

Instruction Manual

BOTTLE TOP DISPENSER With Recirculation valve

Thomas. No. 22A00H933
22A00H934
22A00H935
22A00H936
22A00H937
22A00H938



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Safety Information

LabForce Bottle Top Dispenser may sometimes be used with hazardous materials, operations and equipments. It is beyond the scope of this manual to address all of the potential risks associated with its use in such applications. It is the responsibility of the user of this instrument to consult and establish appropriate safety and health practice and determine the applicability of regulatory limitations prior to use. limitations, prior to the usage of this instrument.

Please follow the guidelines below, and read this manual in its entirety to ensure safe operation of the unit.

1. Every user must read and understand this operating manual before operation.
2. Follow general instructions for hazard prevention and safety instructions e.g. wear protective clothing, eye protection and gloves.
3. Observe all specifications provided by reagent manufacturers.
4. When dispensing inflammable media, make sure to avoid the built up of static charge, e.g. do not dispense into plastic vessels do not wipe instruments with a dry cloth.
5. Use the instrument only for dispensing liquids, with strict regard to the defined limitations of use and operating limitations. Observe operating exclusions. If in doubt, contact the manufacturer or supplier.
6. Always use the instrument in such a way that neither the user nor any other person is endangered. When dispensing, the discharge tube must always point away from you or any other person. Avoid splashes. Only dispense into suitable vessels.
7. Never press down the piston when the discharge tube closure is attached.
8. Never remove the discharge tube while the dispensing cylinder is filled.
9. Reagents can accumulate in the cap of the discharge tube. Thus, it should be cleaned regularly.
10. Never carry the mounted instrument by the cylinder sleeve or the valve block.
Breakage or loosening of the cylinder may also lead to personal injury from chemicals.
11. Never use force on the instrument. Use smooth gentle movements to operate the piston upwards and downwards. Use only original manufacturer's accessories and spare parts.
12. Do not attempt to make any technical alterations. Do not dismantle the instrument any further than is described in the Operation Manual.
13. Always check the instrument for visual damage before use.
14. If there is any sign of a potential malfunction (e.g. piston difficult to move, stuck valve or leakage), immediately stop dispensing. Consult the 'Troubleshooting' section of this Operation Manual and contact the manufacturer if needed.

Package Contents

| Description | Quantity |
|--------------------------|----------|
| Bottle Top Dispenser | 1 |
| Telescopic tube | 1 |
| Calibration Tool | 1 |
| Bottle Adapters | 5 |
| Dispenser Thread Reducer | 1 |
| Calibration Certificate | 1 |
| Operation Manual | 1 |

Installation

1. Adjust length of telescoping inlet tube to fit your particular reservoir.
If you require a longer tube, it is provided on request.
(Fig. 1)

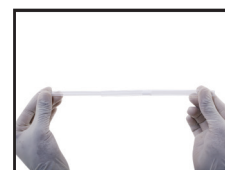


Fig.1

2. Fix the telescoping tube. The tube's ends have different diameters.
Please select the correct side for your dispenser.
(Fig. 2)



Fig.2

3. Choose the correct adapter for the bottle.
The threaded platform base of dispenser has a 30 mm screw thread.
Five adapters are supplied to suit containers with a 28, 32, 38, 40, 45 mm and 30 mm (inbuilt adapter) screw neck.
(Fig. 3)



Fig.3

4. Fix the adapter.

(Fig. 4)

5. Mount the dispenser-

Screw it to the reservoir by applying gentle hand torque applied to the threaded platform base only. In case of removal, apply the same technique to the base, in the opposite direction.

(Fig. 5)

6. Ready to Use



Do not operate the piston until the unit is safely and fully mounted on the reservoir bottle.



Fig. 4



Fig. 5

Intended Use

LabForce Bottle Top Dispenser is a general purpose laboratory instrument intended for use in laboratories for dispensing reagents and chemicals which are compatible with the instrument.

For research use only. Not intended for any animal or human therapeutic or diagnostic use.

Symbols and Conventions



CAUTION This symbol indicates a potential risk and alerts you to proceed with caution.

