

Malfunctions, diagnosis and maintenance

故障，诊断及维护

1.1 Malfunctions and diagnosis 故障及诊断

1.1.1 Fault messages

故障信息

Fault messages are displayed in the LED 7 segment display:

故障信息显示在 7 电子屏上:

List of fault messages 故障信息列表

Display	Meaning	Measures
-	Normal operation	-
1	Analog / digital transducer not functioning 模拟/数字转换无功能作用	Check connection cable, check the wiring on the weighing cell on the igs , check weighing cell 检查连接线，检查 Igs 上重力传感器的连线，检查重力传感器
2	Data loss 数据丢失	Recalibrate igs , Re-enter the number of impulses per revolution, if necessary re-enter system setting via interface, change batteries if problems occurs repeatedly 重新校正 igs ，重新输入每转脉冲数，如必要可通过接口对系统进行重新设置，如果故障再次发生，请更换电池
3	Pinch valve does not close 截止阀未关闭	Check compressed air, check cable connections, check pinch valve rubber membrane 检查压缩空气，检查线缆连接，检查阀芯垫圈
4	Pinch valve does not open no material 截止阀未打开，无料	Check bridge formation at material inlet, release the solenoid valve locking, check the funnel weigher filling time 检查料入口处是否出现架桥现象，打开电磁阀，检查料斗填充时间
5	Screw rotational speed missing, although extruder is turning 螺杆转速丢失，尽管挤出机仍在运行	Check inductive proximity switch cable connection / check igs , check the switching spacing (1 - 3 mm), check the igs connection 检查感应式接近开关线缆的连接/检查 Igs ，检查接近开关间隙（1—3mm），检查 igs 连接
6	Pinch valve in manual mode 截止阀在手动模式	System switched to „pinch valve in manual mode“, initiated by switch /only for dosing stations) 系统切换到“截止阀手动模式”通过开关动作（仅在喂料装置）
7	Weigher at bottom capacity limit 称量在底线位	Too small weight difference for weighing process (delta digit < 80), check screw speed 称量过程量变化过小 ($\Delta \text{digit} < 80$)，检查螺杆转速

1.1.2 Other possible malfunctions

Malfunction	Measures
<p>igs 7 segment display not illuminated igs 7 电子屏无显示</p>	<ul style="list-style-type: none"> - Check LED D1 in igs: 24 V ok --> LED D1 illuminated - Check cable for 24 V supply - Check power pack - Check fuses - 检查 LED D1: 24V 是否正常 →LED D1 闪亮 - 检查 24V 电源线 - 检查电源模块 - 检查保险
<p>Large differences between displayed and actual throughput, considerable throughput fluctuation 显示值与实际值出入比较大, 有相当大的波动</p>	<ul style="list-style-type: none"> - Check that load cells are free and gap dimension stop screw - Recalibrate weigher - Check load cell - Check setting impulse per revolution and correct if necessary - Check inductive proximity switch switching spacing (set point: 1-3 mm) - 检查传感器是否自由悬空, 止动触点 - 重新较称 - 检查重力传感器 - 如果必要检查每转脉冲设置并纠正 - 检查感应式接近开关的间隙 (设定值: 1-3mm)
<p>Only half the throughput is displayed as from a certain screw rotational speed 只能显示某一时刻螺杆转速的一半值</p>	<ul style="list-style-type: none"> - Check the inductive proximity switch switching spacing - Ensure that only one impulse is generated per mark, for this reason do not employ screws with an internal hexagon! - Ensure that the maximum permissible frequency of 180 Hz is not exceeded - 检查感应式接近开关的间隙 - 确保每个记号只产生一个脉冲, 因此不建议使用内六角螺母 - 允许的最大频率不得超过 180Hz

<p>Material tends to form lumps 物料堆积成块</p>	<ul style="list-style-type: none"> - Increase the outlet gap of the impact cone, the fixing permits changes in 5 mm increments. - In extreme cases the impact cone can be removed and the collection funnel fitted with a reduction piece*, however, this impairs the system accuracy. <p>* Note: The use of a reduction piece is generally determined during the project planning phase . If required, the reduction piece can be ordered at a later date.</p> <ul style="list-style-type: none"> — 增加出口处缓冲锥体的间隙, 对其进行 5mm 的调整 — 万一我们需要卸掉缓冲锥体, 为积料斗安置一个缓冲片, 然而, 这样做会影响系统的称量精度 <p>*备注: 使用缓冲片一般是在项目计划过程中就已经决定了的, 如果需要, 在日后也同样可以订购该缓冲片</p>
<p>Coarsely milled material 破碎料</p>	<p>See above 见上</p>

