INSTRUCTIONS

Scienceware®
TOOLS FOR SCIENCE FROM BEL-ART PRODUCTS™

VARIPET®

Repetitive Positive Displacement Dispenser

Catalog Numbers

F37895-0010	Teflon® Tip 1ml
F37895-0040	Teflon® Tip 4ml
F37895-0100	Teflon® Tip 10ml
F37895-0300	Teflon® Tip 30ml
F37895-1010	Metal Luer-Lok™ Tip 1ml
F37895-1040	Metal Luer-Lok™ Tip 4ml
F37895-1100	Metal Luer-Lok™ Tip 10ml

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IMPORTANT NOTE

Consult Chemical Resistance Chart before using your Varipet® to determine that it is compatable with the chemical to be dispensed.

All parts of the Teflon® Tip Varipet® that come in contact with liquid are made of glass or Teflon®, and are suitable for use with most acids and solvents. Metal Luer-Lok™ and cannula are chrome plated brass and stainless steel.

Each Varipet® is tested before it is shipped to assure that it performs to the highest standards of accuracy and reliability. There may be a small amount of ordinary tap water remaining in the barrel as a result of the testing process.

PRINCIPLE OF OPERATION

Varipet® is a variable volume pipettor for repetitive dispensing of preset amounts of liquid. Set the desired volume, then depress the plunger for dispensing and release it for filling.

SPECIFICATIONS

(Size)				
Maximum Volume:	1ml	4ml	10ml	30ml
Graduation:	0.01ml	0.05ml	0.2ml	1ml
Repetitive accuracy ±%				
at full scale:	0.75	0.5	0.5	1.0
at half scale:	1.0	0.75	0.75	1.5
at quarter scale:	1.5	1.0	1.0	1.0

Statistical accuracy within two standard deviations (97% of all readings fall within these limits).

OPERATION

TO SET VOLUME

1. Rotate knob clockwise to decrease volume; counter-clockwise to increase volume.
2. Line up bottom edge of piston with the appropriate graduation on the glass barrel.
3. Dispense set volume in graduated beaker or cylinder. Check and readjust if necessary.

TO FILL

1. Depress plunger fully.
2. Insert tip of Varipet® in the liquid.
3. Release plunger.

The Varipet® is now full and ready for dispensing.

TO ELIMINATE AIR

Should air bubbles appear around piston, the following corrective action should be taken:

1. Depress plunger quickly and forcefully several times using short strokes while tip is in liquid.
2. Turn pipette tip end up and tap glass barrel until air bubbles rise to the top. Then slowly depress plunger until air is expelled.
3. Make sure glass barrel and plunger are clean.

TO DISPENSE

Depress plunger fully. Insert tip of Varipet® into the liquid to be transferred before releasing plunger. This method should prevent air from entering the system.

CLEANING

1. Empty Varipet® by removing tip from the liquid and pressing knob a few times.
2. Insert tip in cleaning solution. Depress plunger several times to fill and then empty unit.
3. Use only chemicals for this purpose that are compatible with the specific model.

For general cleaning, use detergent (such as Bel-Art's Aquet®, Cat. No. F17094-0030) or chromic-sulphuric acid solution (made with Bel-Art's Chromerge®, Cat. No. F17089-0000) for more stubborn deposits.

4. Harsh corrosive chemicals should not be left in pipette for extended periods of time. Clean and rinse it immediately after each use.

AUTOCLAVING

All parts of Varipet® are completely autoclavable. **However:** it is necessary to separate plunger assembly from glass barrel for autoclaving. Follow standard autoclaving practices.

ASSEMBLY AND DISASSEMBLY

TO DISASSEMBLE (1, 4, 10ml MODELS)

Hold plastic syringe adapter (93790-1109 1ml) (93790-0106, 4ml) or glass barrel (10ml) in one hand and plastic body in the other hand. Twist a quarter turn in either direction, then pull the upper piston assembly out of glass barrel.

TO REASSEMBLE (1, 4, 10ml MODELS)

Insert piston into glass barrel tilted at an angle so as not to damage piston edges. Once piston is inside barrel it can be pushed straight in to complete assembly. While rotating plastic adapter (93790-1109, 1ml) (93790-0106, 4ml) or glass barrel (10ml) push both parts together until the adapter or barrel flange disappears into the plastic body; then rotate a quarter turn in either
direction to lock. A rotating motion of the glass barrel in the locked position will not affect the operation of the Varipet®.