Product Specifications

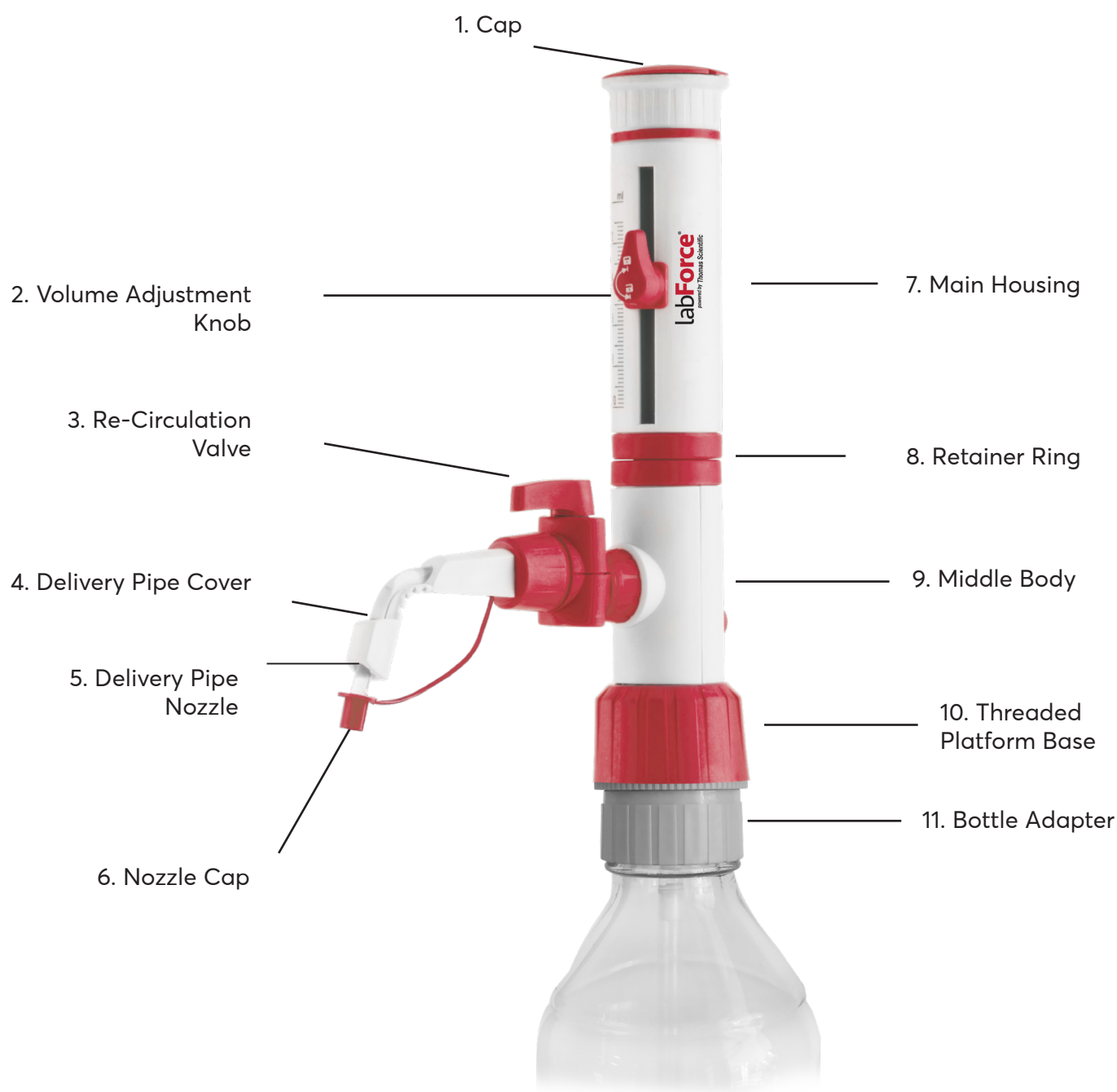
| Specifications as per ISO 8655 | | | | | | |
|--------------------------------|-------------------|----------------|----------|--------|-----|-------|
| Thomas No. | Volume Range (ml) | Increment (ml) | Accuracy | | CV | |
| | | | ±% | ml | ±% | ml |
| 22A00H933 | 0.25-2.5 | 0.05 | 0.5 | 0.0125 | 0.2 | 0.005 |
| 22A00H934 | 0.5-5 | 0.1 | 0.5 | 0.025 | 0.2 | 0.010 |
| 22A00H935 | 1-10 | 0.2 | 0.5 | 0.050 | 0.1 | 0.010 |
| 22A00H936 | 2.5-30 | 0.5 | 0.5 | 0.150 | 0.1 | 0.030 |
| 22A00H937 | 5-60 | 10 | 0.5 | 0.300 | 0.1 | 0.060 |
| 22A00H938 | 10-100 | 20 | 0.5 | 0.500 | 0.1 | 0.100 |

