Acura® *electro*

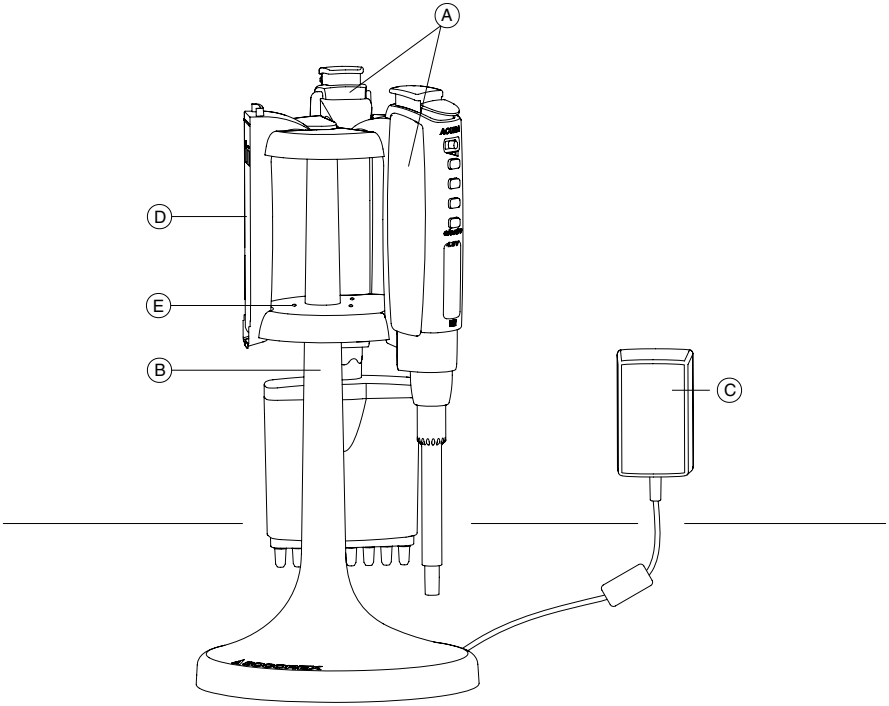
your electronic choice

Operating instructions

Models 925, 935 and 955

4.8V version

SOCOREX
SWISS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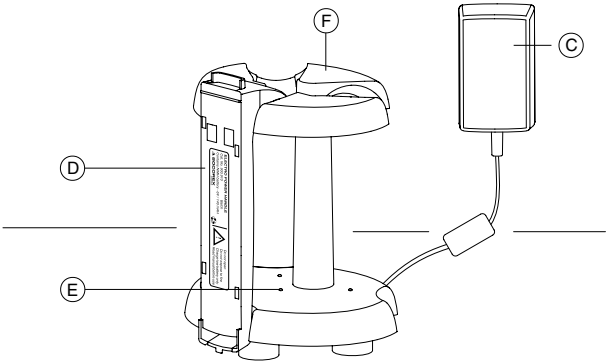
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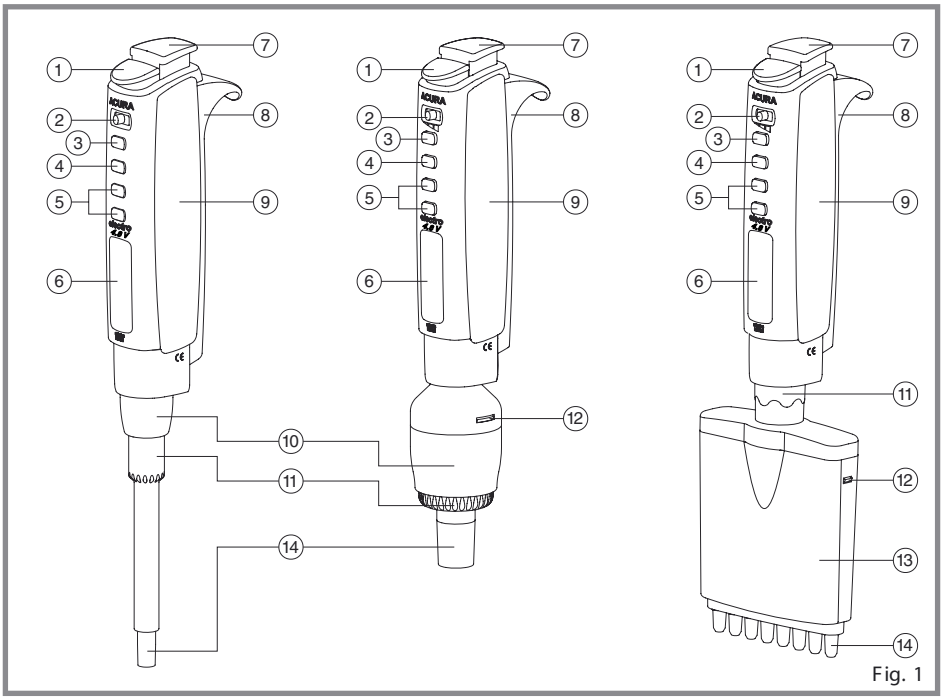


Fig. 1

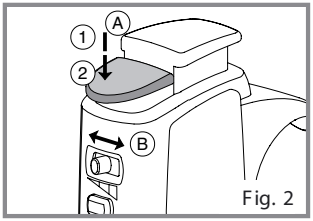


Fig. 2

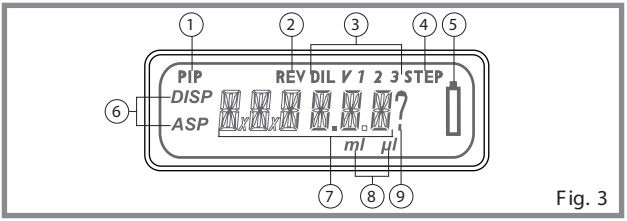


Fig. 3

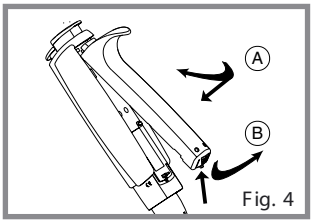
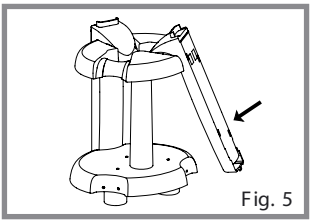


Fig. 4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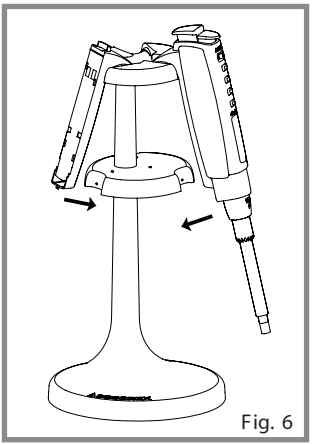
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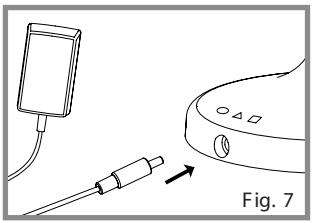
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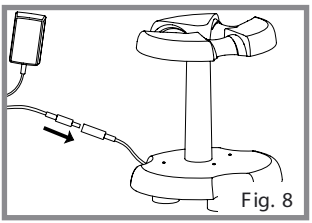
Fig. 8

