

WESTERN POWER DISTRIBUTION

Housing Development Installation and Records framework appendix Part 1 of 2 to be read in conjunction with:

ENA Engineering Recommendation G81 “Framework for Design and Planning, Materials Specification and Installation and Record for Low Voltage Housing Development Installations and Associated, New, HV/LV Distribution Substations” – Part 3 Installation and Records. Version agreed at Ofgem ECSG on 12th October 2004

WESTERN POWER DISTRIBUTION

HOUSING DEVELOPMENT INSTALLATION AND RECORDS FRAMEWORK DLH SPECIFIC APPENDIX

PART 1 OF 2

1.0 INTRODUCTION

1.1 Information contained in this Framework Appendix must be read in conjunction with the National Framework Documents, the Adoption Agreement and the other two Western Power Distribution (WPD) Housing Development Framework Appendices relating to Design, and Materials and the WPD Framework Appendix on cable recording techniques.

1.2 *In the event of query please speak to the WPD Planner acting as the focal point of contact for the scheme.*

2.0 SERVICE ENTRIES FOR NEW DWELLINGS ON RESIDENTIAL ESTATES

2.1 National Joint Utilities Group Publication Number 6 - Service Entries for New Dwellings on Residential Estates (NJUG 6) shall be implemented with one exception:

- (a) Cavity service entry is not normally permitted as this de-rates the service cable.

2.2 On new housing developments the preferred method of service entry to a customers electrical installation is via an external meter cabinet. See attached drawings, and NJUG 6.

2.3 The meter cabinet to be used shall be one of the types detailed in Table 1.

2.4 If alternative arrangements are considered the following shall be taken into account:

- The air temperature surrounding the cut out must not exceed 30^o C
- The meter position must not be unduly exposed to accidental damage.
- Customers prefer to have their meter read rather than receive estimated bills.

2.5 All meter cabinets must be installed in a way that maintains the manufactured fire resistance values.

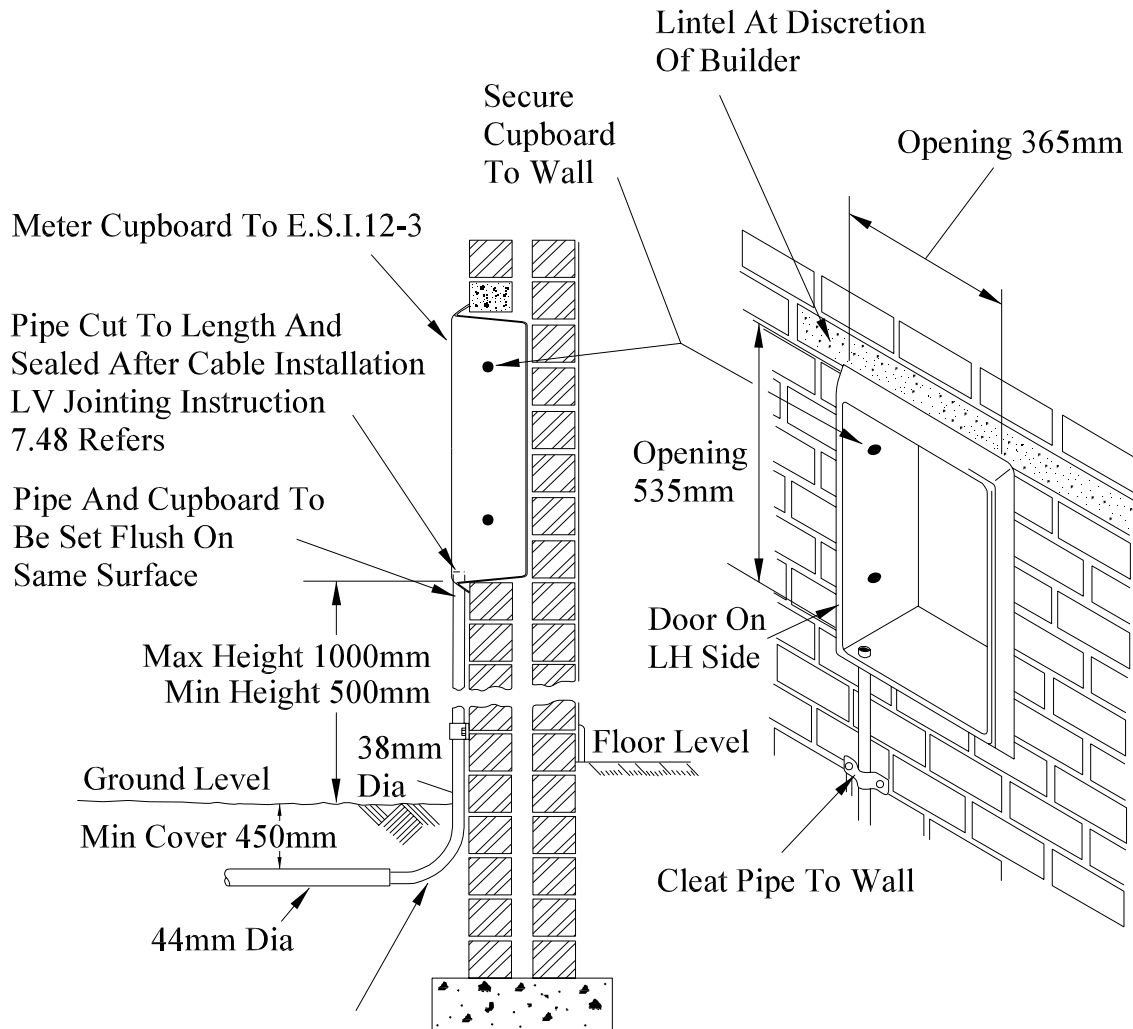
2.6 For a Standard Meter Cabinet the installation height should be between 500 mm & 1000mm above ground level to the bottom of the cabinet.