Malfunctions	Measures
<p>Shut-off unit does not open, no material, however, no fault message 阀门未打开, 无料, 但是无报警信息</p>	<ul style="list-style-type: none"> - Immediate help: switch off the voltage supply, the valve must open when not under tension! - Subsequently: - If the malfunction occurs again recalibrate the weigher - Check the gap dimension of the stop screw, check the load cell <ul style="list-style-type: none"> — 立刻操作: 断开电源, 无电压状态阀必须打开 — 随后: — 如果故障再次出现, 重新校秤 — 检查缓冲支点的间隙, 检查重力传感器
<p>igs does not transit data to the interface igs 不能传递数据到接口</p>	<p>Check cable connection, check node address setting 检查线缆连接, 检查节点地址设置</p>
<p>igs does not start up, although no fault message has been transmitted and voltage supply, rotational speed recording etc. are OK igs 不能启动, 尽管无报警, 电源正常, 螺杆转速记录等都正常</p>	<p>Undertake complete reset (refer to part 1.3.4), subsequently recalibrate the unit!!! (part 1.3.2) 采取完全复位 (查阅 4.3.4 部分), 随后重新校准该单元 (4.3.2 部分)</p>

1.2 Maintenance 维护

Electronic 电子部分

The **igs** electronic system is maintenance free.

Igs 电子系统无需维护.

1.3 Service

1.3.1 Calibrating the funnel weigher with igs 通过 igs 来校秤

The **igs-imis** system has been calibrated at the factory. A new basic calibration becomes necessary when error message 2 " calibration data lost " appears on the 7 segment display or as an error message on the monitor.

Igs-imis 系统出厂时已经较过秤，只有当二极管数字显示模块上显示 2 “校准数据丢失” 时或在显示屏上显示错误信息时才有必要对其进行新的基础校准。

The extrusion system must be stopped and the funnel weigher or respective component of the dosing station must be emptied in order to calibrate the funnel weigher.

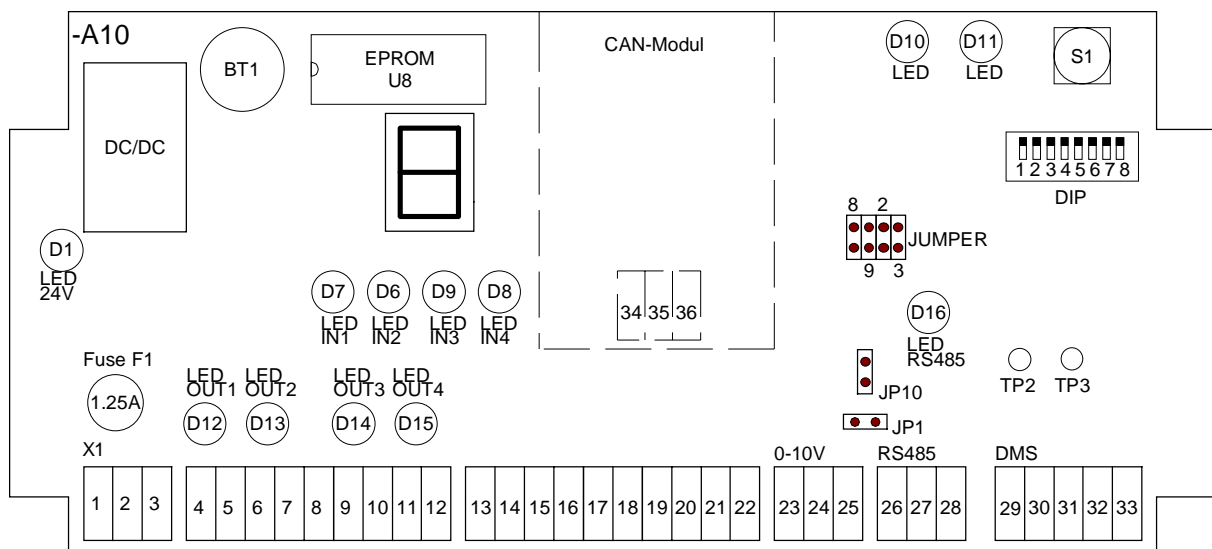
挤出机必须停止，料斗里和喂料站上的积料必须排空，以便重新校秤。

The system is already factory-calibrated! For calibration it is necessary that the electronic is switched on at least half an hour prior to starting work! Make sure that the separating plate is placed inside the weigher hopper! The weigher hopper must not be unhinged during calibration!