Error Limits related to the nominal capacity (= maximum volume) indicated on the instrument, are obtained when instrument and distilled water are equilibrated at ambient temperature (20°C/68°F). Testing takes place according to DIN EN ISO 8655-6 with a completely assembled instrument and with uniform and smooth dispensing.

Instructions for Use

Overview

The bottle top dispenser is designed for dispensing liquids directly from the reservoir bottle. The instrument is calibrated according to the requirements of the DIN EN ISO 8655 – 5. When the instrument is correctly used, the dispensed liquid comes into contact with only the following chemically resistant materials: PTFE, FEP and Borosilicate glass.



Getting Started

Priming

Open the cap of the dispensing tube (Fig. 6). For safety hold the discharge tube orifice on the inner wall of a suitable receiving vessel.



Fig. 6

1. Set the valve to 'Recirculate'. (Fig. 7)

For priming gently pull up the piston approx, 30mm and push it down rapidly until the lower stop. Repeat this procedure 5 times (Fig. 8).



Fig. 7

2. Turn valve to 'Dispense' (Fig.9).

To avoid splashes when priming hold the discharge tube on the inner wall of a suitable receiving vessel and dispense liquid to prime the discharge tube until it is bubble free, Wipe away any remaining drops from the discharge tube.



Fig. 8

Note :

Before using the instrument for the first time, ensure it is rinsed carefully and discard the first few samples dispensed.

Avoid splashing.



Fig. 9

Important Guidelines

Operating limitations

This instrument is designed for dispensing liquids, observing the following physical limits:

- Use temperature from +15°C to +40°C (from 59°F to 104°F) of instrument and reagent
- Vapor pressure up to max. 600 mbar. Aspirate slowly above 300 mbar, in order to prevent the liquid from boiling.
- Kinematic viscosity 500 mm²/s
(dynamic viscosity [mPas] = kinematic viscosity [mm² /s] x density [g/cm³])
- Density: up to 2.2 g/cm³

- Liquids, which form deposits may make the piston difficult to move or may cause jamming (e.g.,) crystallizing solutions or concentrated alkaline solutions). If the piston becomes difficult to move, the instrument should be cleaned immediately.
- Compatibility of the instrument for a specific application(e.g. trace material analysis, food sector etc.) must be checked by the user.
- Approvals for specific applications, e.g. for production and administration of food, pharmaceuticals and cosmetics are not available.

Operating Exclusions

Never use with-

- Liquids attacking FEP, PFA and PTFE (e.g. dissolved sodium azide*)
- Liquids attacking borosilicate glass (e.g. hydrofluoric acid)
- Hydrochloric acid > 40% | Tetrahydrofuran | Trifluoroacetic acid
- Explosive liquids (e.g. carbon disulfide)
- Suspensions (e.g. of charcoal) as solid particles may clog or damage the instrument
- Liquids attacking PP (cap)**

* Dissolved sodium azide permitted up to a concentration of max. 0.1%.