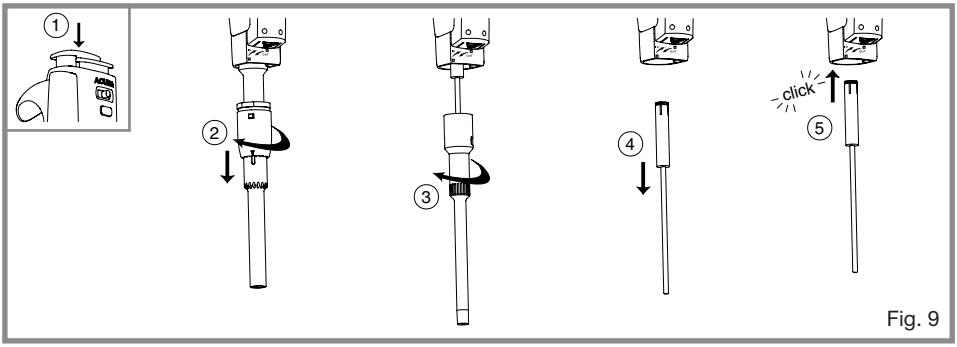

Fig. 9

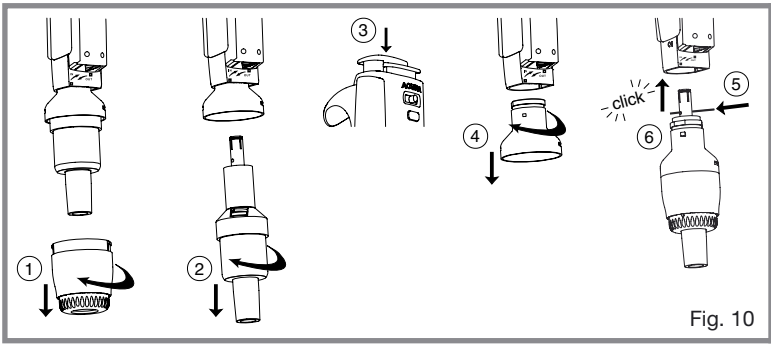

Fig. 10

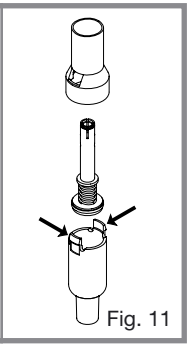
Fig. 11

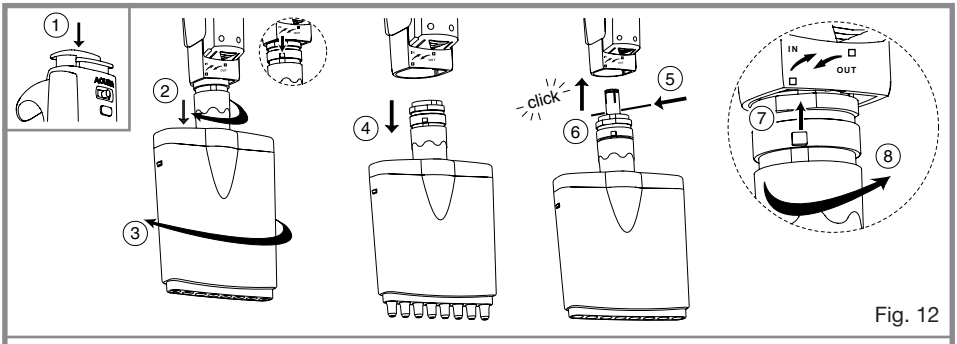

Fig. 12

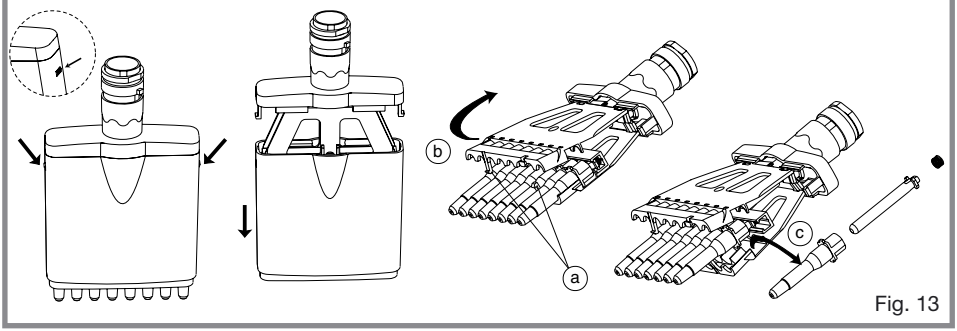

Fig. 13

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Foreword

Congratulation for choosing a Socorex instrument. You purchased a superior quality product built to last, and to satisfy you for a long time.

The Acura® *electro* pipette allows precision liquid handling without hand fatigue. The microprocessor-controlled instrument includes an extended life NiMH battery pack for high performance.

Main user benefits

- Ergonomic, optimized weight and hand balance for perfect working comfort
- User-friendly through intuitive software programme, easy to use
- Display selection for left or right-handed user
- Extended pipetting autonomy, instant exchange of battery pack eliminates interruption of work
- Autoclavable volumetric modules are interchangeable on single control unit
- Instrument software covers all volume modules
- Justip™ ejector facilitates fitting and ejection of tips

Before using the instrument for the first time, read instructions carefully. Special attention should be paid to the safety precautions and application limits. Keep this booklet for future reference.

SAFETY PRECAUTIONS AND APPLICATION LIMITS

Before using the instrument for the first time, read the safety precautions and application limits carefully. Socorex will not assume any responsibility for problems related to erroneous use of the instrument.

Pipette handling

- ***Use only 4.8V power handle (battery) with appropriate 4.8V devices***
- Refer to and follow regulations about handling of potentially hazardous reagents
- Before use, check tip/nozzle tightness and working condition of the instrument
- Emergency stop: press the “set/stop” key to interrupt immediately any plunger movement in stepper and dilution modes
- Do not use the Acura® *electro* in areas where there is explosion or flame hazard
- Do not place the Acura® *electro* on charging stand with a filled tip
- Do not let liquid penetrate inside the pipette housing (upper assembly)
- Change volumetric module **only** with charged power handle in place
- Do not use any volumetric module (lower assembly) not specifically intended for your instrument
- Instrument should not be used at temperatures below 5°C and over 40°C
- This product should be used only for its intended purpose
- Mind possible hand-fatigue during serial pipetting and its potential medical consequences (such as repetitive strain injuries, RSI)

Maintenance and sterilisation

- Do not use aggressive solutions (such as acetone) to clean volumetric modules. Use water or alcohol (ethanol) instead
- Only the volumetric module (lower assembly) is autoclavable at 121°C. The control unit (upper assembly) is **not** autoclavable
- No liquid must penetrate inside the pipette control unit (upper assembly) nor the changing stand
- Refer to instructions for any operation (maintenance, change of volumetric modules) carried out on the instrument
- Servicing of control unit must be done by authorised, trained personnel only
- Use only Socorex original parts and accessories (power handle, pipette tips, spare parts)

