

## **TOP LOADINGS FOR SURFACE BOXES**



**Surface Boxes**

## TOP LOADINGS FOR SURFACE BOXES

Top loading for surface boxes in the UK is covered by the standard BS 5834. Part 1 was last revised in 2011 and Part 2 in 2017. BS 5834 Part 2 replaced the old WIS standard 4-37-01 which has consequently been withdrawn.

The loading grade is calculated based on the clear opening of the frame and surface area of the lid, and relates to the type of installation. Grade C is for “situations not intended for use by vehicles” and Grade B is for “areas to which vehicles would have only occasional access”.

Boxes supplied without surface boxes are classified according to a compression test of the box, whereas boxes supplied with surface boxes are reclassified according to the load-bearing of the surface box to BS 5834-2.

In some cases reference is also made to loading classes under BS EN124:2015 (gully tops and manhole tops).

Atplas has carried out testing of its surface boxes to relevant aspects of BS 5834-2, and results can be supplied as required for the following types:

### SINGLE METERBOXES

Matrix surface box (Grade B)  
 Matrix surface box (Grade C)  
 Ductile iron surface box (Grade B)  
 EBCO surface box (Grade C)  
 Atplas surface box (Grade C)

### DOUBLE METERBOXES

Matrix double surface box  
 (EN124 Class B)

### MULTIMANIFOLD BOXES

Multimanifold surface box (Grade C)

Please contact us for further information.



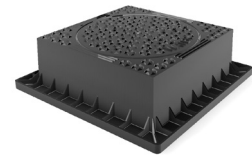
Matrix surface box  
(Grade B)



Ductile iron surface box  
(Grade B)



Matrix surface box  
(Grade C)



Atplas surface box  
(Grade C)



EBCO surface box  
(Grade C)



Matrix double surface box  
(EN124 Class B)



Multimanifold surface box  
(Grade C)

The technical data and performance may be modified without prior notice depending on the technical advances.

## Top Loadings for Surface Boxes

### MATRIX Surface Box Grade C



Matrix surface box  
(Grade C)

**The Talbot Matrix is compliant with the relevant aspects BS5834 Part 2:2011 Grade C. Tests have shown that the surface box has performed in excess of the standard by a significant factor of safety.**

Specifically the following clauses:

- 4.2 Table 1 Grade C
- 5.4.1 (c) Polypropylene (PP) Specified as code L in accordance with BS 5139:1991
- 8.5.2 Raised pattern
- Annex A (normative) A3.2 A.3.4, A.3.5, A.3.6

#### Test piece details:

- Clear opening: 157mm
- Test block bearing Dia.: 135mm (Ref. Table A.1 - C light)
- Calculated loading: 4.05KN
- Grade C test loading criteria - Load: 5KN (0.51 tonne) (Ref Table A.1 - C light)
- Acceptance criteria - Deflection: <4mm (Ref. Clause 11.3)

#### Test results A3.2, A3.4, A3.5, A3.6:

A3.2 / A3.4 Initial Measurements / Bedding-in test (Dimensions will vary within controlled process conditions)

Load applied = 3.33KN (2/3 x 5KN >30s)

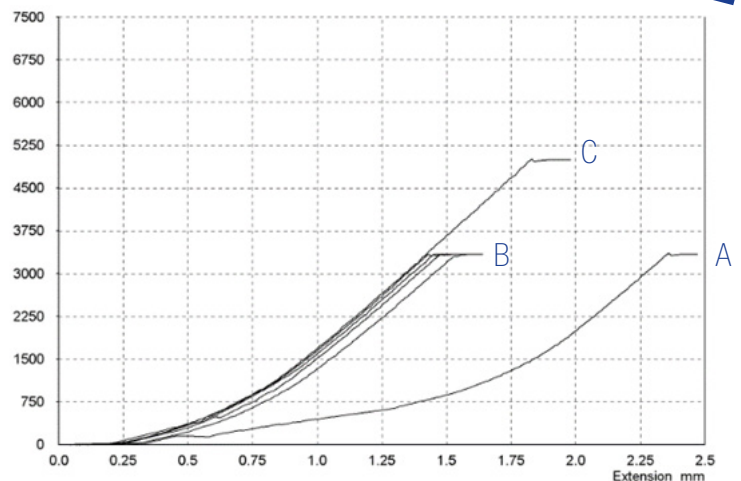
Measurement points	Initial measurements pre and post bedding-in load				
	E	F	G	H	E6
A Pre load	-0.01	0.08	112.01	-0.09	-
B Post load	-0.09	0.60	111.29	-0.69	1.84

A3.5

Load applied = 5KN (>30s)

Measurement points	Measurements post test load (mm)				
	Ex	Fx	Gx	Hx	E6
C Post load	0.31	1.02	110.78	-0.71	2.04

#### Applied Loads



## Top Loadings for Surface Boxes

### EBCO Surface Box Grade C



EBCO surface box  
(Grade C)

The EBCO surface box is compliant with the relevant aspects BS5834 Part 2:2011 Grade C. Tests have shown that the surface box has performed in excess of the standard by a significant factor of safety.