系统已经工厂校正过了！如要校正，必须在启动前电气部分打开至少半小时以上！确信隔板已经放入料斗里！在称量过程中不要晃动称量料斗！

The calibration of the funnel weigher can be made with a higher ranking system like SAVEOMAT or AUREX, if such systems exist in your production. The handling of the calibration is explained in each of the operation manuals.

校秤工作可以在更高级别系统中操作进行，诸如 **Saveomat** 或 **Aurex**，如果系统存在于你的产品中，校秤处理会在每个操作手册中说明。



Rep. Picture 2.1

After emptying the funnel weigher, please proceed as follows:

1. Open the **igs** housing to obtain an unobstructed view of the electronic:

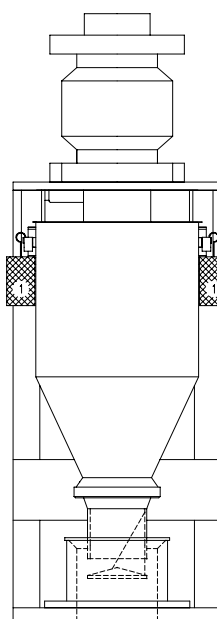
在倒空料斗后，请按如下操作：

1. 打开 **igs** 控制盒使电子部分置于可视范围
2. Set DIP 7 to ON
-> an "A" appears on the 7 segment display

设置 DIP7 为开

—> “A” 出现在二极管显示屏上

3. Set DIP 8 to ON
-> "A" changes to "0" on the display
-> Wait until "0" appears in the display



设置 DIP8 为开

—>“A”变为 “0”

—>等待直到 “0” 出现在显示屏上

4. Keep enter key S1 pushed down until "0" changes to "-"
The computer will now store the empty weight of the funnel weigher
-> Wait until "0" appears in the display.

持续按住 S1 直到 “0” 变为 “-”

这时电脑储存空料斗称量值

—>直到 “0” 出现在显示屏

5. Briefly actuate enter key S1 only once !
-> a "2" appears in the display.

瞬间触动键 S1 一次

->

6. Suspend a 1kg standard weight on each the left and right side of the funnel weigher and ensure that the outfeed of the hopper does not come in contact with the receiver hopper!

Keep enter key S1 pushed down until "2" changes to "-"

The computer will now store the standard weight

-> Wait until "2" appears in the display.

在料斗左右两边各自悬挂一个 1Kg 的标准砝码，确保料斗的出料端不要接触接收料斗！

按住键 S1 直到 “2” 变成 “-”

电脑现在才储存标准重量

->等待直到 “2” 再次显示

7. Set DIP 8 to OFF

-> if the calibration factor was specified correctly, "A" will change to "0"

-> "0" will appear after some time

-> if the calibration factor was not correctly specified, "A" will change to "1".

Then repeat this process.

设置 DIP8 为关闭

->如果校对系数设置正确，“A”将变成“0”

->过一会儿“0”将会再次出现

->如果校对系数没有正确设置，“A”将变成“1”

然后重复该操作

8. Remove the standard weights.

拿掉标准砝码

9. Set the DIP 7 to OFF

-> calibration has been completed.

-> "-" appears in the display.

设置 DIP7 为关闭

->校准结束

->显示“-”

10. Switch the igs off and on again.

After closing the igs housing and unlocking the solenoid valve, turn screw to position " O ", the system is operational again.

关闭 igs 电源再打开

在关闭 igs 控制盒并接通电磁阀，将螺杆位置调整到“O”，系统再次运作。

1.3.2 Calibrating the funnel weigher via the service computer

经由服务电脑来校秤

Please proceed as follows:

请按照如下步骤操作：

- Run down the extrusion line and fully empty the funnel weigher.
- Remove and clean the weighing hopper (after cleaning the hopper make sure that the separating plate is built in correctly!).
- Select a service computer mask which displays the values and permits editing
- Check the basic setting from the following table and correct, if necessary:
- 停止挤出机并倒空称量料斗
- 移开并清洁称量料斗（在清洁料斗后确保分割板安置正确）

- 现在我们校秤，在我们的例子中有两个 1Kg 的砝码，将其悬挂在料斗左右两侧，注意到保持悬挂砝码后的料斗处于自由悬空状态，如果必要可以改变砝码放置位置.
- Read the current A / D values again and log it, if necessary compute a mean value.
- 读出并记录当前的 A/D 值，如果必要计算出平均值.
- Let us assume that the value is 21354 digit.
- 让我们假定该值为 21354digit.
- Remove the standard weights and calculate the calibration factor as follows:
- 移开标准砝码并按如下方式计算出校对系数:

$$\frac{2 \times 1000 \text{ g}}{(21354-14700) \text{ digit}} = \frac{2000 \text{ g}}{6654 \text{ digit}} = 0.30057 \text{ g / digit}$$

- According to this, the new calibration factor reads 0.30057 g / digit.
- 据此，这新的校对系数为 0.30057g/digit.
- Re-enter the values for empty weight and calibration factor.
- 重新输入空斗计量值和校对系数.
- Subsequently compare the displays “current calibration factor” and “new calibration factor” to ensure that the **igs** has taken over the values.
- 随后比较显示的“当前校对系数”和“新的校对系数”以确保 igs 已经接收了新的值.

