

IGEM UP/1B EDITION 4 – INSTALLATION & PURGE VOLUMES

Procedure for working out installation volumes and purge volumes to determine the permissible pressure drop on a gas installation

CLASSROOM & PRACTICAL TRAINING AID

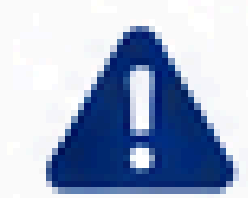
1. INSTALLATION VOLUME (IV)

Meter type		
Length 15mm		
Length 22mm		
Length 28mm		
Length 35mm		

Pipe volume m ³ Multiply the lengths by the volumes from the table in blue	A)
Fittings + 10% Multiply A by 1.1 to add the 10% on	B)
Meter volume Look up the meter volume in green	C)
Total installation volume Add B and C together	D)
Determine the permissible drop from the figure in box D, using the table in yellow.	E)



If IV is over 0.035m³ IGEM/UP/1 or 1A must be used.
If IV is over 0.02m³ when purging, you must ignite at a suitable safe point. i.e. cooker or hob.



If tightness test fails with appliances connected and no smell of gas but zero drop on pipework please see permissible drop chart.

2. PURGE VOLUME (PV)

TOTAL INSTALLATION VOLUME (IV)
(from box D)

PURGE VOLUME (PV)

$$\boxed{\text{m}^3} \times 1.5 = \boxed{\text{m}^3}$$

$$PV = IV (D) \times 1.5$$

(Purge volume is 1.5 times the installation volume)

3. PERMISSIBLE DROPS

Fuel gas	Installation Volume (IV) (m ³)	Maximum permissible pressure drop (mbar)
LPG/ Air (Table 2)	≤0.025	1.5
	>0.025 – ≤0.035	0.5
Natural gas (Table 3)	≤0.005	8
	>0.005 – ≤0.010	4
	>0.010 – ≤0.015	2.5
	>0.015 – ≤0.035	1
LPG (Table 5)	≤0.0025	2
	>0.0025 – ≤0.005	1
	>0.005 – ≤0.01	0.5
	>0.01 – ≤0.035	No perceptible movement

IMPORTANT: Always follow the manufacturer's instructions.

PIPE VOLUMES (m³ PER METRE)

STEEL / STAINLESS STEEL	Per meter
15mm 1/2	0.00024 m ³
20mm 3/4	0.00046 m ³
25mm 1	0.00064 m ³
32mm 1 1/4	0.0011 m ³

COPPER	Per meter
15mm	0.00014 m ³
22mm	0.00032 m ³
28mm	0.00054 m ³
35mm	0.00084 m ³

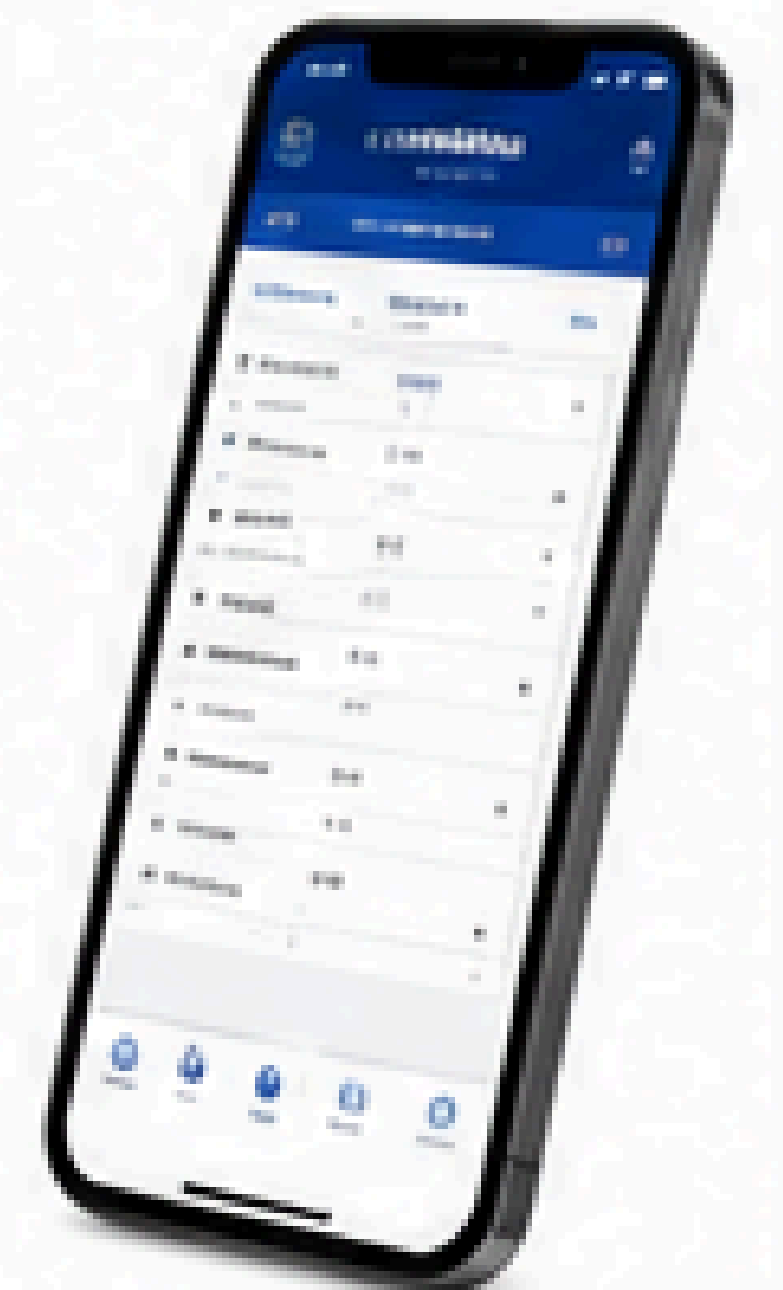
TYPE OF METER	FOR VOLUME CALCS Meter volume (m ³) for pipe work volume calculations
G4/U6	0.008
U16	0.025
E6	0.0024



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WORKED EXAMPLE

- 8m of 22mm copper
- 4m of 15mm copper
- G4 meter

Example installation			
A) Pipe volume (m ³)	(8 × 0.00032) + (4 × 0.00014) =		0.00312
B) +10% fittings	0.00312 × 1.1 =		0.003432
C) Meter volume (G4)	0.00800 (from Table 2)		0.00800
D) Total IV (B + C)	0.003432 + 0.00800 =		0.011432
E) Permissible drop (NG)	From Table 3 (>0.010 – ≤0.015)		2.5 mbar

Purge volume (PV)

$$IV \times 1.5$$

$$0.011432 \times 1.5 =$$

$$0.017148 \text{ m}^3$$



← ACS due?