

140杯直通式無管路自動滴液系統

140 bottles Srtaight Tube-free Dispensing System

免攪拌磁石

No stirring
magnet machine.

140杯母液
攪拌區

140 Solution Bottles
Stirring Area

可與我司電腦配色系統
連線實現配方無紙化傳輸

雙機械手臂
Robotic hand

天平×4組
Balance×4

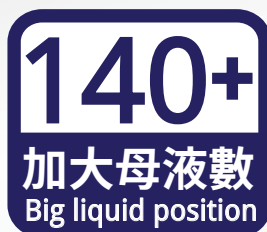
30杯計量位
30 Cups
Measuring
Position

雙轉盤
同時各自計量
Two turntable
working repectivelyat the same time

計量流程 - 集各式滴液機優點於一身

Technological Process - Gathering kinds of dispensing's advantage together





很多滴液機用戶因母液位不足，一支染料僅化兩濃度易導致滴液量太小，造成再現性不良。軟體支持140杯以外母液可以手動放杯方式加入計量。

由於滴液機計量精度為 $\pm 0.02\text{g}$ ，如滴液量為 6g ，產生最大計量誤差時： $(6.02-5.98) \div 6 \times 100\% = 0.66\%$ (尚不含滴液機天平本身精度 ± 0.005 誤差)

為保持再現性，計量重應在 6g 以上，如無法滿足需增加低濃度母液

Due to insufficient mother bottle quantity on machine, many users do only make two concentration of solutions on machines, which will affect the dispensing volume and cause sampling deviation issue. We support 140 bottles on machine and manual operation model when you need more mother solutions.

The measuring accuracy of dispenser precision is $\pm 0.02\text{g}$, if dispense weight was 6g , the maximum measurement tolerance is $(6.02-5.98) \div 6 \times 100\% = 0.66\%$. It will be better to dispense more than 6g of solution on each formula to ensure the same color performance when making sampling and mass production.



雙轉盤同時計量共30個計量杯位+2個排液杯位。滴液機若杯位不足時除效率較低，還會有拿錯放錯等可能疏失。

Two turntable with 30 dispensing position and 2 drain position. Sufficient positions will improve the operation efficiency and avoid mistake in frequent taking in and taking out the dyeing cups.



天平自動校正功能:

當機台閒置或設定時間到時，機械手自動抓取校正杯，進行四天平校正。染廠對天平管理普遍不佳：天平說明書或校正砝碼遺失、無落實定期校正。

Automatic leveling on four balance:

System will implement automatic leveling on all balances regularly to ensure the accuracy of scaling based on your setting time.



母液減重式計量——防止蒸發影響準度

1. 防止秤面或杯身的殘留水分蒸發影響準度

計量一配方假設需要10-20秒，
當室溫30度時，蒸發量達 $0.02\text{g}/20\text{秒}$ 。
以計量 6g 為例，因蒸發所產生的最大誤差為：
 $(0.015 \div 6) \times 100\% = 0.3\%$ (蒸發主要影響濃度偏深)

2. 軟體紀錄母液剩餘量，可知優先泡藥順序

3. 計量時轉盤無須升降，速度更快，動能單純； 計量時可投入面料



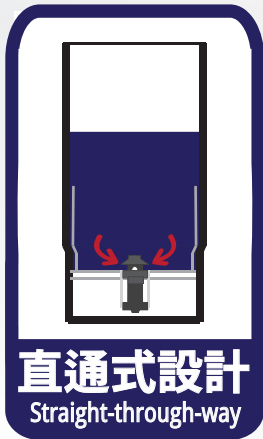
Loss-in-weight measuring method

-- Prevent evaporation affecting the dispensing accuracy

1. Prevent the residual water on balance surface or the cup body evaporation influence dispensing accuracy.
For example:
Dispensing a recipe usually need 10-20 second. When the room temperature 30°C , the evaporate speed is $0.02\text{g}/20\text{ s}$.
If dispense 6g , use 15 second the maximum error caused by evaporation is $(0.015 / 6) * 100\% = 0.3\%$ (evaporation mainly affect the color chroma)
2. Software records the remaining amount of mother liquid when the bottle last dispensing, so the user can known the priorityof making mother liquid.
3. Without turntable lifting, the dispensing speed is faster, and the kinetic energy is simple.
And can put the fabric into dyeing cup during dispensing process.

直通式母液瓶設計 --防止分散性染料滴液不穩

The straight through type solution bottle - Better choice for dispensing disperse dyes solution



原理 Concept:

自然水壓止漏，由天平上的電磁閥頂開滴液橡膠，母液透過小孔流下
Water pressure holds the valve down to prevent leakage. The electromagnetic valve on balances will knock the bottle valve to dispense and weigh the solution.

優勢 advantage:

1. 垂直管路設計，防止染料堆積於管路中 (特別是分散染料)
 2. 無須每瓶配備電磁閥，免去維護保養點徒手就能拆卸清洗
 3. 採用PC材質，不易摔壞，降低耗材成本
1. Solution liquid could be dispensed onto mixing cups straightly without flowing through additional pipe to prevent precipitation.
2. No electromagnetic valve installed on each bottle to cause potential leakage problem. It's easy to maintain and clean.
3. Bottles are made by PC against crashing.