2.7 For a Slim Line Meter Cabinet the installation height should be between 300mm & 1000mm above ground level to the bottom of the cabinet.


- 2.8 There should not normally be any consumer equipment in an external meter cabinet except for the consumer's outgoing tails to their consumer unit.
- 2.9 The standard method of service entry into the meter cabinet shall be by means of a white, ultra violet proof PVC preformed tube with an outside diameter of 38 mm and a wall thickness of 2 mm. The tube shall be fixed to the outside wall by a single bracket normally midway between the base of the meter cabinet and ground level.
- 2.10 Black Alkathene service ducting shall be used. Black is the only colour to be used for electrical service cables, to prevent confusion with other utility services.
- 2.11 Cut-out arrangements shall be in accordance with WPD Standard Technique SD5D.

DRAWINGS FOR METER CUPBOARDS/CABINETS

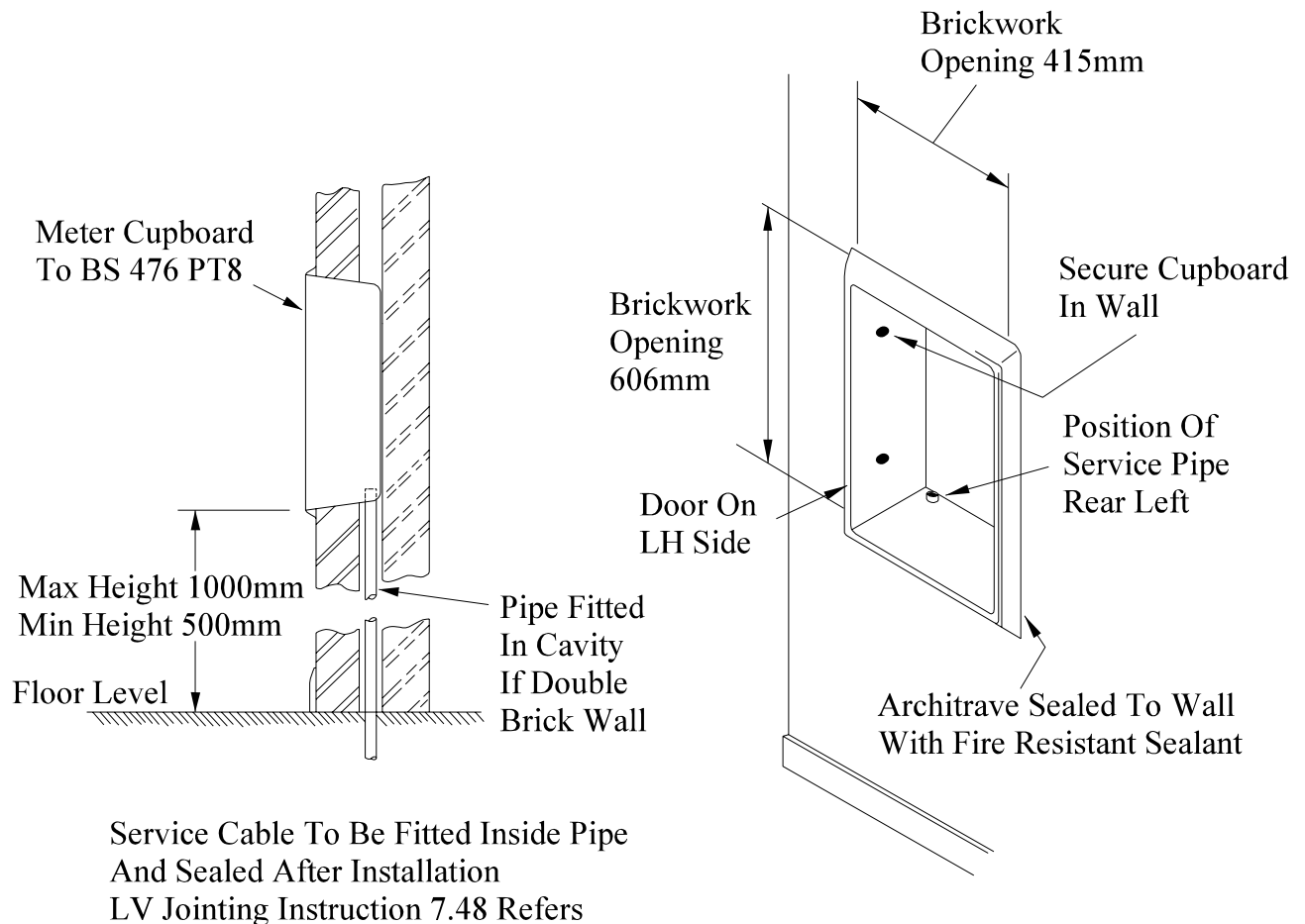
Drawing Number OG/65/4418	General Arrangement for Surface Entry Meter Cupboard
Drawing Number OG/65/4420	General Arrangement For Fire Resistant Meter Cupboard
Drawing Number OG/65/4421	General Arrangement for Surface Entry Meter Cupboard
Drawing Number OG/65/4425	General Arrangement For Mounting Meter, Security Block, Wedge & Cutout
Drawing Number ST:SD6A/1	General Arrangement for Slim Line Surface Entry Meter Cupboard
Drawing Number ST:SD6A/2	General Arrangement for Slim Line Surface Entry Meter Cupboard