Specifically the following clauses:

- 4.2 Table 1 Grade C
- 5.4.1 (c) Polypropylene (PP) Specified as code L in accordance with BS 5139:1991 Table 2
- 8.5.2 Raised pattern
- Annex A (normative) A3.2 A.3.4, A.3.5, A.3.6

#### Test piece details:

- Clear opening: 146mm
- Test block bearing Dia.: 135mm (Ref. Table A.1 - C light)
- Calculated loading: 4.98kN
- Grade C test loading criteria - Load: 5kN (0.51 tonne) (Ref Table A.1 - C light)
- Acceptance criteria - Deflection: <4mm (Ref. Clause 11.3)

#### Test results A3.2, A3.4, A3.5, A3.6:

A3.2 / A3.4 Initial Measurements / Bedding-in test (Dimensions will vary within controlled process conditions)

Load applied = 3.33kN (2/3 x 5kN >30s)

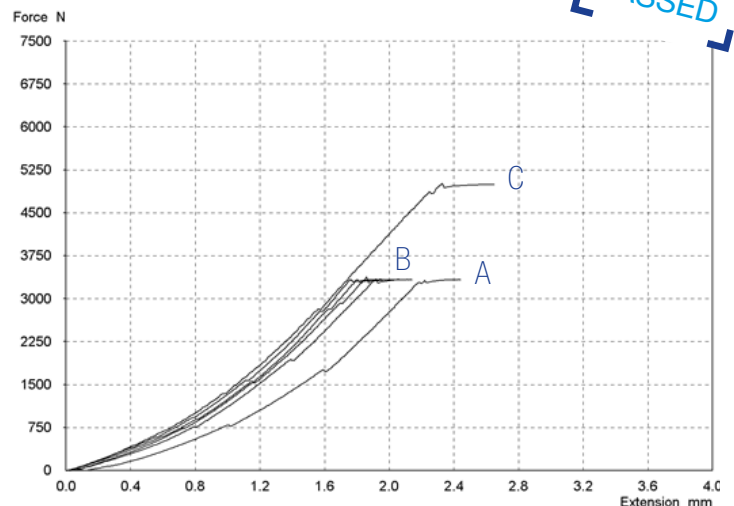
Measurement points	Initial measurements pre and post bedding-in load				
	E	F	G	H	E6
A Pre load	1.72	1.83	73.23	-	-
B Post load	1.95	1.99	72.89	-0.04	1.89

A3.5

Load applied = 5kN (>30s)

Measurement points	Measurements post test load (mm)				
	Ex	Fx	Gx	Hx	E6
C Post load	0.31	1.02	110.78	-0.71	2.60

#### Applied Loads



## Top Loadings for Surface Boxes

### MATRIX Surface Box Grade B



Matrix surface box  
(Grade B)

**The Grade B Matrix Surface Box is compliant with the relevant aspects BS5834 Part 2:2011 Grade B. Tests have shown that the surface box has performed in excess of the standard by a significant factor of safety.**

Specifically the following clauses:

- 4.2 Table 1 Grade B
- 5.4.1 (c) Polypropylene (PP) Specified as code L in accordance with BS 5139:1991 Table 2
- 8.5.2 Raised pattern
- Annex A (normative) A3.2 A.3.4, A.3.5, A.3.6

**Test piece details:**

- Clear opening: 155mm
- Test block bearing Dia.: 135mm (Ref. Table A.1 - B medium)
- Calculated loading: 78.23KN
- Grade B test loading criteria - Load: 78.2KN (7.97 tonne) (Ref Table A.1 - B medium)
- Acceptance criteria - Deflection: <4mm (Ref. Clause 11.3)

**Test results A3.2, A3.4, A3.5, A3.6:**

A3.2 / A3.4 Initial Measurements / Bedding-in test (Dimensions will vary within controlled process conditions)

Load applied = 52.15KN (2/3 x 78.23KN >30s)

