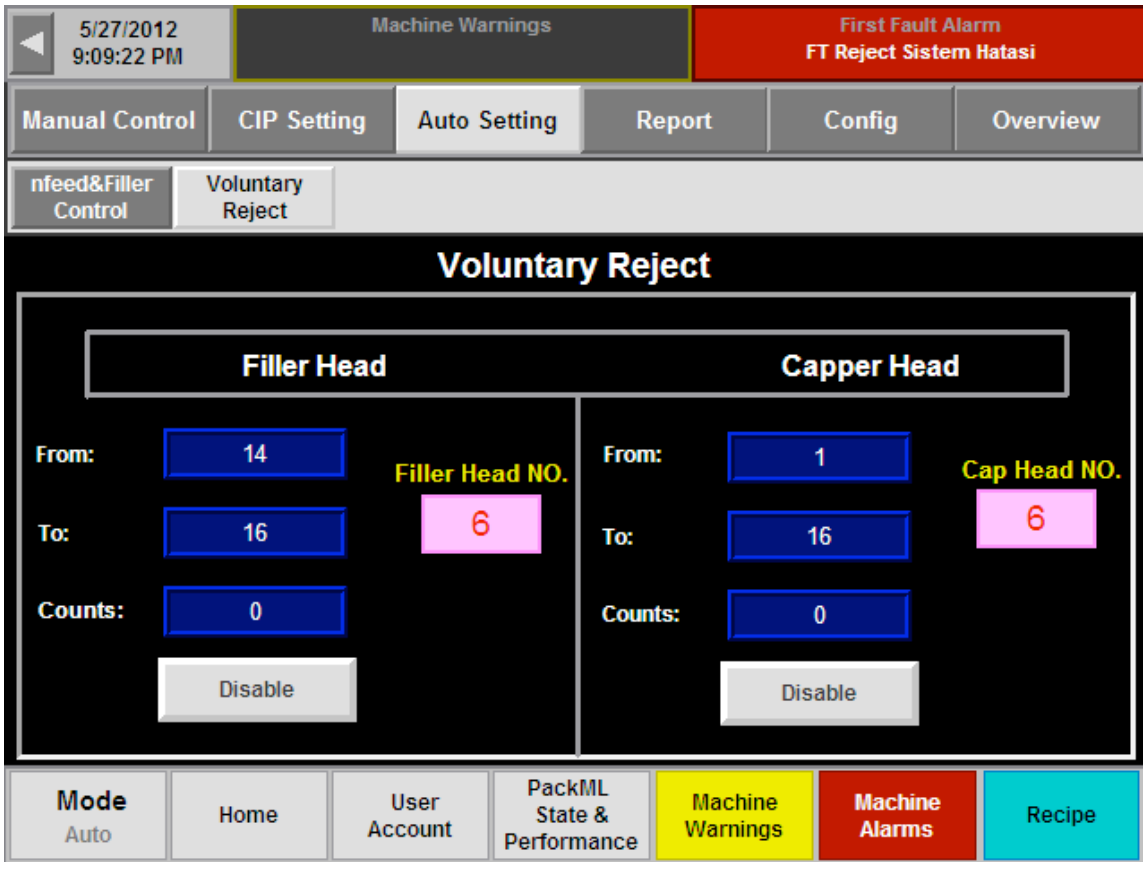
12.11.1 进瓶和灌装控制

12.11.1 Infeed&Filler Control



Item	Explanation
阻瓶 Bottle Infeed Block off	Press this button, bottle block cylinder stretch out to stop the bottle. 按下此按钮阻瓶气缸伸出阻瓶
输出复位 Output reset	清零 Clear.

