

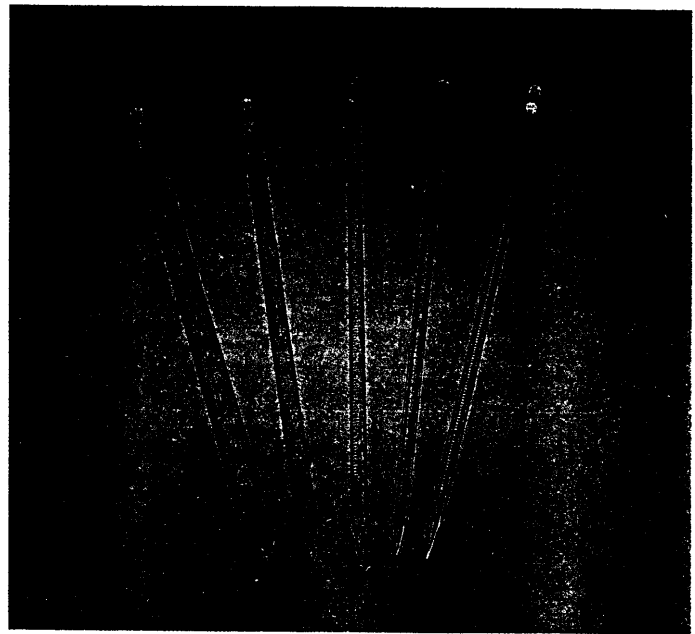
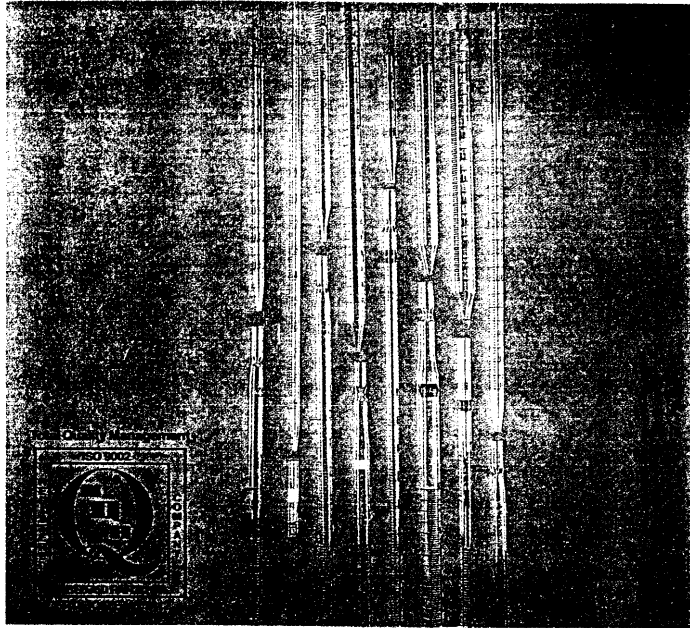


713-0375 to 713-0790

John Poulten Ltd.

77-93 Tanner Street, Barking, Essex IG11 8QD, England
Telephone: 081-594 4256 Telefax: 081-594 8419**VOLAC – VOLumetric ACcuracy – The Ultimate Precision in Laboratory Glassware****GRADUATED (SUB-DIVIDED) PIPETTES**

To British Standard BS700

**Volac – Probably the most *reliably* accurate laboratory volumetric products available**

All "Volac" graduated pipettes share the same exceptional standards of accuracy. Full ranges are available in Class A, either uncertified or with works certificate of accuracy or in Class B. All graduation marks are in permanent amber stain, colour codes are fused ceramic and all tips are carefully formed, ground and bevelled to ensure proper flow rates and "Tufftip" treated for greater resistance to chipping and breakage. All "Volac" graduated pipettes are produced from carefully selected and graded tubing on automated plant and are controlled for accuracy and quality at three stages of production. Sizes 5ml and above are constricted for cotton plugging.

CLASS A ACCURACY (BS 700)

The accuracy of all "Volac" Class A graduated pipettes is more reliable because each pipette is individually calibrated, individually tested, individually numbered and fully traceable whether they are certified (suffix WAC) or uncertified (suffix NC). Each WAC graduated pipette is check tested at 5 different points. The flow rate of graduated pipettes affects the accuracy; time to deliver in seconds is scribed on the side of each Class A pipette.