Provision Must Be Made
For Hockey Stick In
Foundations As Appropriate

3	RJB			12/03	GAS BOX REMOVED		
Rev No	Drawn	Chk'd	App'd	Date	Revision		
ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.					
Drawn	JR	2.87	Title				
Checked			GENERAL ARRANGEMENT FOR TYPE E - SURFACE ENTRY METER CUPBOARD			Drg. No.	Rev No
Approved						OG/65/4418	3
SCALE	N.T.S.						

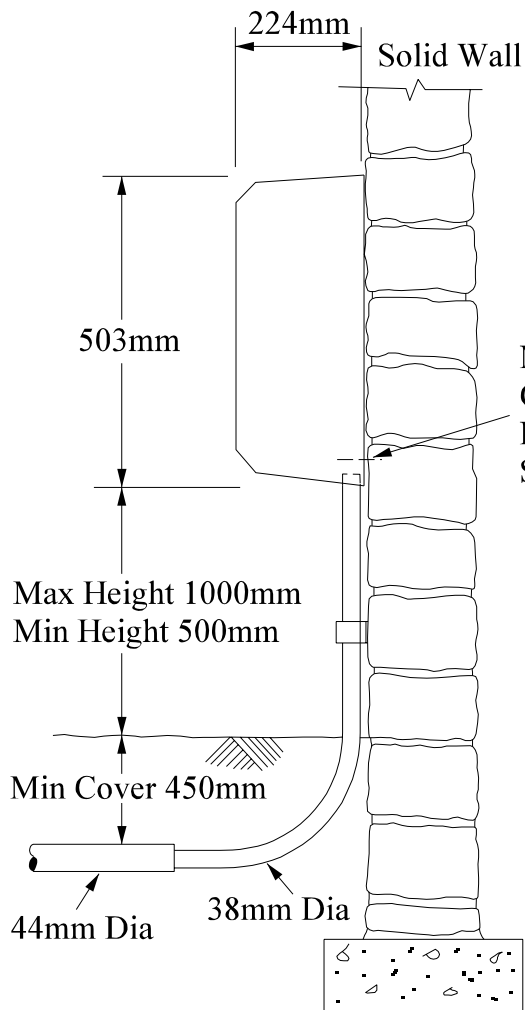
All dimensions in mm



- Notes
1. Type F meter cupboards are usually required in flats. The wall in which the meter cupboard is fixed can either be single or double block/brickwork thick
 2. Fire resistance must be maintained and any holes sealed with approved sealant

2	RJB			10/08	BOX DIMENSIONS ALTERED
Rev No	Drawn	Chk'd	App'd	Date	Revision
ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.			 WESTERN POWER DISTRIBUTION
Drawn	JR	2.87	Title	Drg. No.	
Checked			GENERAL ARRANGEMENT FOR TYPE F - FIRE RESISTANT METER CUPBOARD	OG/65/4420	Rev No
Approved				2	
SCALE	N.T.S.				