Charging stand, power handle and power supply

- ***Use only 4.8V power handle (battery) with appropriate 4.8V charging stand***
- Power handle (battery) must be completely charged before first use
- Power handle can be charged either separately, or when placed on the instrument
- For best power handle durability, avoid recharging when "low bat" is not lit
- Do not use any power supply other than the original one supplied by manufacturer
- Do not damage electrical cord or plug of charger with heavy or sharp items
- Do not expose pipette, power handle, charging stand or power supply to heat or liquid spillage
- Remove power handle from the instrument if it is stored for a long period of time; this prevents discharge of the batteries
- Recycle used or damaged power handle according to applicable local laws
- The power handle will have longer life span if the above instructions are followed carefully

INSTRUMENT DESCRIPTION

The Acura® *electro* is a motorized, microprocessor controlled air displacement pipette. Energy is provided by a long life NiMH battery pack located in the pipette handle. This power handle can be replaced with a fully charged one within seconds, thus ensuring continuous work-flow without loss of set parameters. Acura® 925 models allows precise and reproducible pipetting within 0.25 µL to 1000 µL. 935 macromodels cover volumes from 0.25 to 10 mL. Multichannel Acura® 955 with 8 and 12 channel range between 0.5 µL and 350 µL. All volumetric modules (lower assemblies) are interchangeable on the same control unit (upper assembly). The Justip™ ejection system provides height adjustment of the single and multichannel tip ejector.

View (see p. I)

A) Acura® *electro* pipettes
B) Charging stand for electronic pipette and power handle
C) Power supply with cord
D) Power handle
E) Charging LED
F) Charging stand for power handle only (4.8V)

Keys and functions (fig. 1)

1) 2 positions start button
2) 3 positions speed selector
3) Programming key (mode) for choosing:
   - Pipetting modes
   - Side of display reading
   - Installed volumetric module
4) Set key for entering selection or emergency stop
5) Selection keys (+/-) for choosing:
   - Volumes
   - Calibration settings
   - Volume ranges
   - Left/right display reading
   - Mixing
6) LCD display (see fig. 3 for details)
7) Tip ejector button
8) Power handle
9) Control unit
10) Interchangeable volumetric module
11) Justip™ ejection system
12) Clips
13) Interchangeable multichannel module
14) Pipette nozzle

Start button (fig. 2A)

The start button has two contact positions:

- Press until first stop (1) to work at the slow pipetting speed
- Press until second stop (2) to work at the selected pipetting speed

LCD display (fig. 3)

1) Forward pipetting mode
2) Reverse pipetting mode
3) Dilution mode, volume sequence (vol. 1, 2 or 3)
4) Stepper mode
5) Low battery indicator
6) Pipetting steps: aspirating or dispensing
7) Digits for volume display or messages
8) Current volume units (µL or mL)
9) Sign requiring user input (selection or validation)

Power handle (fig. 4)

The rechargeable 4.8V power handle contains NiMH batteries of 300 mAh/4.8V. Charge a fully discharged power handle in less than 1.5 hours.

Optional charging stands

- Charging stand for 4.8V Acura® *electro* and power handles (fig. 6) with 3 charging positions
- Compact charging stand for 4.8V power handles only (fig. 5): allows to simultaneously charge up to 3 power handles

Power supply (fig. 7-8)

- Input: 100-240, 50/60 Hz
- Out put: 7.5 VDC
- Supplied with electrical cord and plug
- Various plug styles avaible depending on user location. See ordering information

Supply contents

Accessories supplied with the Acura® *electro* may vary, depending on country. Check exact contents on packaging label. All elements also available separately. Refer to chapter "Ordering information" for more details.

Note: *Keep original packaging for adequate instrument protection during future transport or shipment.*

Inserting power handle (fig. 4A)

The 4.8V power handle fits at the back of the pipette control unit. Insert and click in as shown. The initialisation starts automatically, followed by a self-calibration test. The display shows "RE-CAL".

Notes: *A 6V power handle cannot be mounted on a Acura* electro *4.8V instrument.*
Charge power handle completely before first use.

Replacing power handle (fig. 4B)

To remove the handle from control unit, press lock trigger located at the bottom of the handle and lift gently.

Note: *Pipetting data are kept in memory even during battery change. They will show again automatically upon re-inserting power handle.*

Charging power handle (fig. 5 and 6)

The power handle can be charged in three different ways:

1) Attached to the *electro* pipette and placed on the 4.8V charging stand
2) Alone, placed on 4.8V charging stand of the *electro* pipette
3) Alone, placed on the 4.8V compact charging stand (to be ordered separately)

The red LED goes on when charging a power handle.

The green LED indicates that charging is completed and goes on stand by with minimal energy consumption.

Maximal battery capacity is obtained after a few full charging/discharging cycles.

At maximum capacity, power handles allow for over 3000 forward pipetting movements (full plunger stroke on a single channel micropipette) without recharging.

Notes: *It is not possible to charge a 4.8V power handle with a 6V charging stand (320.903 or 320.912). ONLY use charging stand 320.903.48 or 320.913.48.*
If unused for 10 minutes, the Acura® electro *switches automatically to an energy saving stand-by mode (display switches off) to guarantee a longer operation. Simply press start button to re-activate instrument.*

Holding the electronic pipette (fig. 1)

The ergonomic shape of the Acura® *electro* allows long pipetting series without hand fatigue. Place finger rest on the phalanx of forefinger. The thumb reaches naturally start button (1) and ejector button (7), both easily activated. Multichannel casing (13) revolves to allow the selection of the best working position.

Left or right display reading

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Configuration for left or right handed operation	Press (> 0.5 sec.)	MODE	SIdE ?
	Validate function	SET	LEFT ?
	Select	+	RIGHT ?
	Validate side	SET	RIGHT
	Press (> 0.5 sec.) Back to current pipetting mode	MODE	FORWRd?

Note: *After selection of left or right display reading, the last pipetting mode used will be displayed.*

Forward mode, programming and pipetting

In forward mode, the exact volume desired is aspirated. Liquid dispensing is automatically followed by a short excess plunger movement (blow out). Plunger returns back to its initial position one second later.

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Forward pipetting	Select mode	MODE	FORWRd?
	Validate mode	SET	PIP 1000? µl
			Last settings appear by default
Choice of volume	Ex: select 400 µL	+ / -	PIP 400? µl
	Validate volume	SET	PIP ASP 400 µl

Pipetting in forward mode

Press start button gently until first stop to work at the slow pipetting speed. Press fully (second stop) to work at the selected pipetting speed (fig. 2A).

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Aspiration	Press		PIP ASP ASP µl
			PIP DISP 400 µl
Dispensing	Press		PIP DISP DISP µl
			PIP ASP 400 µl

Notes: *Plunger stays down when start button is kept pressed, and returns to initial position when released. Slightly touch reservoir wall when dispensing.*

Reverse mode, programming and pipetting

In reverse mode, the liquid is aspirated in excess of the selected volume. However, the set volume only will be delivered. The excess volume remains in the tip and can be kept or discarded. The reverse pipetting mode is recommended for viscous, volatile or foaming liquids.

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Choice of reverse pipetting mode	Select	MODE	REVERS?
	Validate mode	SET	REV 1000? µl
			Last settings appear by default
Choice of volume	Ex: select 150 µL	+ / -	REV 150? µl
	Validate volume	SET	REV ASP 150 µl

Pipetting in reverse mode

Press start button gently until first stop to work at the slow pipetting speed. Press fully (second stop) to work at the selected pipetting speed (fig. 2A).