	Reference Number	Capacity/ Sub-Division ml	Colour Code	Class A Accuracy Limits \pm ml	Standard Pack Quantity	Flow Time To Delivery in Seconds
CLASS A ACCURACY, TYPE 2 Calibrated zero at outlet, capacity at top; non blow-out. Permanent amber markings are in full ring-pattern dividing, to reduce parallax errors in use.	R385/NC/A/5	1.0/0.01	YELLOW	0.006	5	5-7
	/B/5	2.0/0.02	BLACK	0.01	5	6-9
	/C/5	5.0/0.05	RED	0.03	5	8-11
	/D/5	10.0/0.1	ORANGE	0.05	5	10-13
	/E/5	25.0/0.2	GREEN	0.10	5	11-16
CLASS A ACCURACY, TYPE 1 Calibrated zero at top, total capacity marked at shoulder; non blow-out.	R386/NC/A/5	1.0/0.01	YELLOW	0.006	5	7-10
	/B/5	2.0/0.02	BLACK	0.01	5	8-12
	/C/5	5.0/0.05	RED	0.03	5	10-14
	/D/5	10.0/0.1	ORANGE	0.05	5	13-17
	/E/5	25.0/0.2	GREEN	0.10	5	15-21
CLASS A ACCURACY, TYPE 2 With five-point works correction certificate of accuracy, showing time of flow.	R385/WAC/A/5	1.0/0.01	YELLOW	0.006	5	5-7
	/B/5	2.0/0.02	BLACK	0.01	5	6-9
	/C/5	5.0/0.05	RED	0.03	5	8-11
	/D/5	10.0/0.1	ORANGE	0.05	5	10-13
	/E/5	25.0/0.2	GREEN	0.10	5	11-16
CLASS A ACCURACY, TYPE 1 With five-point works correction certificate of accuracy, showing time of flow.	R386/WAC/A/5	1.0/0.01	YELLOW	0.006	5	7-10
	/B/5	2.0/0.02	BLACK	0.01	5	8-12
	/C/5	5.0/0.05	RED	0.03	5	10-14
	/D/5	10.0/0.1	ORANGE	0.05	5	13-17
	/E/5	25.0/0.2	GREEN	0.10	5	15-21

All NC and WAC pipettes have serial number and flow time marked on them. Observed time must be within 2 seconds of scribed time.

Data Sheet No: 019/2.94

IMPORTANT when ordering please specify number of packs not the number of pieces.

CLASS B ACCURACY (BS 700)

The same attention to detail and accuracy is applied to Class B "Volac" graduated pipettes. Many customers have found them to be as accurate and reliable as competitive Class A instruments. All markings are in permanent amber stain, colour codes are fused ceramic, all tips are carefully formed, ground, bevelled and "Tuftip" treated for greater resistance to chipping and breakage. Sizes 5ml and above are constricted for cotton plugging. Flow rates are checked to lie within stated tolerances.

	Reference Number	Capacity/ Sub-Division ml	Colour Code	Class B Accuracy Limits \pm ml	Standard Pack Quantity	Flow Time To Delivery in Seconds
CLASS B ACCURACY, TYPE 2 Calibrated zero at outlet, total capacity at top; non blow-out.	R376/A/5	1.0/0.01	YELLOW	0.01	5	2-10
	/B/5	2.0/0.02	BLACK	0.02	5	2-12
	/C/5	5.0/0.05	RED	0.05	5	5-14
	/D/5	10.0/0.1	ORANGE	0.10	5	5-17
	/E/5	25.0/0.2	GREEN	0.20	5	9-21
CLASS B ACCURACY, TYPE 1 Calibrated zero at top, total capacity marked at shoulder; non blow-out.	R377/A/5	1.0/0.01	YELLOW	0.01	5	2-10
	/B/5	2.0/0.02	BLACK	0.02	5	2-12
	/C/5	5.0/0.05	RED	0.05	5	5-14
	/D/5	10.0/0.1	ORANGE	0.10	5	5-17
	/E/5	25.0/0.2	GREEN	0.20	5	9-21
CLASS B ACCURACY, TYPE 3 Calibrated zero at top, total capacity at outlet; non blow-out.	R400/A/5	1.0/0.01	YELLOW	0.01	5	2-10
	/B/5	2.0/0.02	BLACK	0.02	5	2-12
	/C/5	5.0/0.05	RED	0.05	5	5-14
	/D/5	10.0/0.1	ORANGE	0.10	5	5-17
	/E/5	25.0/0.2	GREEN	0.20	5	9-21
CLASS B ACCURACY, TYPE 4 Calibrated zero at top total capacity at outlet; adjusted for blow-out delivery.	R402/A/5	1.0/0.01	YELLOW	0.01	5	3-5
	/B/5	2.0/0.02	BLACK	0.02	5	4-6
	/C/5	5.0/0.05	RED	0.05	5	5-7
	/D/5	10.0/0.1	ORANGE	0.10	5	6-9
	/E/5	25.0/0.2	GREEN	0.20	5	8-11