Storage Conditions

- Store the instrument and accessories only in clean conditions in a cool and dry place.
- Storage temperature: from – 20°C to +50°C (from – 4°F to 122°F)

Operation

- Always wear protective gloves when touching the instrument or the bottle, especially when using dangerous liquids. When mounted to a reagent bottle, always carry the instrument as shown in the figure (5).
- Never press down the piston when the cap is on. Avoid splashing the reagent. The reagent can drip out from the discharge tube and cap.
(Fig. 6)

Volume Setting

The Volume Adjustment Knob is simple and easy to operate. There are two positions of the knob as shown in Fig. 10-A

Position 1 : Locked Position | Position 2 : Unlocked Position

To set the Volume, follow these simple steps-:

1. Turn the Knob from Position 1 to Position 2 by rotating it ANTICLOCKWISE as shown in Fig. 10-B1.
2. The slider is now loose and can be moved up and down.
3. Set your desired volume by aligning the pointer with the scale.
4. To lock the set volume, turn the Knob from Position 2 to Position 1 by rotating it CLOCKWISE as shown in Fig. 10-B2 .

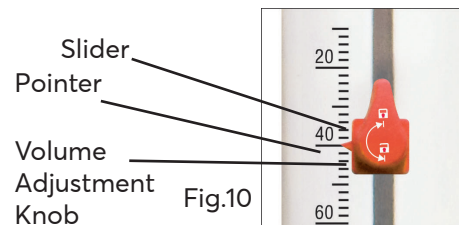


Fig.10 A

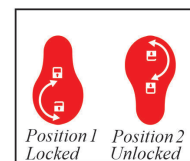
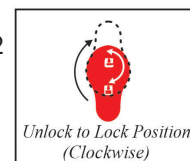


Fig.10 B1



Fig.10 B2



Dispensing

! Wear protective clothing, eye protection and gloves. Liquid may accumulate in the cap. To avoid splashes dispense slowly. Follow all safety instructions and observe limitations of use and operating limitations.

1. Remove cap from the discharge tube. (Fig. 11)

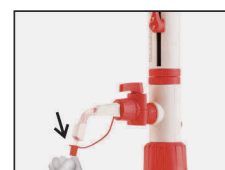


Fig.11

2. When using the instrument (with recirculation valve) turn the valve to Dispensing. (Fig. 12)



Fig.12

3. Hold the discharge tube orifice on the inner wall of a suitable receiving vessel. (Fig. 13)



Fig.13

4. Gently lift the piston until the upper stop and then depress piston slowly and steadily with minimal force until the lower stop. (Fig. 14)



Fig.14

5. Wipe off the discharge tube against the inner wall of the receiving vessel.

6. Reattach cap to discharge tube. (Fig. 15)



Fig.15

Troubleshooting


| Trouble | Possible cause | Solution |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Piston difficult to move | Formation of crystals, dirty | Stop dispensing immediately. Loosen piston with circular motion, but do not disassemble. Follow all cleaning instructions. |
| Air bubbles appear in the Instrument | <p>Reagent with high vapor pressure has been drawn in too quickly</p> <p>The instrument has not been primed</p> <p>Filling tube is loose or damaged</p> <p>Liquid reservoir is empty</p> <p>Too fast filling action</p> <p>Leaking Piston</p> <p>Leaking discharge valve</p> | <p>Slowly draw in reagent.</p> <p>Prime the instrument.</p> <p>Push the filling tube on firmly. if necessary cut off approx. 1 cm of the tube at upper end and then re-connect it or replace filling tube.</p> <p>Refill reservoir and prime unit.</p> <p>Fill & Dispense slowly</p> <p>Clean piston, If Problem persist replace piston.</p> <p>Clean by flushing thoroughly with distilled water.</p> |
| Dispensing not possible | <p>Blocked Dispense nozzle</p> <p>Discharge valve stuck</p> | <p>Disassemble the dispense nozzle and flush through with distilled water.</p> <p>Clean Unit by immersing valve assembly in distilled water</p> |
| Wrong Dispenser Volume | Instrument not calibrated | Follow steps of user calibration. |
| Barrel does not fill with liquid | Inlet tube not fitted firmly | Connect inlet tube correctly. |
| Filling Not Possible | Volume adjustment to minimum setting | Set to required volume. |

General Maintenance

LabForce Bottle Top Dispenser should be cleaned in the following situations:

- Immediately when the piston is difficult to move
- Before changing the reagent
- Prior to long term storage
- Prior to dismantling the instrument
- Prior to autoclaving
- Prior to changing the valve
- Regularly when using liquids which form deposits (e.g. crystallizing liquids)
- Regularly when liquids accumulate in the cap.