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Aspiration	Press		REV ASP ASP µl
			REV DISP 150 µl
Dispensing	Press		REV DISP DISP µl
Excess volume	Double click		PURGE ?
			REV ASP 150 µl

Notes: *Skip "purge" by holding start button down after dosing is completed. The next sample is aspirated directly after release of the start button.*
Slightly touch reservoir wall when dispensing.

Stepper mode, programming and pipetting

In stepper mode, the volume aspirated is in small excess of the sum of every single aliquot. It is distributed step by step according to volume and number of aliquots programmed by the user.

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Choice of stepper pipetting mode	Select	MODE	STEP ?
	Validate mode	SET	STEP 1000 ? µl *Last settings appear by default*
Choice of volume	Ex : select 50 µL	+ / −	STEP 50 ? µl
	Validate volume	SET	STEP 20x ? *Display show maximal number of aliquots possible for the selected volume*
Choice: number of aliquots	Ex: select 15 x	+ / −	STEP 15x ?
	Validate aliquots	SET	STEP ASP 15x 50 µl

Pipetting in stepper mode

Press start button gently until first stop to work at the slow pipetting speed. Press fully (second stop) to work at selected pipetting speed (fig. 2A).

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Aspiration (Ex: 15 x 50 µL)	Press		STEP ASP ASP µl
	Ready		STEP DISP 15x 50 µl
Dispensing	Press		STEP DISP DISP µl

▼

Pipetting in stepper mode *(continued)*

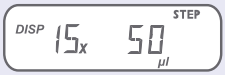
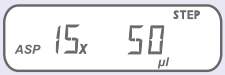
OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Dispensing *(continued)*			DISP 14x 50 µl STEP *Number of aliquots decrease after each dispensing*
Dispensing	Press		DISP DISP µl STEP DISP 1x 50 µl STEP
Excess volume	see below		PURGE ?

Notes: *Slightly touch reservoir wall when dispensing.*

Stepper mode, excess volume control

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Current display			PURGE ?
Keep excess volume, ex. aspiration of same liquid	Press		ASP DISP 15x 50 µl STEP
or			
Blow out excess volume	Double click		PURGE
Ready for aspiration of new liquid			ASP 15x 50 µl STEP

Stepper mode, interruption of pipetting sequence

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Current display			
End of pipetting	Press	STOP 	
Residual volume	Double click		
Ready for new filling			

Dilution mode, programming and pipetting

In dilution mode, up to 3 volumes of different liquids – each separated in the tip by an air bubble – will be aspirated. The total resulting volume is then dispensed in a single dose.

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Choice of dilution pipetting mode	Select	MODE	DILUTE?
	Validate mode	SET	DIL V 1 700? µl *Last settings appear by default*
Choice of 1st volume	Ex: select 250 µL	+ / −	DIL V 1 250? µl
	Validate volume 1	SET	DIL V 2 750? µl *Display shows volume capacity left to reach nominal volume*
Choice of 2nd volume	Ex: select 100 µL	+ / −	DIL V 2 100? µl
	Validate volume 2	SET	DIL V 3 0? µl
Choice of 3rd volume	Ex : select 50 µL	+ / −	DIL V 3 50? µl
No 3rd volume?	Select 0 µL	SET	DIL V 3 0? µl
	Validate volume 3	SET	DIL V 1 ASP 250 µl

Notes: *When 3rd liquid aspirated (V3), air bubble prohibits reaching cumulated volume equal to maximum pipette capacity. Thus avoiding risk of nozzle contamination.*
Air bubbles in macrotips (Acura® 935 models) only serve the purpose of separating liquid at the lower tip area.

Pipetting in dilution mode

Press start button gently until first stop to work at the slow pipetting speed. Press fully (second stop) to work at the selected pipetting speed (fig. 2A).

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Aspiration 1st volume	Press		DIL V 1 ASP µl DIL AIR
Aspiration air bubble	Lift tip out of the liquid, Press		DIL ASP DIL V 2 ASP 100 µl
Aspiration 2nd volume	Press		DIL V 2 ASP ASP µl DIL AIR
Aspiration air bubble	Lift tip out of the liquid, Press		DIL ASP DIL V 3 ASP 50 µl
Aspiration 3rd volume *(if programmed)*	Press		DIL V 3 ASP ASP µl DIL DISP 400 µl
Dispensing V1+V2+V3 **Ready for new filling**	Press		DIL DISP DISP µl DIL V 1 ASP 250 µl

Note: *Slightly touch reservoir wall when dispensing.*

Dilution mode, interruption of pipetting sequence

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Current display			
End of pipetting	Press	STOP 	
Blow out residual volume	Double click		
Ready for new filling			

Mixing

Available in all pipetting modes, the mixing performs consecutive back and forth aspiration/dispensing of the set volume. It is only possible after pipetting or purge steps are over.

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Mixing with 3 cycles of aspiration/dispensing	Press 1 x		
Continuous mixing	Keep key pressed		
Back to the pipetting	Press		

Selection of pipetting speed (fig. 2B)

Three pipetting speeds are available. Simply move the selector from left to right (slow/fast) to adapt working speed to the type of liquid or to a specific application. Independently from the speed selection, it is always possible to aspirate or distribute at the slow speed by gently pressing start button half way (feel first stop).

Charge level of power handle (fig. 3)

Pay attention to charge indicator on LCD to avoid unexpected power cut-off. For appropriate handling of the power handle, refer to chapters on “Replacing power handle” (fig. 4B) and “Charging power handle” (fig. 5 and 6) for more details.

LCD DISPLAY	SIGNIFICATION/CAUSE	SOLUTION
	Charged battery	Work without trouble
	Low battery	It is recommended to charge battery after pipetting work is finished or to replace power handle
	Battery almost empty handle	Energy level insufficient Instrument will switch off Replace or charge power handle immediately with a 4.8V power

Note: *Always keep one or more spare 4.8V power handle(s) available on the charging stand.*

Changing volumetric module

Lower assembly of the Acura® *electro* is interchangeable on a single control unit (upper assembly). Pipetting sequence must be completed before disassembling.

Note: *350 µL volumetric modules are only compatible with Acura® electro pipettes bearing serial numbers xxxx3001 or higher.*

Disassembling volumetric module up to 1000 µL (fig. 9 inside front cover)

① Press ejector button to the bottom

② Hold screw of tip ejector and slightly turn to the left. Pull out tip ejector (see arrows on handle).

③ Unscrew barrel

④ Unclip plunger

Before storing volumetric module, reassemble plunger, barrel, and ejector and place protection cap (accessory, Cat. No. 825.691) on the top.

Assembling

Remove protection cap and pull out plunger

⑤ Hold plunger between thumb and index finger and clip plunger

Note: *Plunger must be clicked in the control unit before assembling the module.*

③ Screw on barrel

① Press ejector button to the bottom

② Introduce ejector screw into the control unit (see arrows on handle). Slightly turn right to lock. Release ejector button

Enter module data in control unit prior to use, as described in chapter “Programming volumetric module”.

Disassembling volumetric module 5 and 10 mL (fig. 10 inside front cover)

① Slightly turn ejector nut to unclip from ejector cap

② Unscrew barrel, then gently pull barrel to unclip plunger rod

③ Press ejector button to the bottom

④ Turn ejector cap to the left and pull out

Before storing volumetric module, reassemble ejector nut and cap then place protection cap (accessory, Cat. No. 825.691) on the top.