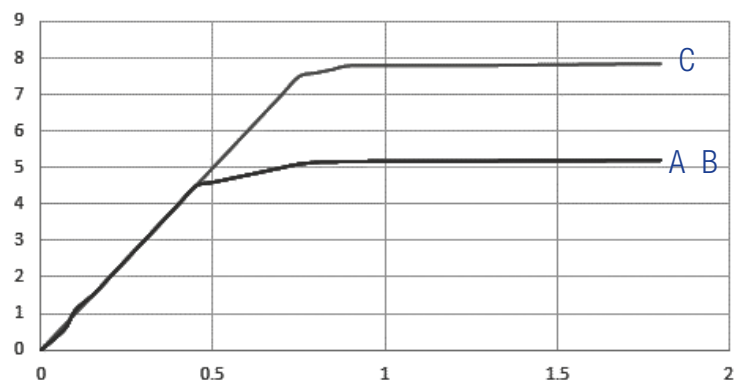
Measurement points	Initial measurements pre and post bedding-in load				
	E	F	G	H	E6
A Pre load	0.2	0.75	60.56	0.75	-
B Post load	0.41	0.71	60.15	0.71	-

A3.5

Load applied = 78.23KN (>30s)

Measurement points	Measurements post test load (mm)				
	Ex	Fx	Gx	Hx	E6
C Post load	0.51	0.66	60.05	-	1.76

**Applied Loads**



PASSED

## Top Loadings for Surface Boxes

### Atplas Surface Box Grade C



Atplas surface box  
(Grade C)

The Atplas surface box is compliant with the relevant aspects BS5834 Part 2:2011 Grade C. Tests have shown that the surface box has performed in excess of the standard by a significant factor of safety.

Specifically the following clauses:

- 4.2 Table 1 Grade C
- 5.4.1 (c) Polypropylene (PP) Specified as code L in accordance with BS 5139:1991
- 8.5.2 Raised pattern
- Annex A (normative) A3.2 A.3.4, A.3.5, A.3.6

#### Test piece details:

- Clear opening: 144mm
- Test block bearing Dia.: 135mm (Ref. Table A.1 - C light)
- Calculated loading: 4.05KN
- Grade C test loading criteria - Load: 5KN (0.51 tonne) (Ref Table A.1 - C light)
- Acceptance criteria - Deflection: <4mm (Ref. Clause 11.3)

#### Test results A3.2, A3.4, A3.5, A3.6:

A3.2 / A3.4 Initial Measurements / Bedding-in test (Dimensions will vary within controlled process conditions)

Load applied = 3.33KN (2/3 x 5KN >30s)

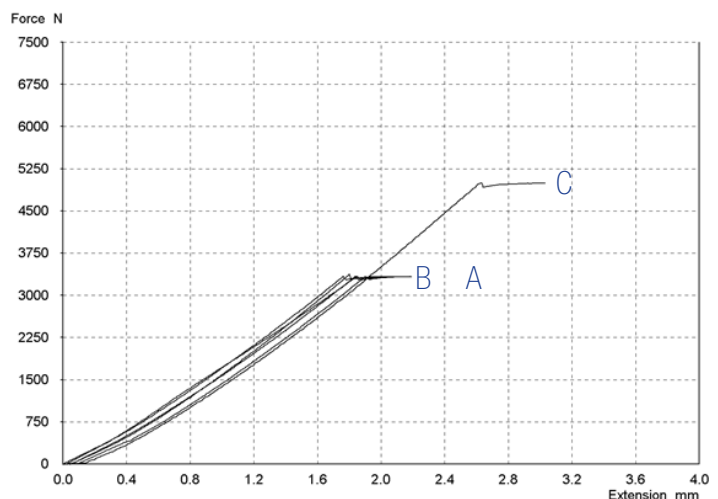
Measurement points	Initial measurements pre and post bedding-in load				
	E	F	G	H	E6
A Pre load	1.72	1.83	73.23	-0.11	-
B Post load	1.95	1.99	72.89	-0.04	2.57

A3.5

Load applied = 5KN (>30s)

Measurement points	Measurements post test load (mm)				
	Ex	Fx	Gx	Hx	E6
C Post load	2.11	2.05	72.92	0.06	3.56

#### Applied Loads



## Top Loadings for Surface Boxes

### Ductile Iron Surface Box Grade B

The Ductile Iron is compliant with the relevant aspects BS5834 Part 2:2011 Grade B. Tests have shown that the surface box has performed in excess of the standard by a significant factor of safety.