TO DISASSEMBLE 30ml MODEL

Remove flange screws holding plunger assembly and glass barrel together. Separate plunger assembly from glass barrel by pulling them apart.

TO REASSEMBLE 30ml MODEL

Insert piston into glass barrel tilted at an angle so as not to damage piston edges. Once piston is inside barrel, it can be pushed straight in to complete assembly. Line up screw holes in flange and reinsert screws. Tighten until snug. Do not overtighten.

VARIPET® TROUBLESHOOTING

KNOB DIFFICULT TO TURN WHEN SETTING VOLUME

No lubrication on adjustment nut (Cat. No. 93790-1103 or 93790-0139).

Remove upper piston assembly from glass barrel. Turn knob clockwise until nut appears. Lubricate nut with petroleum jelly and reassemble.

TO CORRECT PISTON LEAKS

When liquid passes behind the Teflon® piston it is because the Teflon® plunger and the glass barrel are no longer forming a proper seal.

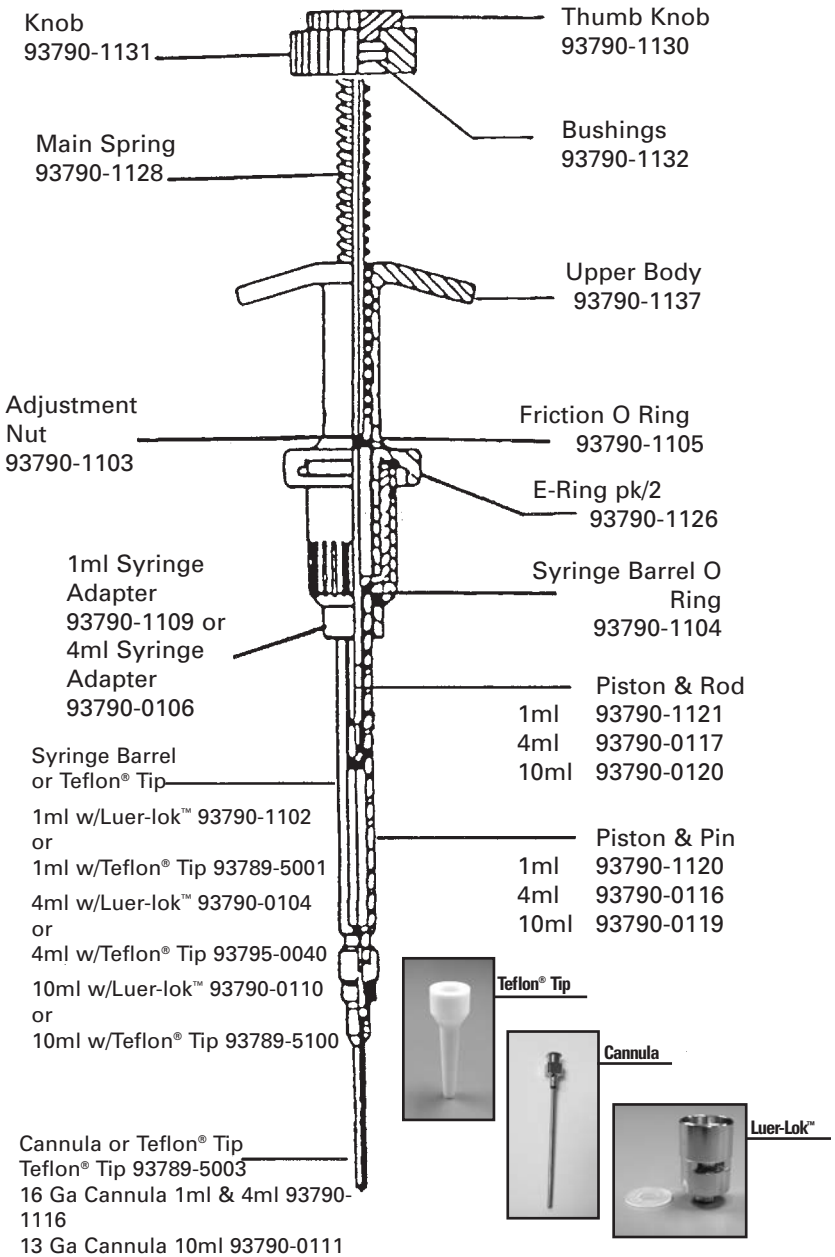
FOR 1ml MODELS, F37895-0010 & F37895-1010

1. Disassemble the unit by removing the plunger assembly from the glass barrel.
2. Insert a blunt object like a ballpoint pen in the front face groove of the plunger.
3. Gently force the thin Teflon® edge outward by circling the pen around the entire circumference. If the Teflon® edge is intact and has no nicks, this simple operation will restore the sealing ability of the plunger. If not, replace the piston and pin (#93790-1120).