Pre Dis-assembly Procedure

 All maintenance should be carried out wearing suitable eye protection and protective clothing. If in doubt, consult your safety officer.

1. Make sure that the Dispenser is completely empty.
2. Place the instrument into an empty sink together with its reservoir.
3. Unscrew the threaded platform base from the reservoir and lift the dispenser's intake tube carefully out of the reservoir, whilst tapping it against the reservoir's aperture to shake off any droplets from the intake tube.
4. Hold the dispense nozzle over the aperture of the reservoir and apply gentle piston strokes in order to return any contents into the reservoir.
5. Empty the instrument completely and flush thoroughly with distilled water.
6. If the piston barrel is still not completely clean, you need to dis-assemble the dispenser. Refer Dis-assembling procedure given below.

Dis-assembly and assembly Procedure

1. Pull the cap outwards to expose the Calibration Nut.

(Fig. 16)



Fig.16

2. Unscrew the Calibration Nut with the help of calibration tool to dis-assemble the Piston and shaft out of the main housing.

(Fig. 17)



Fig.17

3. After unscrewing pull out the shaft.

(Fig. 18)



Fig.18

4. Rinse the piston and shaft with deionized water.

(Fig. 19)



Fig.19

5. Clean the cylinder with a bottle-brush. If necessary carefully remove deposits at the edge of the glass cylinder.

(Fig. 20)



Fig.20

6. Then flush all the parts of the instrument with deionized water.

(Fig. 21)



Fig.21

7. Insert the piston completely into the cylinder and then reassemble the instrument using the calibration tool by screwing back the piston.

(Fig. 22)



Fig.22

8. Snap back the cap to complete the assembly.

(Fig. 23)



Fig.23

Dis-assembling and Assembling the Delivery Pipe

1. Unscrew the chuck nut and pull out the delivery pipe.
(Fig. 24) & (Fig. 25)



Fig.24

2. Clean the delivery pipe with deionized water.

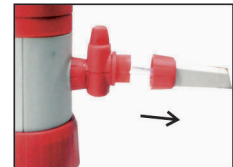


Fig.25

3. First push the delivery pipe into the lower housing till it stops going in further. (Fig. 26)

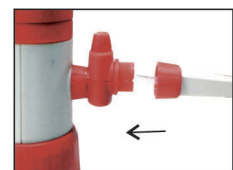


Fig.26

4. Screw the chuck nut to complete the assembly.
(Fig. 27)

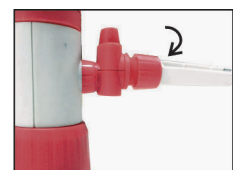


Fig.27

Autoclaving

This instrument is autoclavable at 121° C (250° F) 1 bar absolute (15 psi) with a holding time of at least 15 minutes.

Note-Only the piston needs to be removed for autoclaving the instrument.

Dis-assembling for Autoclaving

1. Pull the cap outwards to expose the Calibration Nut.
(Fig. 28)
2. Unscrew the Calibration Nut with the help of calibration tool to dis-assemble the Piston and shaft out of the main housing.
(Fig. 29)



Fig.28



Fig.29

3. After unscrewing pull out the shaft.

(Fig. 30)



Fig.30

4. This is the piston-shaft sub-assembly.

(Fig. 31)



Fig.31

5. Autoclave the two sub-assemblies at 121°C and 15 psi pressure for at least 15 mins.

(Fig. 32)



Fig.32

6. The volume adjustment knob should always be kept in the 'unlocked' position while autoclaving.

(Refer fig. 10.A)

Re-assembling after Autoclaving

1. Insert the piston completely into the cylinder and then reassemble the instrument use in the calibration tool by screwing back the piston.

(Fig. 33)



Fig.33

2. Snap back the cap to complete the assembly.

(Fig. 34)



Fig.34

3. Dispenser is now ready for use.

(Fig. 35)



Fig.35

Re-calibration is required after autoclaving.

User Calibration

LabForce Bottle Top Dispenser has been laboratory calibrated at its nominal volume. However, due to changes in environmental conditions and the viscosity of the media which you dispense, we recommend gravimetric testing every 3-12 months.