Assembling

Remove protection cap

⑤ Pull out plunger rod and introduce tip or rod in side hole to prevent from retracting

⑥ Introduce plunger rod in control unit and click in

Note: *Plunger must be clicked in the control unit before assembling the module. If difficulty to pull out plunger, use the small pin supplied in the box when ordering additional volumetric module.*

Hold pipette nozzle and screw barrel firmly

③ Press ejector button, introduce tooth of ejector cap in recess (see arrows on handle), and turn right to lock

Enter module data in control unit prior to use as described in chapter “Programming volumetric module”.

Changing volumetric module *(continued)*

Disassembling multichannel volumetric module (fig. 12 inside front cover)

① Press ejector button

② Turn ejector nut to the left till its lowest position, unclip ejector ring and release ejector button

③ Hold volumetric module firmly with one hand and, while pulling down casing, rotate slowly to unscrew

④ Gently unclip plunger rod.

Before storing volumetric module, place protection cap (accessory, Cat. No. 825.691) on the top.

Assembling

Remove protection cap

⑤ Pull out plunger rod and introduce small pin (i.e. paper clip) in side hole to prevent from retracting

⑥ Introduce plunger rod in control unit and click in

Note: *Plunger must be clicked in the control unit before assembling the module.*

Hold casing with fingers pulling against barrel extremities

Slowly screw volumetric module while positionning tooth of ejector ring in recess (see arrows on handle)

③ Press ejector button, turn ejector ring to the right until tooth clicks in and release ejector button

Control proper functioning of ejector button. Set ejector height to desired position. Enter module data in control unit prior to use as described in chapter “Programming volumetric module”.

Notes: *Power handle **must** be connected on control unit prior to re-assembling volumetric module.*
Watch for not activating programming keys when changing volumetric module.

IMPORTANT, *before the very first use of a new volumetric module, perform pipette calibration according to chapter “Calibration”.*

Programming for volumetric module

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Choice of volumetric module			1000?
			Last settings appear by default
	Ex: module ranging 20-200 µL	+ / −	200?
	Validate the choice	SET	RE-CAL
			Instrument performs a self-calibration test automatically
Select pipetting mode according to chapter "Programming"			FORWRd?

Correction of volumetric module selection

It is also possible to access the menu "Programming volumetric module" at anytime.

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Current display			PIP ASP 100 µl
Choice of volumetric module menu	Press (> 0.5 sec.)	MODE	SIdE ?
	Press	MODE	MOdULE?
	Validate	SET	200? µl
Correction of volumetric module selection ▼	Ex: 8-channel module ranging 5-50 µL	+ / −	8x50? µl

Correction of volumetric module selection *(continued)*

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Correction of volumetric module *(continued)*		SET	RE-CAL *Instrument performs self-calibration test automatically*
Select pipetting mode according to chapter "Programming"			FORWRd?

Note: *WARNING, the programmed volumetric module **must** correspond to the one fitted on the pipette assembly.*

Use of Pasteur pipette (935, 5 mL model only)

Glass Pasteur pipettes are of advantage in handling PP affecting solvents. Optional adapter-nozzle (cat. No. 1.835.633) fits 0.5-5 mL model to accomodate standard 2 mL Pasteur pipettes (ext. Ø 6.5-7.2 mm) in addition to Polypropylene tips. Refer to chapter "Replacement of tightness parts" for disassembling and changing adapter nozzle. Slightly grease O-rings in adapter for tight Pasteur pipette fitting.

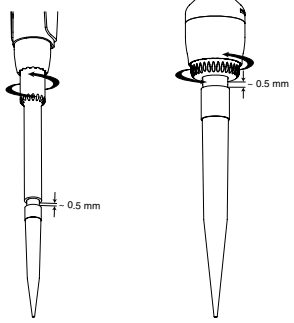
Note: *WARNING, do not set volume higher than 2 mL.*

Adjustment of tip ejector (fig. 14 and 15)

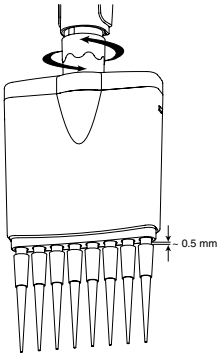
The Justip™ system allows instant height adjustment (+/- 2 mm) of ejector for best fitting of the tip used (optimal distance).

Set the correct position (~0.5 mm space between tip and ejector) by rotating ejector screw to the left or to the right (LO-HI). Click stops prevent any unwanted change while pipetting.

Note: *Ejector head on multichannel models designed for soft, sequential tip removal.*



Acura® 925 *Acura® 935* fig. 14



Acura® 955 fig. 15

The Acura® *electro* requires little basic maintenance. To obtain long term trouble free use, special attention during pipetting and regular cleaning are recommanded.

Cleaning

- External parts of control unit, power handle and charging stands are cleaned with damped cloth
- Volumetric module, once disassembled according to instructions in chapter “Operation”, can be cleaned with alcohol, or soaked in decontamination or disinfecting solutions. Ultra-sonic bath helps to remove sticking residues
- On volumetric modules up to 1000 µL, plunger tightness is provided by PTFE sleeve on O-ring. Grease O-ring slightly after sleeve was disassembled. Also grease plunger, O-ring and barrel wall of 5 and 10 mL models before reassembling
- Any defective part must be replaced. Order original spare parts from authorised dealers

Note: *WARNING: No liquid must penetrate into control unit (upper assembly).*

Replacement of tightness parts

O-ring and PTFE sleeve, single channel micro-volumetric modules (up to 1000 µL)

- Remove volumetric module from control unit according to instructions in chapter “Operation” (fig. 9)
- Press both clips of the ring (Cat. No. 825.701) with a pipette tip or a pointed tool. (See exploded drawings p. IV)
- Remove ring from barrel
- Remove spring to access O-ring/PTFE sleeve assembly
- Change parts. Clean plunger to eliminate any grease residue. Slightly grease O-ring and reassemble according to instructions in chapter “Operation”

Note: *Tightness parts are not available separately on 10 µL model. In case of tightness problem, barrel must be changed. Plunger must be "clicked" with the control unit* ***before*** *assembling the volumetric volume.*

O-ring, single channel macro-volumetric modules (5 and 10 mL)

- Remove volumetric module from control unit according to instructions in chapter “Operation” (fig. 10)
- Press both barrel clips with fingers to separate from bonnet (fig. 11)
- Pull out plunger assembly. Unscrew plunger rod and remove washers and spring
- Change parts if needed. Grease O-ring, washer and barrel
- Reassemble plunger assembly, barrel and bonnet according to instructions in chapter “Operation”

Note: *Plunger must be "clicked" with the control unit* ***before*** *assembling the volumetric volume.*

Replacement of tightness parts *(continued)*

Barrel change, multichannel volumetric modules (up to 350 µL)

Note: *O-ring cannot be removed from barrel. Change barrel if tightness is deficient.*

- Remove volumetric module from control unit according to instructions in chapter «Operation» (fig. 12)
- Press both clips of cover with pointed tool and remove casing (fig. 13)
- Press bottom clips (a) of barrel holder and separate (b)
- Pull out barrels (c)
- Apply thin, even grease layer on all surface length of plunger before reassembling
- Introduce barrel on plunger. Separate both plate of barrel holder, reposition barrel
- Clip barrel plate, all barrels must be sitting properly and aligned
- Place assembly in casing and clip on cover

Notes: *Plunger must be "clicked" with the control unit **before** assembling the volumetric volume. Markings on casing (volume) and on cover (Justip) should appear on opposite sides.*

Sterilisation

Only the volumetric module (lower part) is autoclavable at 121°C (20 minutes, 1 atm). Disassemble from control unit according to instructions in chapter “Operation”. Before autoclaving, remove nozzle filter on 935 models. Autoclave volumetric module as one assembly. Parts must be cooled down and completely dry before mounting on control unit. Check tightness and accuracy after first cycle, then regularly but at least after 50 autoclaving cycles. Correct autoclaving and resulting sterility are the responsibility of the user.