12.11.2 自动剔除 12.11.2 Voluntary Reject



Steps	Explanation
灌装头 Filler Head	设置需要开始剔除或停止剔除的灌装头的号码。（范围：＃01－＃40） Set the starting nozzle No. which needs to start rejection. Set the stopping nozzle No. which needs to stop rejection. (Range: #01-#40)

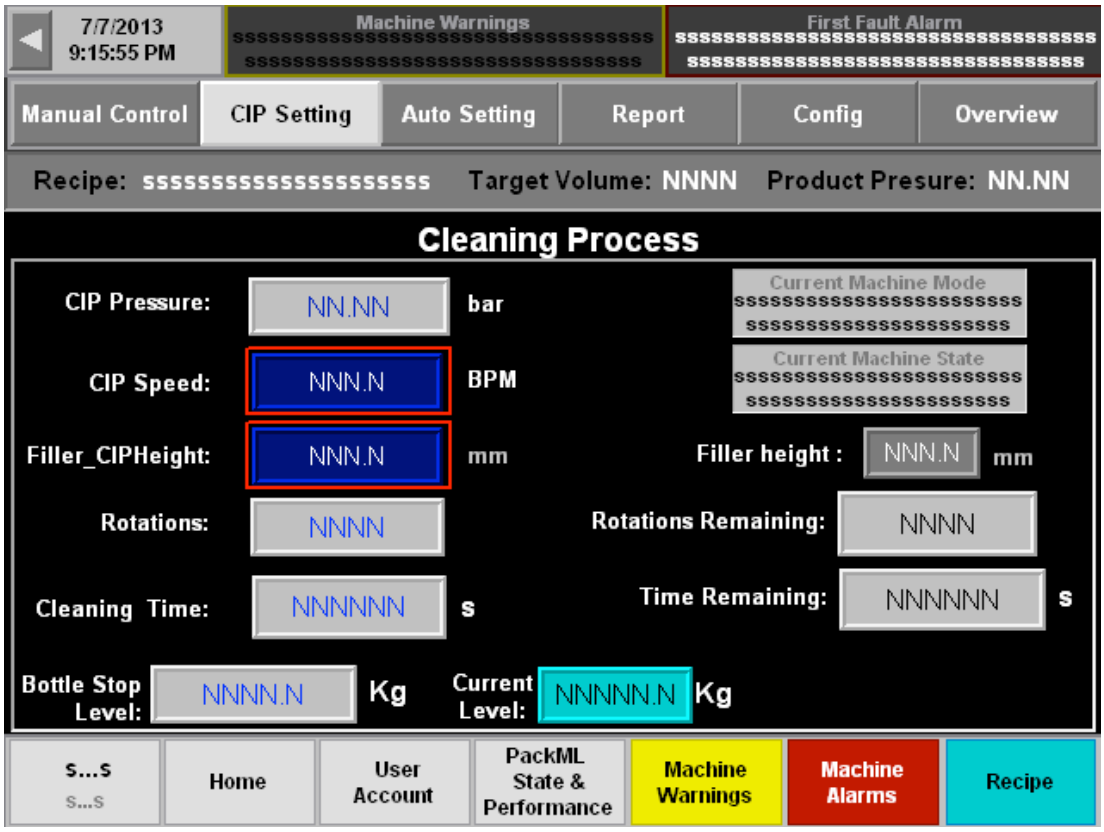
旋盖头 Capper Head	设置需要开始或停止剔除的压/旋盖头的号码（范围：＃01－＃16） Set the starting capping head No. which needs to start rejection. Set the stopping capping head No. which needs to stop rejection. (Range: #01-#16)
计数 Counts	设置剔除瓶子的数量。 Set number of rejected bottles. Number belongs to every selected filler/capper head.
启用 Enable	按下此键来启用固定数目的灌装头和固定数目旋盖头自动剔瓶。 Press this button to enable voluntary reject
禁用 Disable	按下此键来禁止固定数目的灌装头和固定数目旋盖头自动剔瓶。 Press this button to disable voluntary reject.

12.12 清洗程序

用户可以通过此菜单来启动 CIP 清洗，并观察到 CIP 的工作状态。

12.12 Cleaning program

Start CIP and observe its working status.