Gravimetric volume testing according to DIN EN ISO 8655-6 is performed as follows:

Re-Calibration Procedure

1. Set the instrument to the nominal volume or any other volume which is most commonly used by you. Follow the common rules for calibration used in statistical quality control (ISO 8655-5).

Set the volume and dispense five full volumes of distilled water at 20°C on an electronic balance to establish the actual mean volume of liquid dispensed. If the gravitational average result varies from the volume displayed, you should re-calibrate the instrument.

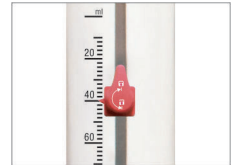


Fig. 36

2. For re-calibration pull the cap outwards to expose the Calibration nut. (Fig. 37)



Fig. 37

3. Using the calibration tool, turn the calibration nut clockwise to reduce the volume and anticlockwise to increase the volume. Repeat this procedure till the desired volume is achieved on the electronic balance. (Fig. 38)



Fig. 38

Accessories and Spares

| Descripton | Quantity | Cat. No. |
|----------------------------------------------------|----------|-----------|
| Discharge Nozzle for 1-10ML Bottle Top Dispenser | 1 | 22A00H681 |
| Discharge Nozzle for 10-100ML Bottle Top Dispenser | 1 | 22A00H682 |
| BTD Bottle Adapter Assortment PK5 | 1 | 22A00H683 |
| BTD Bottle Adapter 28MM PK3 | 1 | 22A00H684 |
| BTD Bottle Adapter 32MM PK3 | 1 | 22A00H685 |
| BTD Bottle Adapter 38MM PK3 | 1 | 22A00H686 |
| BTD Bottle Adapter 40MM PK3 | 1 | 22A00H687 |
| BTD Bottle Adapter 45MM PK3 | 1 | 22A00H688 |
| BTD Inlet Tube (310mm Length) PK5 | 1 | 22A00H689 |
| BTD Inlet Tube (450mm Length) PK5 | 1 | 22A00H690 |

Warranty

LabForce warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, LabForce will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY

Compliance with Local Laws and Regulations

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the Product in its local environment. LabForce will not be held liable for any related omission or for not obtaining the required

Appendix

Chemical Compatibility Chart

Chemicals from A to Z

The following tables enlist the most frequently used reagents.

They provide useful information for the safe and efficient use of dispenser.

All the safety precautions and recommendations within this Operation Manual must be followed carefully.

Code explanations:

A = Good resistance

B = Acceptable with limitations

C = Not recommended

1 = Acid vapours (better resistance with lower concentration).

Do not leave the instrument on the bottle.

Rinse with distilled water after use.

2 = Risk of damage, softening or discoloration of external parts through vapours.

Do not leave the instrument on the bottle.

Rinse with distilled water after use.

3 = Chemical degradation of glass parts (plunger/barrel).

List of Reagents

| Chemicals A - Z | |
|-------------------------------|-----|
| A | |
| Acetaldehyde (Ethanal) | A |
| Acetic acid 96% | A |
| Acetic acid 100% (glacial) | B/2 |
| Acetic anhydride | B/2 |
| Acetone (Propanone) | B/2 |
| Acetonitrile (MECN) | A |
| Acetophenone | B/2 |
| Acetyl Chloride | B/2 |
| Acetylacetone | A |
| Acrylic acid | A |
| Acrylonitrile | B/2 |
| Adipic acid | A |
| Allyl alcohol | A |
| Aluminum chloride | A |
| Amino acids | A |
| Ammonia 20% | B/2 |
| Ammonia 20-30% | B/2 |
| Ammonium chloride | A |
| Ammonium fluoride | A |
| Ammonium molybdate | A |
| Ammonium sulfate | A |
| Amyl alcohol (Pentanol) | A |
| Amyl chloride (Chloropentane) | B/2 |
| Aniline | A |
| Ascorbic acid | A |
| n-Amyl acetate | B/2 |
| B | |
| Barium chloride | A |
| Benzaldehyde | A |
| Benzene | B/2 |
| Benzine | A |
| Benzoyl chloride | B/2 |
| Benzyl alcohol | A |
| Benzyl chloride | B/2 |
| Bis(2-ethylhexyl) phthalate | B/2 |
| Boric acid 10% | A |
| Bromine | C/2 |
| Bromobenzene | B/2 |
| Bromonaphtalene | A |
| Butanediol | A |
| Butanol | A |
| Butyl acetate | B/2 |
| Butyl methyl ether | B/2 |
| Butylamine | B/2 |
| Butyric acid | B/2 |
| C | |
| Calcium carbonate | A |
| Calcium chloride | A |
| Calcium hydroxide | A |
| Calcium hypochlorite | A |