免攪拌軸、攪拌磁石設計--母液瓶直接正反轉動

攪拌軸/磁石的壞處:

1. 泡藥時就投入，會影響天平準度
2. 磨損母液瓶底，使母液瓶變成耗材
3. 如果漏放，用到該瓶配方都不對色。100個磁石即100個疏失機會
4. 高濃度時，磁石或攪拌軸成污染源

No stirring magnet or rod

-- turn the solution bottle positively and negatively

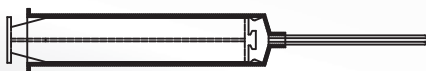
Why it's bad to use stirring magnet / rod :

1. Put the magnet during solution making process will affect the accuracy of balances.
2. Bottom of solution bottle would be damaged.
3. Adding anything onto the bottle during mixing process is adding potential risk for management.
4. Put-in and take-out the stirring magnet/rod will cause potential pollution, especially when the concentration of solution is high.



注射筒式(速度慢)

Injector type (slower)



- 1、玻璃母液瓶與針筒均是耗材。
- 2、止漏材質遇染料助劑易膨脹，若不更換則影響精度。
- 3、滴液速度較重量法慢許多，一次僅能滴液一支染液，為速度最慢的機型

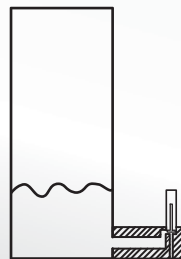
- 1、Both Glass liquid bottle and Injector are consumables.
- 2、The leakage free material in injector may expanded in contact with some auxiliaries and lead to accuracy issue.
- 3、Dispensing speed is slower than weight method. It can only dispense single dye solution at a time. It is the slowest type of dispenser.



非直通式(分散性染料效果不佳)

Not Straight type

Not good effect for disperse dye



- 1、分散染料不溶於水，磁石一旋轉，染料進入橫躺部位容易產生沉積，造成配色不穩。
- 2、電磁閥及母液瓶未分離，成本高且維護保養不易。
- 3、需特殊工具才能清洗，不容易查看是否清洗乾淨

1. Disperse dyes is in insoluble in water. Dyestuff precipitation will appear on extending pipe after stirring and cause dispensing mistake.
2. Electromagnetic valve is installed on solution bottle, which is difficult to maintain. And the bottle cost will be higher.
3. It's difficult to clean the expending pipe and verify the cleanness.

雙天平母液泡製機

Solution Maker

0.001
小數點3位
Accuracy 0.001g

若使用小數點兩位稱料，務必取5g以上化料
Use accuracy 0.01g balance, must keep weigh 5g up.

2位天平3g化料最大誤差: $(5.004-4.995)/3g \times 100\% = 0.3\%$
3位天平3g化料最大誤差: $(5.0004-4.9995)/3g \times 100\% = 0.03\%$

Use accuracy 0.01g balance to weigh 3g, the max error by balance is 0.3%. Use accuracy 0.001g balance to weigh 3g, the max error by balance is 0.03%

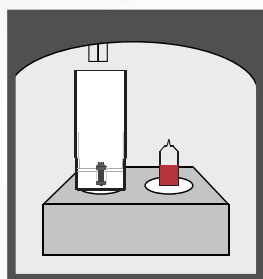
雙天平監控
2 balance monitoring

軟體偵測小數點3位天平減少的染料重與小數點2位天平增加的重量相符才可完成化料，避免在灑料的情況下完成泡藥

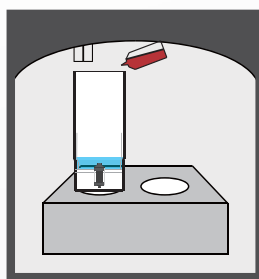
Software monitors the reducing weigh on 0.001g balance and increasing weigh on 0.01g balance. The dissolving will be passed when the volume is balance during weighing process. It can prevent operator spreading out the powder and cause accuracy issue.



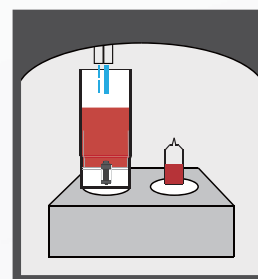
◎ 雙天平泡藥流程示意圖 Two balance to making solution operation process



1. 紀錄母液瓶及染料重量
Software record empty solution bottles and dye tank weight



2. 加底水後提示應加染料重
System adds water for dissolving automatically and notice the dyestuff powder volume to operator.



3. 增減重吻合, 加水完成泡藥
System monitors the whole weighing process and ensure balance.

泡藥機配備一台攪拌機，20個攪拌杯

Solution makers is equipped with a mixer & 20 solution bottles.

免攪拌磁石，八杯位正反轉高速攪拌

NO stirring magnet. 8 stirring position.

攪拌機
Mixer



滴液機 Dispenser
尺寸 Size: 160×270×190cm
精度 Accuracy: $\pm 0.02g$
速度 Speed: 30cups/30-40min
電源 Power: 220V 4KW/H
水源 Water: 4分 1/2"

泡藥機 Solution Maker
尺寸 Size: 60×60×95cm
精度 Accuracy: Water $\pm 0.02g$ Dyestuff $\pm 0.002g$
電源 Power: 220V 2.5KW/H
水源 Water: 4分 1/2"

攪拌機 Mixer
尺寸 Size: 76×32×34cm
電源 Power: 220V 80W/H