The calibration is now concluded.

Switch the main voltage once off and on again.

Now the system is operational again.

校对过程结束.

关闭电源一次然后再打开.现在系统再次运行.

1.3.3 Testing the load cell 测试重力传感器

A certain degree of variation will result for the calibration factors due to component part tolerances. According to experience, the variation is approx. +/- 3% (view the following schedule).

由于组件的公差区别在某中程度上导致校对系数的不同.

根据经验, 误差大概为 +/- 3% (见下表)

Funnel weighers for mono-, co-extrusion and dosing stations:

单一、共挤、喂料站用计量料斗:

Type 型号	Load cell 重力传感器	Standard calibration factor 标准校准系数	Experimental value min. 最小实验值	Experimental value max. 最大实验值
TW 93/60/3L	1 X 5 kg	0.076295 g / digit	0.074006	0,078584
TW 93/200/6L	1 X 10 kg	0.15259 g / digit	0.14801	0,15717
TW 93/500/15L	1 X 20 kg	0.30516 g / digit	0.29602	0,31434
TW 93/900/25L	1 X 30 kg	0.45777 g / digit	0.44404	0,47150
TW 93/1400/40L	1 X 75 kg	1.17250 g / digit	1.137325	1,207675
TW 98/350	1 X 20 kg	0.30516 g / digit	0.29602	0,31434
TW 98/650	1 X 30 kg	0.45777 g / digit	0.44404	0,47150
TW 98/1300	1 X 75 kg	1.17250 g / digit	1.137325	1,207675
TW 98/2000	1 X 50 kg	1.63115 g / digit	1.582216	1,680085

Actual calibration factors can be seen in one of the service masks.实际校对系数可以在服务界面上显示.

Besides the visual check on mechanical damage, there is the option for electrical check.

除了对机械破损的目测外, 还有对电子部分检查的选项.

Preconditions for this check:

检查前提:

1. Extruder standstill due to the fact that the weigher and the **igs** electronics will be manipulated
挤出机停止，根据实际秤和 igs 电子部分将被操作
2. The weigher must not contain material.
料斗秤里必须无料.
3. The service level has to be invoked to read the actual A/D value.
服务级别可以调用以便读取实际的 A/D 值.
4. A digital multimeter having a direct voltage range of 2000 mV
一台直流电压范围为 2000mV 的数字万用表.

As the zero point as well as the tare weight are subject to changes partly due to construction, the following table contains only difference values (difference value = value with calibration weigh - value of empty weigh resp. tare weight). Calibration factors may differ by approx. +/- 3 %. Voltage at the **igs** is measured between the test points TP 2and TP 3 (see **Fig. 2.1**).

Funnel weighers for mono-, co-extrusion ans dosing stations:

单一、共挤、喂料站用计量料斗：

Type 型号	Load cell 重力传感器	Calibration weigh 校秤 [g]	Delta digit Δ digit			Delta mV Δ mV		
			standard	min.	max.	standard	min.	max.
TW 93/60/3L	1 X 5 kg	2000	26214	25428	27000	256	248	264
TW 93/200/6L	1 X 10 kg	2000	13107	12779	13435	128	124	132
TW 93/500/15L	1 X 20 kg	5000	16384	15974	16794	160	155	165
TW 93/900/25L	1 X 30 kg	5000	10922	10595	11250	107	104	110
TW 93/1400/40L	1 X 75 kg	(10000) 5000	8528 (4264)	8272 (4136)	8783 (4392)	83 (42)	81 (41)	85 (43)
TW 98/350	1 X 20 kg	5000	16384	15974	16794	160	155	165
TW 98/650	1 X 30 kg	5000	10922	10595	11250	107	104	110
TW 98/1300	1 X 75 kg	(10000) 5000	8582 (4264)	8272 (4136)	8783 (4392)	83 (42)	81 (41)	85 (43)
TW 98/2000	2 X 50 kg	(10000) 5000	6131 (3065)	5947 (2973)	6315 (3280)	60 (30)	58 (29)	62 (31)

1.3.4 Total reset 整体复位

Following a computer crash e.g. due to high mains voltage fluctuations it may be necessary to completely erase the internal computer memory:

在电脑崩溃后，比如由于高频电压的波动，他可能有必要彻底清空电脑的内存存储器：

1. Switch off mains voltage. 关闭主电源
2. Keep the input key S1 pressed. 按住键 S1 不放
2. Turn on the mains voltage again. 再次开启电源
3. The **igs** now signals fault "2" (Data loss). 现在 **igs** 显示错误 “2” （数据丢失）
4. Release the input key S1. 放开键 S1.