All dimensions in mm

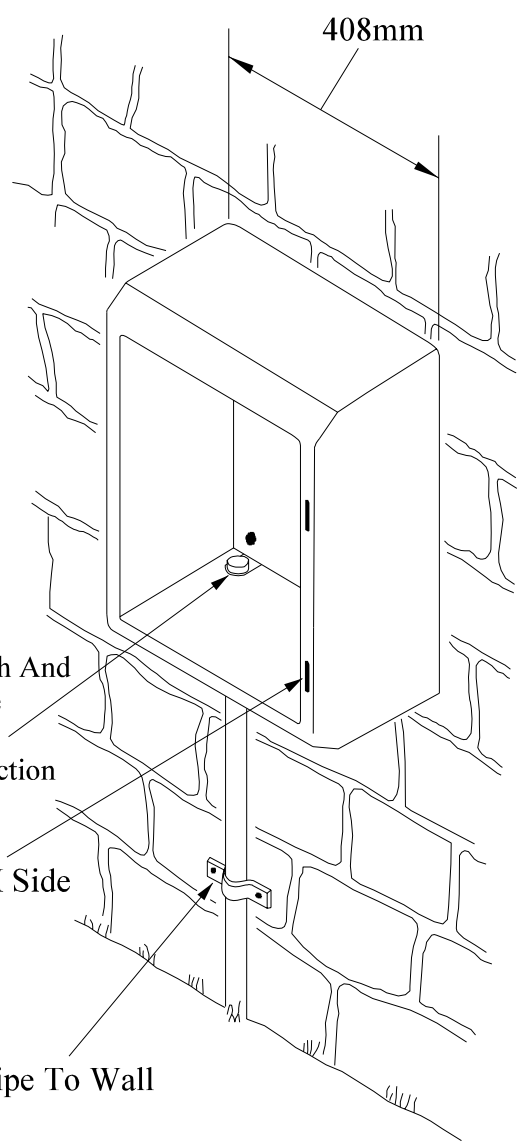



Meter Cupboard Fixed To Solid Wall

Pipe Cut To Length And Sealed After Cable Installation
LV Jointing Instruction 7.48 Refers