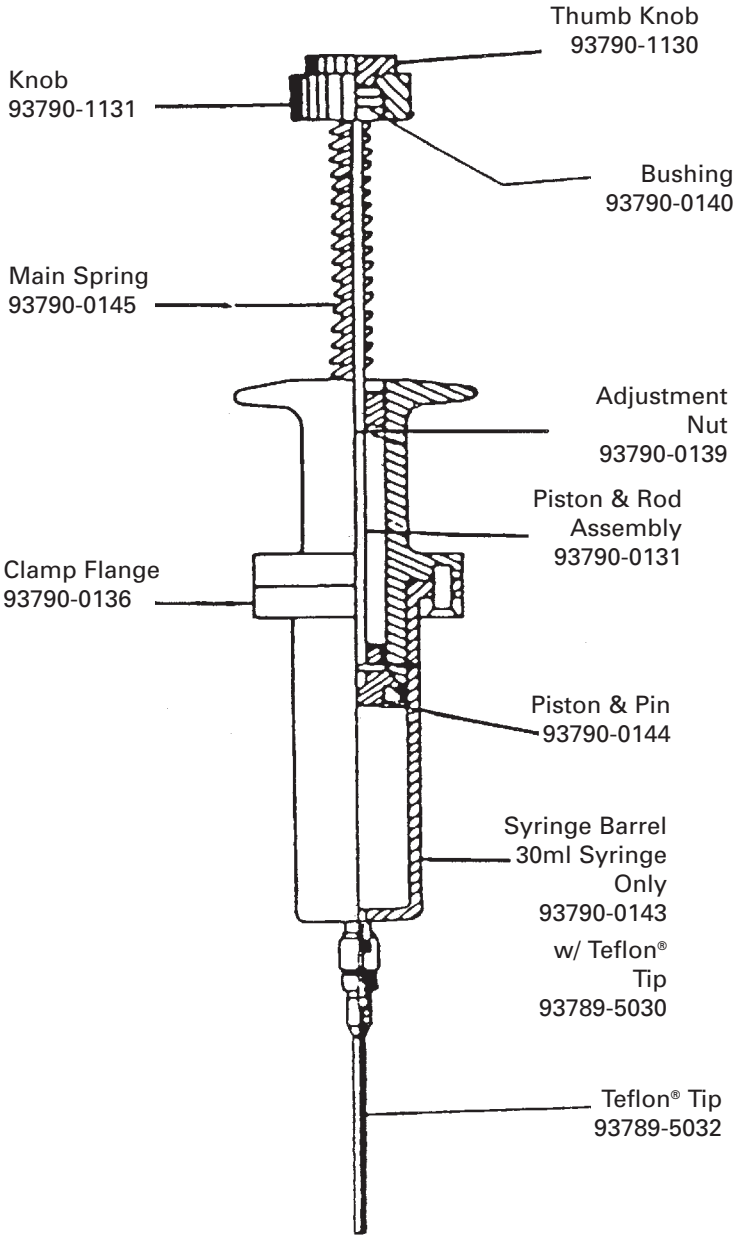
FOR ALL OTHER MODELS

1. Disassemble the unit by removing the plunger assembly from the glass barrel.
2. Closely inspect the plunger; if there is a nick in the plunger, the piston and rod should be replaced. See diagrams for replacement #.

VARIPET® DIAGRAM
1ml, 4ml, 10ml Sizes



VARIPET® DIAGRAM
30ml Size



CHEMICAL COMPATIBILITY CHART

CONSULT THIS CHART TO DETERMINE THE VARIPET® SUITED TO YOUR REQUIREMENTS

This chart contains information gained from laboratory tests and should be used as a guide only. For applications not shown, consult our Engineering Department. Harsh corrosive chemicals should not be left in Varipet® for extended periods of time. Clean Varipet® immediately after each use