List of Reagents

Chemicals A - Z

| C | |
|--------------------------------------|-------|
| Carbon disulfide | B/2 |
| Carbon tetrachloride | B/2 |
| Chlorine dioxide | B/2 |
| Chlorine water | B/2 |
| Chloro naphthalene | B/2 |
| Chloroacetaldehyde 45% | A |
| Chloroacetic acid | A |
| Chloroacetone | B/2 |
| Chlorobenzene | B/2 |
| Chlorobutane | B/2 |
| Chloroethanol | B/2 |
| Chloroform (Trichloromethane) | B/2 |
| Nitro-hydrochloric acid (Aqua regia) | B/2 |
| Chlorosulfonic acid | B/2 |
| Chlorosulfuric acid 100% | B/1/2 |
| Chromic acid 100% | B/1/2 |
| Chromosulfuric acid 100% | C/1/2 |
| Citric acid | A |
| Copper fluoride | A |
| Copper sulfate | A |
| Covi-Ox-T70/ Mixed Tocopherol | A |
| Cresol | A |
| Cumene (Isopropylbenzene) | B/2 |
| Cyanoacrylate | A |
| Cyclohexane | B/2 |
| Cyclohexanone | B/2 |
| Cyclopentane | B/2 |
| D | |
| 1,2-Diethylbenzene | B/2 |
| 1,4-Dioxane (Diethylene dioxide) | B/2 |
| 1-Decanol | A |
| Decane | A |
| Di-(2-ethylhexyl) peroxydicarbonate | B/2 |
| Dibenzyl ether | B/2 |
| Dichloroacetic acid | A |
| Dichlorobenzene | A |
| Dichloroethane | A |
| Dichloroethylene | B/2 |
| Diesel oil (Heating oil) | A |
| Diethanolamine | A |
| Diethylamine | B/2 |
| Diethylene glycol | A |
| Diethylether | B/2 |
| Dimethylacetamide | A |
| Dimethyl sulfoxide (DMSO) | B/2 |
| Dimethylaniline | A |
| Dimethylformamide (DMF) | B/2 |

List of Reagents

Chemicals A - Z

| E | |
|---------------------------------|-----|
| Ethanol | A |
| Ethanolamine | B/2 |
| Ether | B/2 |
| Ethyl acetate | B/2 |
| Ethylbenzene | B/2 |
| Ethylene chloride | B/2 |
| Ethylene diamine | A |
| Ethylene glycol | A |
| F | |
| Fluoroacetic acid | B/2 |
| Formaldehyde (Formalin) | A |
| Formamide | A |
| Formic acid | A |
| G | |
| Gamma-butyrolactone | A |
| Gasoline | B/2 |
| Glycerin <40% | A |
| Glycolic acid 50% | A |
| H | |
| Heating oil (Diesel oil) | A |
| Heptane | A |
| Hexane | A |
| Hexanoic acid | A |
| Hexanol | A |
| Hydriodic acid | B/2 |
| Hydrobromic acid | A |
| Hydrochloric acid 20% (HCl) | A |
| Hydrochloric acid 37% (HCl) | B/1 |
| Hydrofluoric acid (HF) | C/3 |
| Hydrogen peroxide | A |
| I | |
| Iodine | A |
| Iodine bromide | C/2 |
| Iodine chloride | C/2 |
| Isoamyl alcohol | A |
| Isobutanol | A |
| Isooctane | A |
| Isopropanol | A |
| Isopropyl ether | B/2 |
| Iso-propylamine | B/2 |
| K | |
| Kerosene | A |
| L | |
| Lactic acid | A |
| M | |
| 2-Methoxyethanol | A |
| Methanol | A |
| Methoxybenzene (Anisol) | B/2 |
| Methyl benzoate | B/2 |
| Methyl chloride (Chloromethane) | B/2 |