Item	Explanation 说明
CIP Pressure	CIP Pressure CIP 压力
CIP Speed: (bpm)	CIP speed CIP 速度
Filler_CIPHeight (mm)	CIP height CIP 高度
Filler height (mm)	Filler current height 灌装机当前高度
Rotations	Set rotation of filler when conducting CIP. 设定 CIP 时灌装机旋转的圈数
Cleaning Time	Set CIP time 设定 CIP 时间
RotationsRemaining	Remaning rotation 剩余圈数
Time Remaining	Remaining time 剩余时间
Bottle StopLevel	Under Auto mode,Target weight when stop to infeed bottles 自动模式下，停止进瓶的目标重量
CurrentLevel	Under Auto mode, product weight supplied by LPD. 自动模式下，LPD 所供应的产品重量

在 PackML Idle 下选择 CIP Mode，设定好 CIP 时间、CIP 速度、CIP 压力、Filler_CIPHeight，按下启动按按钮，灌装机上升到 Filler_CIPHeight，CIP 接水盘伸出，灌装机开始旋转进行 CIP 清洗；如果 Exhausting Flush 显示剩余 0 圈，CIP 设定时间开始生效，如果 CIP 剩余时间为 0，CIP 停止。

注意：完成 CIP 清洗后，灌装机不会自动下降，需要手动将灌装机高度调整到当前配方所设定高度。

Under PackML Idle, choose CIP Mode, set CIP time, CIP speed, CIP pressure, Filler_CIPHeight, press button “Start”, the filler will rise to Filler_CIPHeight, then CIP water catch pan extend; the filler start to rotate and CIP; If “Exhausting Flush” indicate “0”, then CIP setting time come into effect; If the remaining time for CIP is “0”, CIP stop.

Note: The filler will not move down automatic, please manually adjust the height to target value required in recipe.

13. 剔瓶器剔瓶原因 / 13. Rejecter cause table

Item	Rejecter reason	Rejecter dealing result
1	Under product level	Rejected to the rejecting conveyor
2	No cap , crooked cap on bottle	Rejected to the rejecting conveyor
3	Wrong pulse value	Rejected to the rejecting conveyor

14. 程序的输入/输出

14. I/O list for programming

1 I/O list for programming

	Input Module 1 1769-IQ32	Input Module 2 1769-IQ32	Input Module 3 1769-IQ32		Output Module 1 1769-OB32	Output Module 2 1769-OB32
Input No 0	Emergency stop_1, Filler HMI	Main Filler Capper Motor Overload 16Q1	Spare	Output No 0	Green	DC+24V flow meter 1-5 60K1
Input No 1	Emergency stop_2, On the Jog	Capper Over-Speed Motor Overload 17Q1	Spare	Output No 1	Blue	DC+24V flow meter 6-10 60K2
Input No 2	Emergency stop_3, Outfeed side	Cap Star-wheel Height Adjustment Motor Overload 18Q1	Spare	Output No 2	Red	DC+24V flow meter 11-15 60K3
Input No 3	Emergency stop_4, Right side	Capper Height Adjustment Motor Overload 19Q1	Spare	Output No 3	Buzzer	DC+24V flow meter 16-20 60K4
Input No 4	Safety Gate_15	Filler Height Adjustment Motor Overload 21Q1	Safety disconnect lock Black4	Output No 4	Main air supply	DC+24V flow meter 21-25 60K5
Input No 5	Emergency stop_6, Cabinet	Infeed Conveyor Motor Overload 22Q1	Spare	Output No 5	Blowing cap valve	DC+24V flow meter 26-30 60K6
Input No 6	CIP Catch Pan Extend	Outfeed Conveyor Motor Overload 23Q1	Safety disconnect lock Black 6 23SD1	Output No 6	SIP/SIP Cylinder	DC+24V flow meter 31-35 60K7