Note: *Setting parameters on the Acura®* electro *must correspond to those of the assembled volumetric module.*

INSTRUMENT CALIBRATION

Each Acura® *electro* pipette is factory tested for conformity according to ISO 8655 standards. Calibration parameters are permanently memorised in the instrument's microprocessor. If performance results are no longer within recommended values, for instance after QC check, or replacing parts, or if changes occur in physical parameters (liquid density, temperature, atmospheric pressure), re-calibration is easily performed through the calibration menu.

Notes: *WARNING, a calibration is necessary before the very first use of a volumetric module other than the one supplied with the instrument (even if same range).*
It is recommended to control instrument performance in accordance with internal laboratory procedures (SOP/GLP, etc.) or at least once a year.

Calibration increments

In the calibration menu, "QC-CAL" is the original calibration value of a factory-calibrated instrument. Other volumetric modules purchased as accessories will display "0" as target calibration value. Calibration is performed by changing the calibration unit figure according to following values:

Volumetric module (lower assembly)	10 µL	50 µL	200 µL	350 µL	1000 µL	5 mL	10 mL
Each calibration increment =	± 0.0025 µL	± 0.0125 µL	± 0.05 µL	± 0.1 µL	± 0.25 µL	± 1.25 µL	± 2.5 µL

New calibration

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Finish pipetting sequence			
Access calibration menu	Press first		
	Then press simultaneously		
	Validate		

Display shows "QC-CAL" for a factory-calibrated instrument where the original parameters have not been modified. If modified, display shows the number of calibration increments previously selected

▼

New calibration *(continued)*

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Change calibration parameter	Ex: volume reduction of 0.75 µL (= 3 x 0.25 µL / increment) on a 1000 µL model Press	+ / −	
	Validate	SET	
	Press	MODE	

Note: *When purchasing a new volumetric module as an accessory, it is important to introduce calibration parameters before very first use. To do so, perform calibration according to chapter "Calibration". The value entered is automatically and permanently memorised in the microprocessor when leaving calibration menu.*

Error messages

LCD DISPLAY	CAUSE	SOLUTION
ERROR 1	Plunger sticking or dragging	Disassemble volumetric module according to chapter “Operation” Clean plunger according to chapter “Maintenance” Reset instrument (see below)
	Plunger rod not clipped before assembling	Reconnect plunger rod according step 5 and 6 of page 18 and 19. Reset instrument (see below) Contact authorised dealer for control if error persists
ERROR 2	Microprocessor detected deviation between set volume and effective plunger travel	Reset instrument (see below)
	Plunger rod not clipped before assembling	Reconnect plunger rod according step 5 and 6 of page 18 and 19. Reset instrument (see below)
ERROR 3	Volumetric module disassembled when pipetting sequence is not completed	Reset instrument (see below) Confirm selection of volumetric module
ERROR 4	Only in dilution mode Volumes programmed larger than maximal aspiration capacity	Reset instrument (see below)

Instrument reset

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Error message			ERROR 1,2,3
	Press	STOP SET	PURGE ?
Reset	Double click on start button		RESET
Error message			ERROR 4
	Press	STOP SET	DIL V 2 100? µl
Select new volume	Press	+ / −	DIL V 2 90? µl

Instrument reset *(continued)*

OPERATION	ACTION	KEY/BUTTON	LCD DISPLAY
Or change calibration settings	Press then		

Refer to chapter "Calibration" for new setting

Other failures

Observation	Possible cause	Action
Power handle does not fit in pipette control unit	Control if compatible 4.8V device	Exchange with 4.8V power handle
Power handle or instrument is not charging/no red light	Control if compatible 4.8V device	Exchange with 4.8V device
Plug do not fit into stand	Control for correct power supply model 4.8V	Use 4.8V power supply
No display	Instrument in stand-by	Press start button to activate instrument
	Battery is discharged	Charge power handle or replace if damaged
LCD display on but no reaction when pressing start button	Volumetric module not correctly locked	Check volumetric module
Poor instrument performance	Lack of tightness	Check proper tip fitting. Use tips compatible with the instrument Check tip cone, change if damaged Check O-ring and PTFE sleeve, change if damaged
	Instrument not calibrated	Perform new calibration
	Instrument pipetting viscous, or volatile solutions, liquid temperature not comprised between 20-25°C	New calibration with specific solution or temperature
Reduced battery life span	Power handle damaged	Replace 4.8V power handle
	Too much friction in lower assembly	Clean lower assembly
Red light on charger stand not lid	Micropipette or power handle not sitting correctly on stand Using a 6V power handle instead of 4.8V	Reposition instrument or power handle Replace with a 4.8V power handle
Wrong volume	Erroneous programming of volumetric module	Set parameters correctly
Long pipetting time **Plunger moves stepwise**	Plunger sticking or dragging	Disassemble volumetric module and clean
	Motor drive impaired	Contact authorized dealer for control

PERFORMANCE

Accepted tolerance value as obtained with bi-dist. water at constant temperature (±0.5°C) comprised between 20°C and 25°C, according to ISO 8655. Use original or compatible tips.

Acura® *electro* 925

Volume µL	Division µL	Tip type µL	Performance at µL	Inaccuracy E%	Imprecision CV%
0.5 - 10	0.05	10	1	< ± 2.5 %	< 1.8 %
			5	< ± 1.8 %	< 1.2 %
			10	< ± 1.0 %	< 0.5 %
2.5 - 50	0.25	200	5	< ± 2.5 %	< 1.5 %
			25	< ± 1.6 %	< 0.9 %
			50	< ± 0.7 %	< 0.3 %
10 - 200	1.00	200	20	< ± 1.5 %	< 0.7 %
			100	< ± 1.1 %	< 0.5 %
			200	< ± 0.6 %	< 0.2 %
50 - 1000	5.00	1000	100	< ± 1.5 %	< 0.5 %
			500	< ± 1.0 %	< 0.4 %
			1000	< ± 0.5 %	< 0.2 %

Acura® *electro* 935

Volume mL	Division mL	Tip type mL	Performance at mL	Inaccuracy* E%	Imprecision* CV%
0.25 - 5	0.05	5	0.5	< ± 1.0 %	< 0.6 %
			2.5	< ± 0.9 %	< 0.5 %
			5	< ± 0.7 %	< 0.3 %
0.5 - 10	0.05	10	1	< ± 0.8 %	< 0.4 %
			5	< ± 0.7 %	< 0.3 %
			10	< ± 0.5 %	< 0.2 %

** Macropipette with nozzle filter.*

Acura® *electro* 955 (8 and 12-channel)

Volume µL	Division µL	Tip type µL	Performance at µL	Inaccuracy E%	Imprecision CV%
0.5 - 10	0.05	10	1	< ± 3.5 %	< 3.0 %
			5	< ± 2.5 %	< 2.0 %
			10	< ± 1.5 %	< 1.0 %
2.5 - 50	0.25	200	5	< ± 1.0 %	< 1.0 %
			25	< ± 0.9 %	< 0.7 %
			50	< ± 0.8 %	< 0.4 %
20 - 350	5.00	350	40	< ± 1.0 %	< 0.6 %
			200	< ± 0.9 %	< 0.4 %
			350	< ± 0.8 %	< 0.3 %

Notes: *Use of other tips than those recommended, as well as pipetting viscous or volatile liquids may lead to performance deviation compared to those shown in the above figure. Product specifications subject to change without prior notice.*
Performance value obtained in forward mode. Small deviations may exist when using other pipetting modes. To obtain best possible performance with one specific pipetting mode, it is recommended to perform a new calibration.