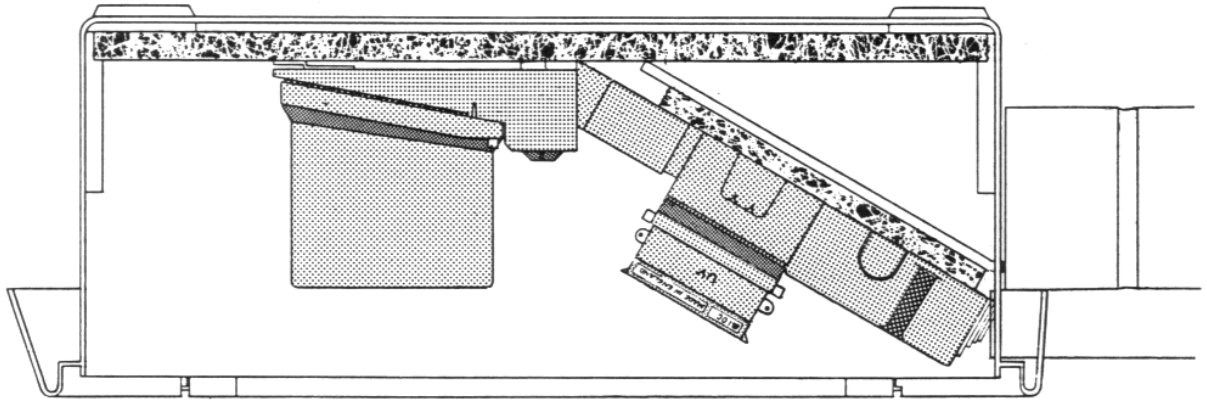
Door On RH Side

Cleat Pipe To Wall

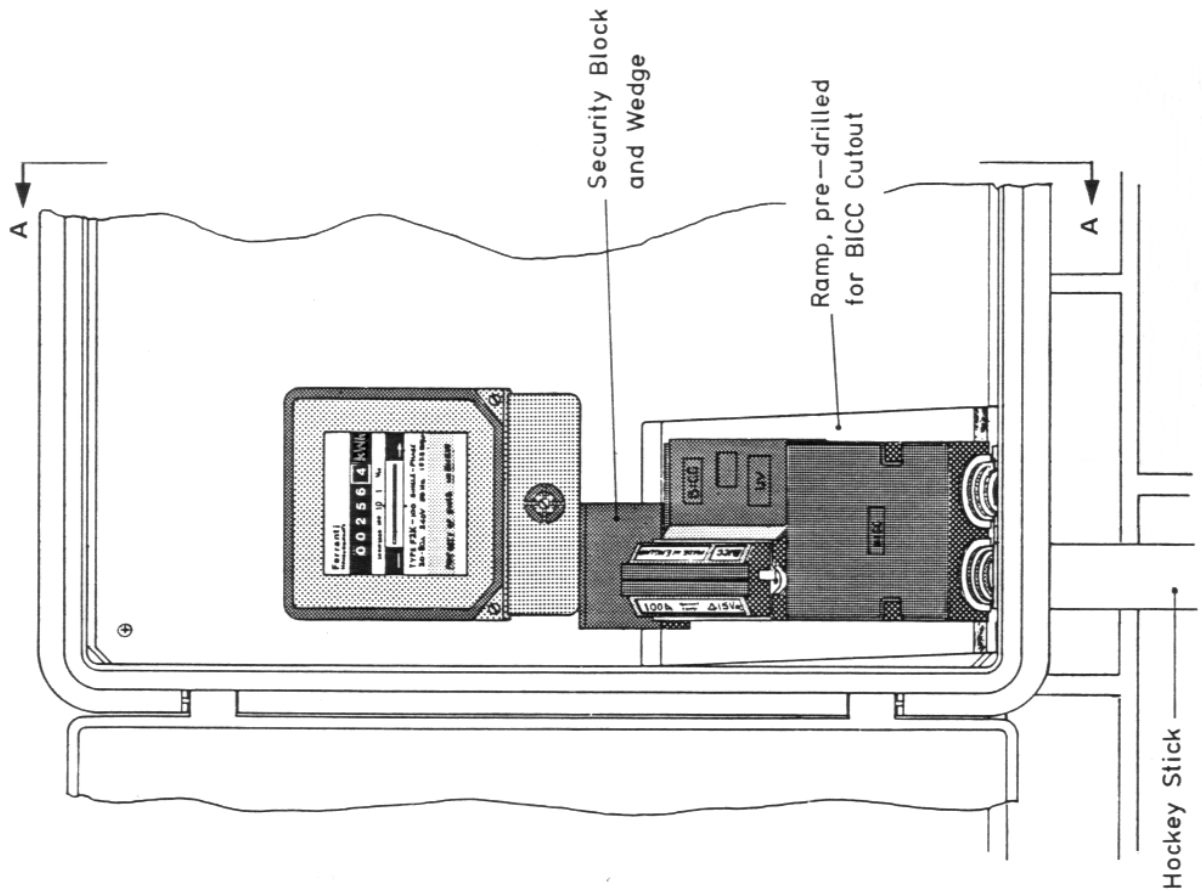


3	RJB			10/08	BOX ALTERED		
Rev No	Drawn	Chk'd	App'd	Date	Revision		
ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.					
Drawn	JR	2.87	Title				Drg. No.
Checked			GENERAL ARRANGEMENT FOR TYPE S - SURFACE ENTRY METER CUPBOARD			OG/65/4421	Rev No
Approved							3
SCALE		N.T.S.					

SECTION 'A-A'