	Input Module 1 1769-IQ32	Input Module 2 1769-IQ32	Input Module 3 1769-IQ32		Output Module 1 1769-OB32	Output Module 2 1769-OB32
Input No 7	CIP catch pan Retract	Spare	Spare	Output No 7	Filler stop bottles feed	DC+24V flow meter 36-40 60K8
Input No 8	Filler Minimum Accumulation Bottle	Spare	Safety Gate-1	Output No 8	Filler stop Caps Feed	Spare
Input No 9	Filler Fallen Bottle	Spare	Safety Gate-2	Output No 9	Cap Lid Bottle	Hold Status
Input No 10	Bottle Presence In Infeed-Starwheel	Spare	Safety Gate-3	Output No 10	Spare	Amber
Input No 11	Spare	Start/Pulse	Safety Gate-4	Output No 11	Spare	Spare
Input No 12	Downstream Conveyor Full	Reset	Safety Gate-16	Output No 12	Spare	Spare
Input No 13	Spare	Start	Safety Gate-6	Output No 13	Spare	Spare
Input No 14	Downstream Conveyor Half Full	Stop	Safety Gate-7	Output No 14	Spare	Spare
Input No 15	Brake Resistance Contactant Feedback Signal	Spare	Safety Gate-8	Output No 15	Spare	Spare
Input No 16	(Line Contorl) 10E-S-9 Spare	Bottle Outfeed Star-wheel Overload	Safety Gate-9	Output No 16	Cap star-wheel height adjustment motor up	Spare
Input No 17	Minimum Cap Presence In Airveyor	Spare	Safety Gate-10	Output No 17	Cap star-wheel height adjustment motor Down	Spare
Input	Spare	Reject conveyor	Safety	Output	Capper	Spare

	Input Module 1 1769-IQ32	Input Module 2 1769-IQ32	Input Module 3 1769-IQ32		Output Module 1 1769-OB32	Output Module 2 1769-OB32
No 18		full	Gate-11	No 18	height adjustment motor up	
Input No 19	Spare	Product level	Safety Gate-12	Output No 19	Capper height adjustment motor down	Spare
Input No 20	Cap checking In CapDisc	Filler mechanical zero	Safety Gate-13	Output No 20	Filler height adjustment motor up	Spare
Input No 21	Filler Height Upper Limit	Capper mechanical zero	Safety Gate-14	Output No 21	Filler height adjustment motor down	Spare
Input No 22	Filler Height Lower Limit	Cap star-wheel overload	Emergency Stop_9 （Spare）	Output No 22	Spare	Spare
Input No 23	Capper Height Upper Limit	Filler-compressed air pressure low limit, 47PS1	Emergency Stop_8	Output No 23	Spare	Spare
Input No 24	Capper Height Lower Limit	+24v Voltage circuit fault	Cap presence on bottle_1	Output No 24	Spare	Spare
Input No 25	Spare	Spare	Cap presence on bottle_2 High Cap	Output No 25	Brake Resistance Contactant	Spare
Input No 26	Spare	Spare	Hold	Output No 26	Spare	Spare
Input No 27	Cap Star-wheel Height Upper Limit	FT System, Powered Control	Spare	Output No 27	Rejecter Relay	Spare
Input No 28	Cap Star-wheel Height Lower Limit	FT System, Fault Machine	Spare	Output No 28	Spare	Spare
Input	Infeed	FT system,	Spare	Output	Spare	Spare

	Input Module 1 1769-IQ32	Input Module 2 1769-IQ32	Input Module 3 1769-IQ32		Output Module 1 1769-OB32	Output Module 2 1769-OB32
No 29	Star-wheel Overload	Alarm		No 29		
Input No 30	Intermediate Star-wheel Overload	Filler Safety Relay Auxiliary Contactor	Spare	Output No 30	Spare	Spare
Input No 31	Scroll Overload	Spare	Spare	Output No 31	Spare	Spare

15. 图纸

15.1 电气原理图

请参考附件一。

15.2 气动原理图

请参考附件二。

15.3 机械图纸

请参考附件三。

15.4 减速机推荐润滑油表

请参考说明书文件包。

15. Assembly drawings

15.1 Electrical principle drawing

Refer to No.1 attachment.

15.2 Pneumatic principle drawing

Refer to No.2 attachment.

15.3 Mechanical drawings

Refer to No.3 attachment.

15.4 Recommended lubricant for reducers

Refer to document package.

16. 附件

a) 电气原理图（附件一）

16. Attachments

Electrical principle drawing (Attachment 1)

b) 气动原理图（附件二） Pneumatic principle drawing (Attachment 2)

c) 机械图纸（附件三） Mechnical drawing (Attachment 3)

附件一

电气原理图
(Electrical principle drawing)

附件二

气动原理图

(Pneumatic principle drawing)

附件三

机械图纸
(Mechnical drawing)