WARRANTY

Your Acura® *electro* and power handle are guaranteed against any material or manufacturing defects for the period of time specified in its QC certificate. Damages due to non-respect of manufacturer's instructions, safety precautions or autoclaving conditions, as well as material colour alteration are excluded from the warranty. Repair and replacement of parts do not extend warranty time. Claims for warranty are void if instrument has been tempered. Should regular maintenance not eliminate a detected defect, return the instrument to the dealer from whom it was purchased after obtaining return authorisation.

Note: *Decontaminate volumetric module of the instrument prior to returning it.*

CE DECLARATION OF CONFORMITY

SOCOREX ISBA S.A.
CHAMP-COLOMB 7 - 1024 ECUBLENS/LAUSANNE
SWITZERLAND

We declare under our sole responsability that our devices

Electronic pipettes ACURA®*electro*

are in conformity with the following Council directives

98/79/EEC
In vitro Diagnostic

89/336/EEC, and amending directives 91/263, 92/31, 93/68/EEC
Electromagnetic Compatibility

73/23/EEC, and amending directive 93/68/EEC
Low Voltage

Sylvain Christen
Director, CEO

Jean-Pierre Uldry
Director, Engineering

Ecublens
May 15th, 2007

SOCOREX

Micropipettes

Acura® *electro* 925

Volume µL	Division µL	Tip type µL	Pipette alone Cat. No.	Basic package* Cat. No.**
0.5 – 10	0.05	10	925.0010.48	925.0010.48x
2.5 – 50	0.25	200	925.0050.48	925.0050.48x
10 – 200	1.00	200	925.0200.48	925.0200.48x
50 – 1000	5.00	1000	925.1000.48	925.1000.48x

Acura® *electro* 935

Volume mL	Division mL	Tip type mL	Pipette alone Cat. No.	Basic package* Cat. No.**
0.25 – 5	0.05	5	935.05.48	935.05.48x
0.5 – 10	0.05	10	935.10.48	935.10.48x

Acura® *electro* 955

Volume µL	Division µL	No of channel	Tip type µL	Pipette alone Cat. No.	Basic package* Cat. No.**
0.5 – 10	0.05	8	10	955.08.010.48	955.08.010.48x
2.5 – 50	0.25	8	200	955.08.050.48	955.08.050.48x
20 – 350	5.00	8	350	955.08.350.48	955.08.350.48x
0.5 – 10	0.05	12	10	955.12.010.48	955.12.010.48x
2.5 – 50	0.25	12	200	955.12.050.48	955.12.050.48x
20 – 350	5.00	12	350	955.12.350.48	955.12.350.48x

* *Basic package includes electronic micropipette with individual QC certificate, pipette charging stand, power supply with cord, an additional power handle, Qualitips pipette tips samples and operating instructions.*

** *Replace* ***x*** *by letter for correct plug type depending on user location: E=Europe, G=UK, U=USA-Japan, A=Australia/NZ.*

Accessories and stands

Description	Packaging	Cat. No.
Interchangeable, autoclavable single channel volumetric module		
0.5 – 10 µL	1/pk	800.0010
2.5 – 50 µL	1/pk	800.0050
10 – 200 µL	1/pk	800.0200
50 – 1000 µL	1/pk	800.1000
0.25 – 5 mL	1/pk	800.5000
0.5 – 10 mL	1/pk	800.10000
Interchangeable, autoclavable 8-channel volumetric module		
0.5 – 10 µL	1/pk	800.08.010
2.5 – 50 µL	1/pk	800.08.050
20 – 350 µL	1/pk	800.08.350
Interchangeable, autoclavable 12-channel volumetric module		
0.5 – 10 µL	1/pk	800.12.010
2.5 – 50 µL	1/pk	800.12.050
20 – 350 µL	1/pk	800.12.350

Accessories and stands *(continued)*

Description	Packaging	Cat. No.
Power handle (battery pack)	1/pk	900.910.48
Power handle (duo battery pack)	2/pk	900.912.48
Charging stand for *electro* pipettes and power handles*	1/pk	320.903.48
Compact charging stand for power handles only*	1/pk	320.912.48
** Power supply with plug to be ordered separately*		
Power supply 100-240 V with cord and plug for Europe	1/pk	900.901.48E
Power supply 100-240 V with cord and plug for UK	1/pk	900.901.48G
Power supply 100-240 V with cord and plug for USA-Japan	1/pk	900.901.48U
Power supply 100-240 V with cord and plug for Australia/NZ	1/pk	900.901.48A
Universal work station 337 for 7 single channel pipettes or spare volumetric modules		
Light grey	1/pk	320.337G
Ice blue	1/pk	320.337B
Vanilla yellow	1/pk	320.337Y
Mint green	1/pk	320.337M
Pastel rose	1/pk	320.337R