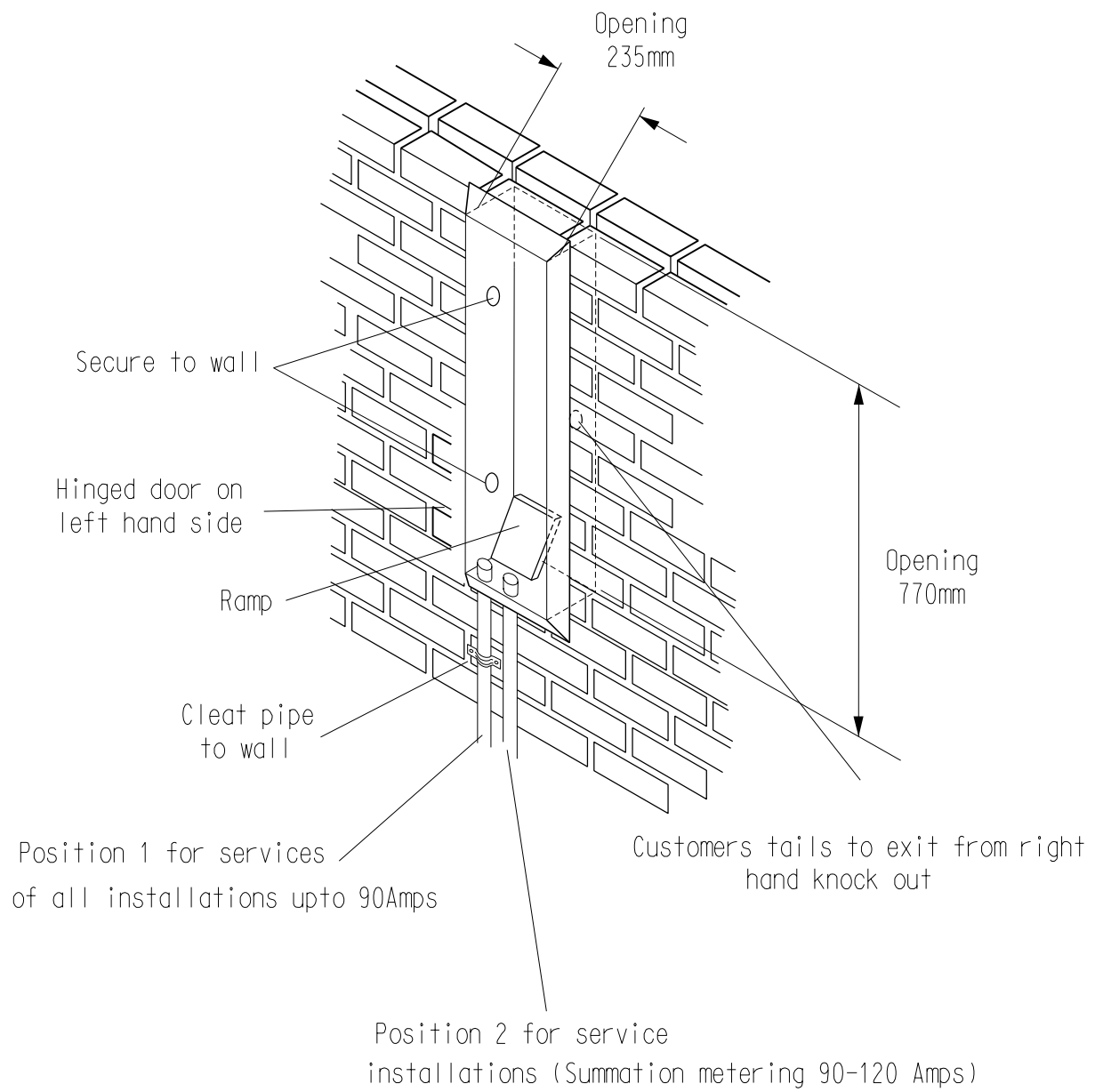



FRONT ELEVATION



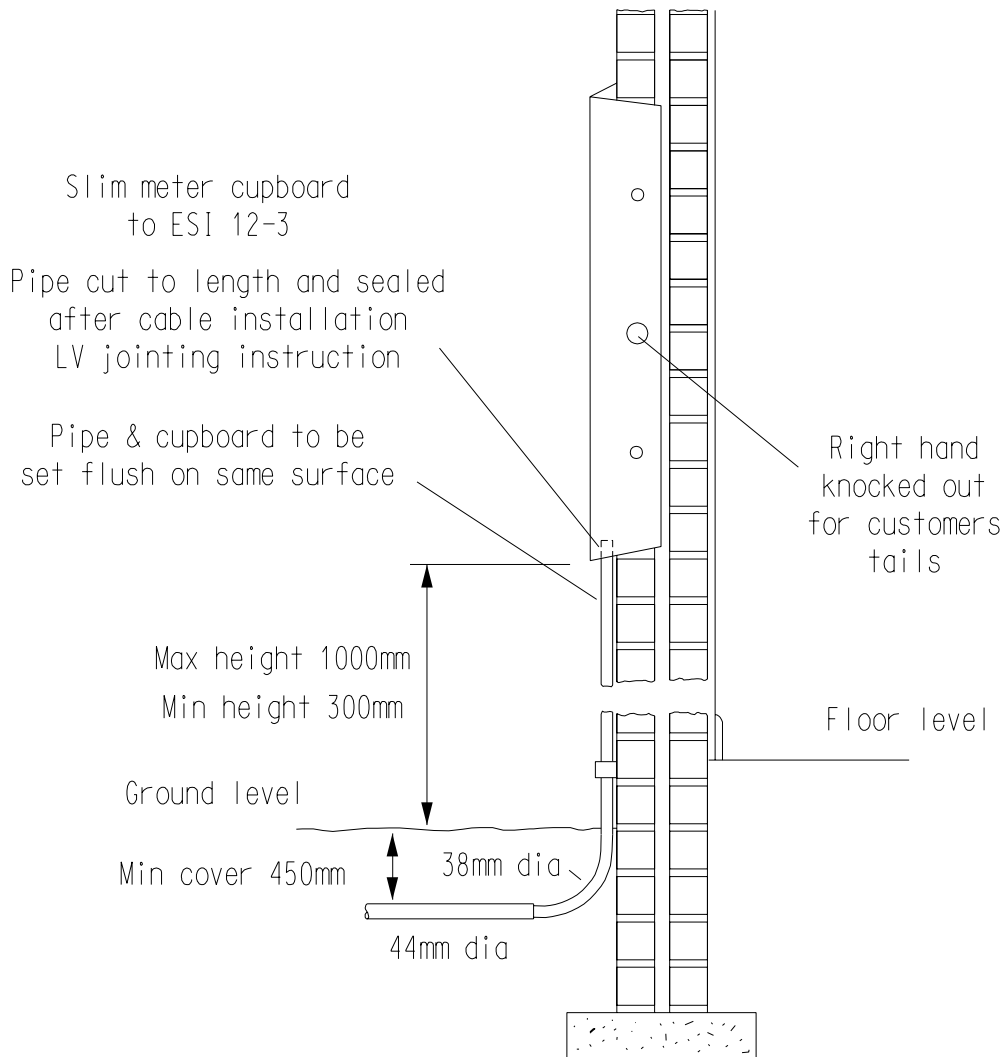
NOTE
Meter, Security Block, Wedge and Cutout must fit together tightly.

1	RJB			11/03	LOOP REMOVED			
Rev No	Drawn	Chk'd	App'd	Date		Revision		
ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				WESTERN POWER DISTRIBUTION		
Drawn	M.J.N.	6.87	Title				Drg. No.	Rev No
Checked			GENERAL ARRANGEMENT FOR MOUNTING METER, SECURITY BLOCK, WEDGE & CUTOUT				OG/65/4425	1
Approved								
SCALE	N.T.S.							



Rev No	Drawn	Chk'd	App'd	Date	Revision	
ORIGINAL ISSUE	DATE		WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.			 WESTERN POWER DISTRIBUTION
Drawn	R.J.B	03.97	Title GENERAL ARRANGEMENTS FOR SLIM LINE SURFACE ENTRY METER CUPBOARD			
Checked			Drg. No. ST:SD6A/1			Rev No 0
Approved			SCALE			

Side Elevation



1	RJB			12/03	Depth Of Cover Changed
Rev No	Drawn	Chk'd	App'd	Date	Revision
ORIGINAL ISSUE		DATE		WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.	
Drawn	R.J.B	03.97			
Checked					
Approved					
SCALE				Title	
				GENERAL ARRANGEMENTS FOR SLIM LINE SURFACE ENTRY METER CUPBOARD	
				Drg. No. ST:SD6A/2	
				Rev No 1	