Chemical	Compatability	
	Luer-Lok™ Varipet®	Teflon® Tip Varipet®
ACETIC ACID (5%)		YES
ACETIC ACID (60%)		YES
ACETIC ACID (Glacier)		YES
ACETIC ANHYDRIDE	YES	YES
ACETONE	YES	
ALCOHOLS in general	YES	YES
ALUMINUM CHLORIDE SOLUTIONS	YES	YES
ALUMINUM SULFATE SOLUTIONS	YES	YES
AMMONIA	YES	YES
AMMONIUM CHLORIDE SOLUTIONS	YES	YES
AMMONIUM HYDROXIDE (58%)	YES	YES
AMMONIUM PERSULFATE (Set'd)		YES
AMMONIUM PHOSPHATE		YES
AMMONIUM SULFIDE		YES
ANIUNE	YES	
BARIUM HYDROXIDE SOLUTIONS	YES	YES
BENZENE	YES	
BORIC ACID	YES	YES
BUTANOL	YES	YES
BUTYL ACETATE	YES	
CADMIUM CHLORIDE		YES
CALCIUM CHLORIDE	YES	YES
CALCIUM HYPOCHLORITE		YES
CARBON TETRACHLORIDE	YES	
CHLOROFORM	YES	
CHLOROACETIC ACID	YES	
CHROMIC ACID (10%)		YES
CHROMIC ACID (50%)		YES
CITRIC ACID (10%)	YES	YES
COPPER CHLORIDE SOLUTIONS		YES
COPPER SULFATE SOLUTIONS	YES	YES
CELLOSOLVE	YES	YES
CRESOL	YES	
CYCLOHEXANONE	YES	
DIACETONE ALCOHOL	YES	
DIBUTYL PHTHALATE	YES	
DIBENZYL SEBACATE	YES	
DIISOBUTYL KETONE	YES	
ESTERS in general	YES	
ETHERS in general	YES	
ETHYL ACETATE	YES	
ETHYL BENZENE	YES	
ETHYLENE GLYCOL	YES	
ETHYL ETHER	YES	
FATTY ACIDS	YES	
FERRIC CHLORIDE SOLUTIONS		YES
FERRIC NITRATE SOLUTIONS		YES
FERRIC SULFATE		YES
FORMALDEHYDE (40%)	YES	YES
FORMIC ACID (100%)	YES	YES
FUEL OIL	YES	YES
GASOLINE	YES	
GLUCOSE	YES	YES
GLYCERINE	YES	YES
HEPTANE	YES	

Chart continued on next page

Chemical	Compatability	
	Luer-Lok™ Varipet®	Teflon® Tip Varipet®
N-HEXANE	YES	
HYRAULIC OIL	YES	YES
HYDROCHLORIC ACID (10%)		YES
HYDROCHLORIC ACID (37.5%)		YES
HYDROGEN PEROXIDE		YES
ISOOCTANE	YES	YES
ISOPENTYL ACETATE	YES	
KEROSENE	YES	YES
KETONES in general	YES	
LACTIC ACID (85%)	YES	YES
MAGNESIUM CHLORIDE	YES	YES
METHYL ALCOHOL	YES	YES
METHYL BENZOATE	YES	
METHYL ETHYL KETONE	YES	
METHYL ISOBUTYL KETONE	YES	
NITRIC ACID (10%)		YES
NITRIC ACID (50%)		YES
OLEIC ACID	YES	
OXALIC ACID		YES
PALMITIC ACID	YES	YES
PERCHLORIC ACID (68%)		YES
PHOSPHORIC ACID (75%)	YES	YES
PHOTOGRAPHIC DEVELOPERS		YES
PHOTOGRAPHIC FIXING SOLUTIONS		YES
POTASSIUM CHLORATE	YES	YES
POTASSIUM HYDROXIDE (9%)	YES	YES
POTASSIUM HYDROXIDE (conc.)	YES	YES
POTASSIUM PERMANGANATE	YES	YES
SAE 20 OIL	YES	YES
SODIUM HYDROXIDE (conc.)		YES
SODIUM HYPOCHLORITE		YES
STANNOUS CHLORIDE	YES	YES
STEARIC ACID	YES	YES
SULFURIC ACID (10%)		YES
SULFURIC ACID (50%)		YES
SULFURIC ACID (75%)		YES
TANNIC ACID	YES	YES
TARTARIC ACID	YES	YES
TOLUENE	YES	
TRICHLOROACETIC ACID		YES
TRICHLOROETHYLENE	YES	
TRICRESYL PHOSPHATE	YES	YES
TRIETHANOLAMINE	YES	YES
TURPENTINE	YES	YES
XYLOL (Xylene)	YES	
ZINC CHLORIDE	YES	YES

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