FAST FLOW GRADUATED PIPETTES

R379 series (Type 3)

These fast flow pipettes are similar to BS700 Type 3 pipettes (R400 series) and are calibrated to the same levels of Class B accuracy but have faster flow times than permitted by British Standard.

They are calibrated for free delivery without blow-out of the final residue in the jet. As with all "Volac" graduated pipettes jets are ground, bevelled and "Tuftip" treated to increase strength.

Reference Number	Capacity/ Sub-Division ml	Colour Code	Accuracy Limits \pm ml	Standard Pack Quantity
<i>Calibrated zero at top, to outlet</i>				
R379/A/5	1.0/0.01	YELLOW	0.01	5
/C/5	2.0/0.02	BLACK	0.02	5
/D/5	5.0/0.05	RED	0.05	5
/F/5	10.0/0.1	ORANGE	0.10	5
/G/5	25.0/0.2	GREEN	0.20	5
/H/5	25.0/0.1	WHITE	0.20	5

R381 series (Type 4)

These pipettes are similar to BS700 Type 4 pipettes (R402 series) and are calibrated to the same levels of Class B accuracy but with faster flow rates than permitted by British Standard. They are calibrated for delivery to tip with volume adjusted for blow-out delivery.

Reference Number	Capacity/ Sub-Division ml	Colour Code	Accuracy Limits \pm ml	Standard Pack Quantity
R381/D/5	1.0/0.01	YELLOW	0.01	5
/E/5	2.0/0.02	BLACK	0.02	5
/G/5	5.0/0.05	RED	0.05	5
/I/5	10.0/0.1	ORANGE	0.10	5
/J/5	25.0/0.10	WHITE	0.20	5

SPECIAL FORMS

Short Form Serological Pipettes

For work in the confined space of a hood when pipetting infectious or hazardous materials, "Volac" shorty pipettes are only 175mm long and are all suited for cotton plugs. They should ideally be used with the "Volac" pipette controller for complete safety in filling or delivering under a hood. These pipettes are not included in the British Standard but are made to Class B levels of accuracy with permanent amber stain markings, ceramic fused colour codes and tips which have been "Tuftip" treated for resistance to chipping and breakages.

Reference Number	Capacity ml	Sub-division ml	Accuracy Limits \pm ml	Standard Pack Quantity
R388/D/5	1.0	0.02	0.02	5
/E/5	2.0	0.10	0.05	5
/F/5	5.0	0.10	0.10	5
/G/5	10.0	0.20	0.20	5
/H/5	25.0	0.50	0.50	5

Wide Bore Orifice Serological Pipettes

These pipettes can be supplied to special order with an enlarged orifice for use with viscous solutions. Normal accuracy tolerances do not apply but markings and calibration are normally to Class B levels. Apply suffix WB when ordering; prices available on request.

Special Note: When users wish to check the accuracy of volumetric glassware, care should be taken not only to avoid parallax error, but also to avoid a false view of the bottom of the meniscus. Use of a black ring, clip or surround 1 mm below the mark will give a black reflection on the bottom of the meniscus and dramatically improve the accuracy of the reading (see ISO4787 or BS6696). We can supply suitable clips on request.

IMPORTANT when ordering please specify number of packs not the number of pieces.