TABLE 1**Types and Sizes of Meter Cabinet Available**

METAL METER CABINETS					
Description	Overall Size (mm)	To fit brickwork opening (mm)	Type of Steel	Colour	Comments
Surface Mounted	695 x 505 x 200	N/A	Commercial Grade	Grey	Used where there is a need for additional mechanical protection
Semi-Recessed	657 x 470 x 180	606 x 415 x 130	Zintec	Grey	The common corridor or hall on any floor or common access way for flats or maisonettes

GRP METER CABINETS				
Description	Overall Size (mm)	To fit brickwork opening (mm)	Colour	Comments
Flush Fire Retardant electric cabinet small (See Note 1)	595 x 409 x 210	535 x 365 x 150	White	Can be used in the common corridor or hall on any floor or common access way for flats or maisonettes
Fire Retardant Slimline meter box (for application within limited space) including strap	828 x 279 x 210	770 x 235 x 150	White	Can be used in external walls & in the common corridor or hall on any floor or common access way for flats or maisonettes
Slimline meter box (for application within limited space) including strap	828 x 279 x 210	770 x 235 x 150	White	Used in external walls
Flush electric cabinet, standard (small) including strap	595 x 409 x 210	535 x 365 x 150	White	Used in external walls
Flush electric cabinet, medium	685 x 485 x 210	610 x 405 x 150	White	Used in external walls
Flush electric cabinet, large 3 Phase	770 x 550 x 210	700 x 475 x 145	White	For three phase supplies. In external walls
Surface Mounted electric cabinet, large 3 Phase	780 x 550 x 225	N/A	White	For three phase supplies. Outdoor where the use of the recessed cabinet is not possible.
Surface Mounted electric cabinet (Not Fire Retardant)	503 x 408x 224	N/A	White	For single phase supplies. Outdoor where use of the recessed cabinet is not possible.
Note 1 :- With Fire Retardant class 0 backboard, brass hinges and fire resistant to a minimum Class 2 as described in BS476 Part 7 (1997)				

3.0 DOMESTIC ELECTRICITY SERVICES TO FLATS, MAISONNETTES & BEDSITS

3.1 WPD requirements are set out in Part 2* of this Framework Document Appendix; it is an extract from a handbook previously issued to architects and builders. *(separated out to reduce individual file sizes when downloading this document from the Internet)

4.0 CABLE INSTALLATION

4.1 General installation data for WPD low voltage cables are given in Table 4.1 below, (which like other requirements has to be read with the National Framework Documents). Cable ratings, including ratings in ducts are provided in the WPD Design Framework DLH Specific Appendix.

TYPE AND SIZE OF CABLE	OVERALL DIAMETER (mm)	MINIMUM BENDING RADIUS (mm)	
		PULLING IN	ADJ TO JOINTS
16mm 1ph Split Cu Concentric	15.0	300	
25mm 1ph Split Cu Concentric	18.3	366	
16mm 3ph Split Cu Concentric	19.6	392	
25mm 3ph Split Cu Concentric	26.2	524	
95mm Wavecon	34.4	650	510
185mm Wavecon	45.9	850	680
300mm Wavecon	55.2	950	820

Table 4.1

5.0 TESTS AND RECORDS

5.1 The details of records and tests required, together with test record sheets are shown below.

5.2 Further WPD requirements covering underground assets recording techniques, procedures and records are detailed in WPD's Framework Document Appendix on Cable Recording Techniques; it is an extract from a handbook issued to WPD Contractors. *(separated out to reduce individual files sizes when downloading this document from the Internet).

5.3 Other data to be recorded on site

- Site location / address
- Recorded by (name and contractor) and when.
- Cable sizes
- Depth of plant below final ground level
- Size, type and manufacturer of jointing chambers
- Cable drum number and manufacturer

Cable length

Duct and sub duct sizes. (Sections to be shown where multiple ducts are laid)

Cable laid by and when.

Map number or reference and scale

– minimum scale 1/500 for underground cable recording

LV Link box maker, type, rating and (if present) serial number

LV Fuse cabinet / board / pillar make, type, serial number, number of outgoing ways

HV/LV transformer, type (eg unit), make, rating, serial number, tapping range, fixed and variable losses (from test certificate)

HV ring main unit / tee circuit breaker – make, type, ratings normal and short circuit current and serial number

Make and type of substation housing with serial number (if present)

5.4 **Test records required**

Test sheets, for completion by the third party, including some aide-memoire checks follow. It should be noted that in listing only *some* checks this is no way removes any of the requirements stated elsewhere.

MAINS CABLE TEST / CHECK SHEET			
SITE LOCATION –			
Item	Which section / Location?	Which section / Location?	Which section / Location?
Insert location details			
Insulation Resistances ph-ph & ph-earth 0.5 / 1kV M Ohms			
Continuity checked and OK? Y/N			
Trench depth checked and OK? Y/N			
Cable marker tape laid throughout length? Y/N			
Where applicable, reinstatement is compliant with NRSWA spec? Y/N			

I confirm the above tests / checks and that the installation is compliant with requirements of National Framework Documents and WPD Framework Appendices

Signed.....