List of Reagents

| Chemicals A - Z | |
|--------------------------------------------|-----|
| M | |
| Methyl ethyl ketone (MEK/Butanone) | B/2 |
| Methyl formate | A |
| Methyl iodide (Iodomethane) | B/2 |
| Methyl methacrylate (MMA) | B/2 |
| Methyl propyl ketone (2-Pentanone) | A |
| Methyl tert-butyl ether | B/2 |
| Methylene chloride (Dichloromethane) (DCM) | B/2 |
| Methylpentanone | A |
| Mineral oil (engine oil) | A |
| Monochloroacetic acid | A |
| N | |
| Nitric acid 100% | A |
| Nitric acid 30-70% | A |
| Nitric acid dil. <30% | A |
| Nitrobenzene | B/2 |
| Nitromethane | B/2 |
| N-methyl-2-pyrrolidone (NMP) | A |
| O | |
| Octane | A |
| Octanol | A |
| Oil (vegetable, animal) | B/2 |
| Oil of turpentine | B/2 |
| Oleic acid | A |
| Oleum (Fuming Sulfuric acid) | A |
| Oxalic acid | A |
| P | |
| Pentane | B/2 |
| Peracetic acid | A |
| Perchloric acid 100% | B/2 |
| Perchloric acid diluted | A |
| Perchloroethylene | B/2 |
| Petroleum | B/2 |
| Petroleum ether / spirit | B/2 |
| Phenol | A |
| Phenylethanol | B/2 |
| Phenylhydrazine | B/2 |
| Phosphoric acid 100% | A |
| Phosphoric acid 85% | A |
| Piperidine | B/2 |
| Potassium chloride | A |
| Potassium dichromate | A |
| Potassium dihydrogen phosphate | A |
| Potassium hydroxide | A |
| Potassium iodide | A |
| Potassium permanganate (persulfate) | A |
| Potassium peroxydisulfate | A |
| Potassium sulfate | A |
| Propionic acid (Propanoic acid) | A |
| Propylene glycol (Propane-1,2-diol) | A |

List of Reagents

| Chemicals A - Z | |
|----------------------------------|-----|
| Propylene oxide | A |
| Picric acid (Trinitrophenol) | B/2 |
| Pyridine | B/2 |
| Pyruvic acid | A |
| R | |
| Resorcin | A |
| S | |
| Salicylaldehyde | A |
| Scintillation fluid | A |
| Silver acetate | A |
| Silver nitrate | A |
| Sodium acetate | A |
| Sodium chloride (kitchen salt) | A |
| Sodium dichromate | A |
| Sodium fluoride | A |
| Sodium hydroxide 30% | A |
| Sodium hypochlorite | A |
| Sodium thiosulfate | A |
| Sulfonitric acid 100% | B/2 |
| Sulfur dioxide | B/2 |
| Sulfuric acid 100% | B/2 |
| Sulfuric acid <10% | A |
| Sulfuric acid (10-75%) | B/1 |
| Sulfuric acid (Cold conc.) | A |
| Sulfuric acid (Hot conc.) | B/2 |
| T | |
| 1,1,2-Trichlorotrifluoroethane | B/2 |
| Tartaric acid | A |
| Tetrachlorethylene | B/2 |
| Tetrahydrofuran (THF) | B/2 |
| Tetramethylammonium hydroxide | A |
| Toluene | B/2 |
| Trichlorethylene | B/2 |
| Trichloroacetic acid | B/2 |
| Trichlorobenzene | B/2 |
| Trichloroethane | B/2 |
| Triethanolamine | A |
| Triethylamine | A |
| Triethylene glycol | A |
| Trifluoroacetic anhydride (TFAA) | B/2 |
| Trifluoromethane (Fluoroform) | B/2 |
| U | |
| Urea | A |
| X | |
| Xylene | B/2 |
| Z | |
| Zinc chloride 10% | A |
| Zinc sulfate 10% | A |