Now recalibrate the funnel weigher and re-enter the number of pulses per screw rotation (see above)! After calibration switch the main power once off and on again.

现在重新校秤和重新输入螺杆每转脉冲值（见前文）！校准后重新断开闭合电源一次。

Note: If a mains switch is available, as an alternative remove the plug on the fuses 1, 2, 3 or pull the safety fuse F1 (see Fig. 2.1).

备注：如果主电源可用，可选择移开保险上的 123 接头或拉出保险 F1（见图示 2.1）

1.3.5 EPROM change

EPROM 更换

- Switch off the operating voltage and remove the housing lid. 关闭电源并移开控制盒盖.
- Carefully remove the IC labelled „EPROM U8“ (see Fig. 2.1) from its base. 小心地从底座上拔掉 IC 芯片 “EPROM U8” （见图示 2.1）
- Take the new EPROM and fit it into its base. Ensure that the indentation of the IC is on the same side as the indentation of the base. 在底座上装上新的 EPROM，确保芯片脚与底座相对应.
- Check afterwards whether all legs of the EPROM are correctly fitted in the base. 再次确认正确安装.
- Re-assemble the unit and effect a system reset as described under 1.3.4. 再次如 4.3.4 描述对系统单元复位.

Afterwards the **igs** will be ready for operation. 然后 **igs** 准备操作.

1.3.6 Calibrating the analog - digital transducer 校对数模转换

The electronics are assigned a freely programmable analog output (option) which provides a direct voltage of 0-10V. This output is factory programmed for the output of the melt throughput (if the option is used). Its configuration shows a value for mass throughput which is proportional to the tension and dependant to the size of the funnel weigher and the load cells. For the various funnel weighers the following values are transmitted:

电子模块被指派的自定义模拟输出（选项）（提供 0—10V 的直流电压），该输出为工厂定义的熔积物产量输出（如果选项被使用）。该配置根据电压、料斗尺寸和重力传感器比例显示产量。根据不同的料斗以下的值与之相对应：

TW 93/60/3L	0 - 50 kg/h	TW 98/350	0 - 700 kg/h
TW 93/200/6L	0 - 300 kg/h	TW 98/650	0 - 1500 kg/h
TW 93/500/15L	0 - 700 kg/h	TW 98/1300	0 - 2000 kg/h
TW 93/900/25L	0 - 1500 kg/h	TW 98/2000	0 - 2000 kg/h
TW 93/1400/40L	0 - 2000 kg/h		

The tension 0 – 10 V can only be switched to the inlet of a digital display device with 4 or 4 ½ figures. This device shall provide the possibility to adjust the zero point as well as the scaling. If such a system is delivered by iNOEX, it is also ready for assembly, meaning calibrated.

电压 0—10V 的切换输入通过 4 或 4 ½ 寸数字显示。该装置根据比例调节零点。如果设备由 iNOEX 直接提供，它既已装配并校对。

With our service program the throughput values of the funnel weigher can individually be adjusted.

通过我们服务程序对料斗的产量值进行调整下可相对独立运行。

1.3.7 Meaning of the status LED

LED 状态显示含义

Several red and green light diodes which represent various functions (refer to Fig. 2.1) are located on the **igs** printed circuit board:

igs 印刷电路板上一些红、绿二极管表示不同功能（见图示 2.1）

LED display LED 显示		Meaning 表示含义
LED D10 1 0 1 0	LED D11 1 1 0 0	<u>Weigher status</u> 称量状态 Stand By, extruder check running?后 备, 挤出机检测运行? Change of screw 螺杆改变 Weighing 称量 Filling 填充物料 Settling after filling 填充下料
LED D1 1 0		<u>Supply voltage</u> 电源 OK 好 Missing 丢失
LED D12 0 1		<u>Solenoid valve</u> 电磁阀 Open 打开 Closed 关闭
LED D6 0 <--> 1 0		<u>Rotational speed recording</u> 转速记录 Rotational speed recording OK 好 Rotational speed recording fault 出错
LED D16 0 <--> 1 0		<u>Interface</u> 接口 Interface OK 好 Interface fault 出错

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