Company.....

Date.....

HV / LV SUBSTATION TEST / CHECK SHEET		
SITE LOCATION –		
Item	Test / check	Result value or Y/N
Earthing resistance at substation	Overall value measured at substation Ohms	
	At HV/LV substation – combined HV/LV / not combined and overlap (depends on achieving < 1 Ohm)	
	HV Value Ohms	
	LV Value Ohms	
	Overlap value Ohms	
	HV earth link position in or out?	
LV fuse cabinet	Insulation resistance 500/1000V M Ohms	
	All fuseway carriers in place? Y/N	
	Ratings of fuses installed – A, by fuseway	
HV/LV transformer	Insulation resistances HV-LV winding / earth 5kV HV G Ohms	
	Pressure test, value and duration kV, time	
	Voltage and phasing checks OK? Y/N	
	Tap setting check +/- % (Value)	
	Oil moisture content ppm	
	Oil electric breakdown strength kV / gap	
	Confirmation from oil supplier that PCB content <5ppm Y/N	
HV Switchgear	Insulation resistance 5kV G Ohms	
	Pressure test value and duration kV, time	
	Protection test, secondary injection or dummy HV fuse tester (e.g. B&S device) OK? Y/N	
	Functional test of interlocks and operation OK? Y/N	
	Insulation test of any loose test devices G Ohms	
	Gas pressure indication satisfactory? Y/N	
	Busbar resistance if work includes connections of busbars, new to new or new to existing. Micro Ohms	

I confirm the above tests / checks and that the installation is compliant with requirements of National Framework Documents and WPD Framework Appendices

Signed.....
Company.....
Date.....

HV CABLE TEST / CHECK SHEET			
SITE LOCATION –			
Item	Which section / Location?	Which section / Location?	Which section / Location?
Insert location details			
Insulation Resistances ph-ph & ph-earth 5kV G Ohms *			
Continuity checked and OK? Y/N			
Trench depth checked and OK? Y/N			
Cable marker tape laid throughout length? Y/N			
Where applicable, reinstatement is compliant with NRSWA spec? Y/N			

* NOTE – Following HV “closing” jointing by WPD to connect into WPD network, WPD undertake insulation and pressure tests of the circuit prior to energisation.

I confirm the above tests / checks and that the installation is compliant with requirements of National Framework Documents and WPD Framework Appendices

Signed.....

Company.....

Date.....

AC VLF FOR 11kV POLYMERIC CIRCUITS (XLPE or EPR)			
SITE LOCATION-			
Test Voltage	Test Points	Time	Result
2.5 U_o	All Phases to Earth	30 min	
2.5 U_o	Phase 1 to Phase 2	30 min	
2.5 U_o	Phase 1 to Phase 3	30 min	
2.5 U_o	Phase 2 to Phase 3	30 min	
Where U_o = the power frequency voltage between phase and earth			

Note:- Where the cable is to be connected to an existing Western Power Distribution cable, the above test shall be carried out by an authorised member of Western Power Distribution.

I confirm the above tests/checks and that the installation is compliant with requirements of National Framework Documents and WPD Framework Appendices

Signed.....

Company.....

Date.....

AC PRESSURE TEST FOR 11 kV SWITCHGEAR (NOT CONNECTED)			
SITE LOCATION-			
Manufacture			
Type			
Serial Number			
Switch 1			
Test Voltage	Test Points	Time	Result
24kV	All Phases to Earth	1 min	
24kV	Phase 1 to Phase 2	1 min	
24kV	Phase 1 to Phase 3	1 min	
24kV	Phase 2 to Phase 3	1 min	
24kV	All Phases Across open switch	1 min	
Switch 2			
Test Voltage	Test Points	Time	Result
24kV	All Phases to Earth	1 min	
24kV	Phase 1 to Phase 2	1 min	
24kV	Phase 1 to Phase 3	1 min	
24kV	Phase 2 to Phase 3	1 min	
24kV	All Phases Across open switch	1 min	
Switch 3			
Test Voltage	Test Points	Time	Result
24kV	All Phases to Earth	1 min	
24kV	Phase 1 to Phase 2	1 min	
24kV	Phase 2 to Phase 3	1 min	
24kV	Phase 1 to Phase 3	1 min	
24kV	All Phases Across open switch	1 min	

Note:- These tests must be carried out prior to any cable being connected to the switch.

Where the switch is mounted directly on to a transformer the 11kV windings of the transformer shall disconnected from the switch prior to the test commencing.

I confirm the above tests/checks and that the installation is compliant with requirements of National Framework Documents and WPD Framework Appendices

Signed.....

Company.....

Date.....

11kV/415V TRANSFORMER TESTS			
SITE LOCATION-			
Manufacture			
Size KVA			
Serial Number			
Tap Setting			
HV WINDING DC PRESSURE TEST			
Test Voltage	Test Points	Time	Result
18kV	Winding to Earth	15 min	
LV WINDINGS			
1000V	Winding to Earth	1 min	

I confirm the above tests/checks and that the installation is compliant with requirements of National Framework Documents and WPD Framework Appendices

Signed.....

Company.....

Date.....