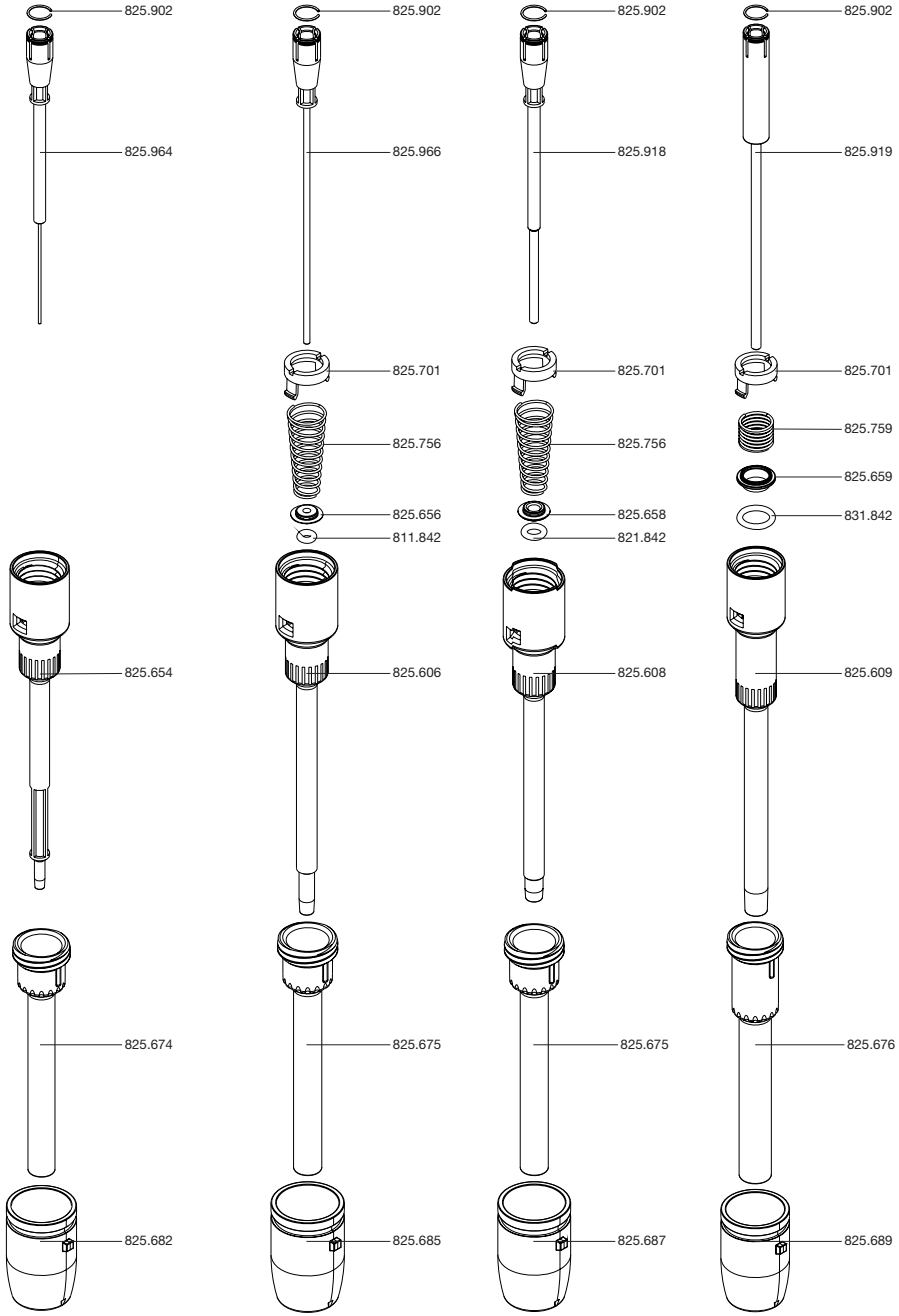
Qualitips® pipette tips

Description	Packaging	Cat. No.
Selection of Qualitips® without filter		
Ultra-micro tips, 10 µL	1x 1000/bag	309.0010B
	10x 96/rack	309.0010R
Natural tips, 200 µL	2x 500/bag	307.0200B
	10x 96/rack	307.0200R
Yellow tips, 200 µL	2x 500/bag	327.0200B
	10x 96/rack	327.0200R
Natural tips, 200 µL	1x 1000/bag	308.0200B
	10x 96/rack	308.0200R
Natural tips, 350 µL	1x 1000/bag	308.0350B
	10x 96/rack	308.0350R
Blue tips, 1000 µL	4x 250/bag	318.1000B
	8x 96/rack	318.1000R
Natural tips, 5 mL	2x 250/bag	312.05B
	2x 50/rack	312.05R
Natural tips, 10 mL	2x 250/bag	312.10
	4x empty rack	312.10ER
Selection of Qualitips® with filter		
Ultra-micro tips, 10 µL, sterile	10x 96/rack	309.0010FR
Natural tips, 100 µL, sterile	10x 96/rack	308.0100FR
Natural tips, 300 µL, sterile	10x 96/rack	308.0300FR
Natural tips, 1000 µL, sterile	10x 100/rack	309.1000FR
Nozzle protection filter, cellulose		
For 5 mL volumetric module	1x 250/bag	322.05
For 10 mL volumetric module	1x 100/bag	322.10

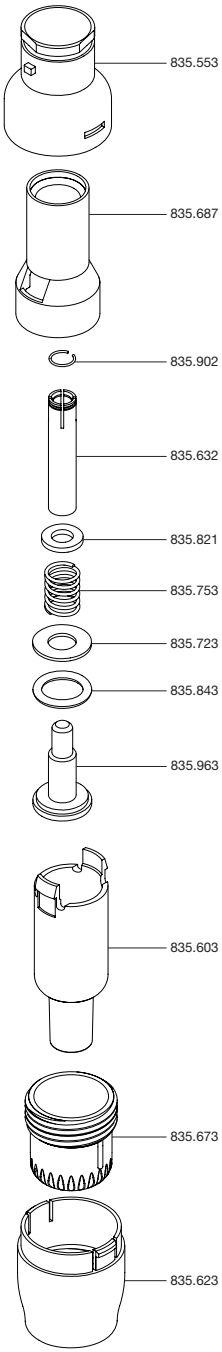
Note: *Refer to sales literature for full programme of Qualitips® pipette tips.*

NOTES

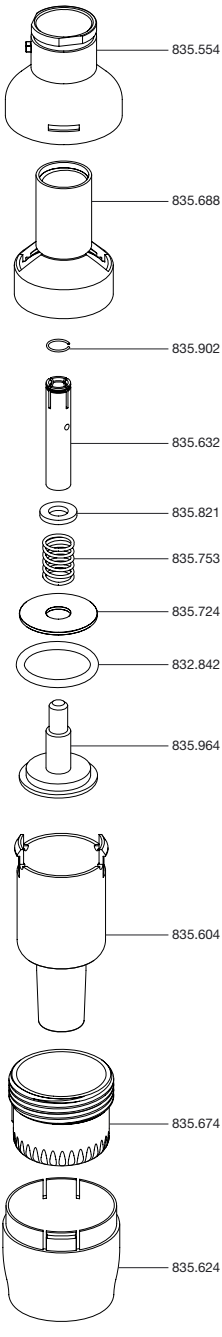
0.5 - 10 µL	2.5 - 50 µL	10 - 200 µL	50 - 1000 µL

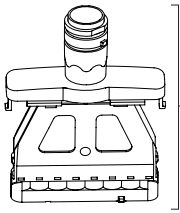


0.25 - 5 mL



0.5 - 10 mL





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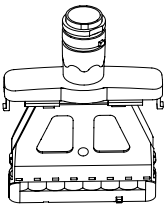

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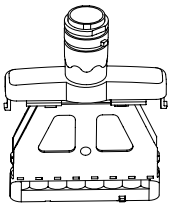

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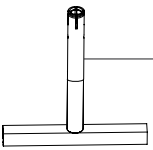

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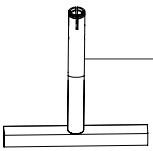

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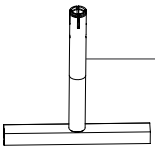

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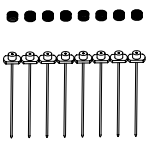

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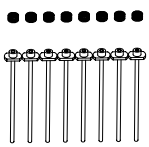

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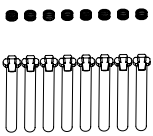

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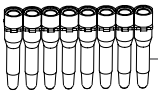

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Operating instructions also available in other languages

IVD CONFORM

CE

U.S. FCC part 15

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PS E JQA (power supply)

ENERGY STAR® qualified power supply for a better environment

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socorex@socorex.com – www.socorex.com – TEL. +41 21 651 6000 – FAX +41 21 651 6001

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