Specifically the following clauses:

- 4.2 Table 1 Grade B
- 5.2.1 Ductile Cast Iron conforming to BSEN1676 or BSEN1706
- 8.5.2 Raised pattern
- Annex A (normative) A3.2 A.3.4, A.3.5, A.3.6



Ductile Iron surface box  
(Grade B)

#### Test piece details:

- Clear opening: 183mm
- Test block bearing Dia.: 135mm (Ref. Table A.1 - B medium)
- Calculated loading: 10.4KN
- Grade B test loading criteria - Load: 100.4KN (10.23 tonne) (Ref Table A.1 - B medium)
- Acceptance criteria - Deflection: <4mm (Ref. Clause 11.3)

#### Test results A3.2, A3.4, A3.5, A3.6:

A3.2 / A3.4 Initial Measurements / Bedding-in test (Dimensions will vary within controlled process conditions)

Load applied = 6.6KN (2/3 x 10.4KN >30s)

Measurement points	Initial measurements pre and post bedding-in load				
	E	F	G	H	E6
A Pre load	0.41	0.19	73.72	0.30	-
B Post load	0.55	0.22	73.58	0.33	-

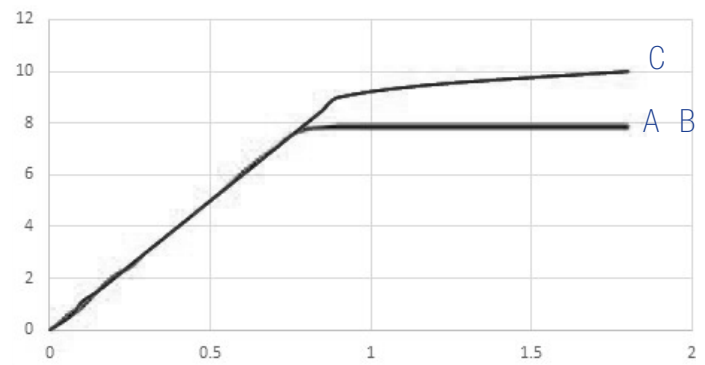
A3.5

Load applied = 10.4KN (>30s)

Measurement points	Measurements post test load (mm)				
	Ex	Fx	Gx	Hx	E6
C Post load	0.55	0.3	73.58	-	0.55

#### Applied Loads

**PASSED**



# Top Loadings for Surface Boxes

## Multimanifold Surface Box Grade C



Multimanifold surface box  
(Grade C)

**The Multimanifold is compliant with the relevant aspects BS5834 Part 2:2011 Grade C. Tests have shown that the surface box has performed in excess of the standard by a significant factor of safety.**

Specifically the following clauses:

- 4.2 Table 1 Grade C
- 5.4.2 (a) BMC conforming to BSEN 14598-3:2005
- 8.5.2 Raised pattern
- Annex A (normative) A3.2 A.3.4, A.3.5, A.3.6

### Test piece details:

- Clear opening: 162mm
- Test block bearing Dia.: 135mm (Ref. Table A.1 - C light)
- Calculated loading: 18.05KN
- Grade C test loading criteria - Load: 18.05KN (1.84 tonne) (Ref Table A.1 - C light)
- Acceptance criteria - Deflection: <4mm (Ref. Clause 11.3)

### Test results A3.2, A3.4, A3.5, A3.6:

A3.2 / A3.4 Initial Measurements / Bedding-in test (Dimensions will vary within controlled process conditions)

Load applied = 12.04KN (2/3 x 18.053KN >30s)

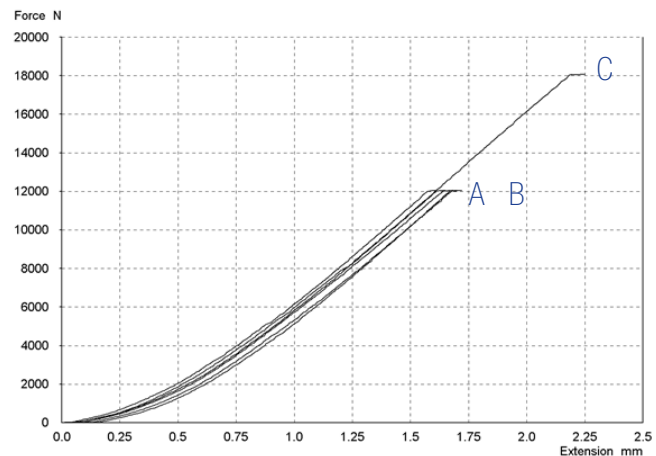
Measurement points	Initial measurements pre and post bedding-in load				
	E	F	G	H	E6
A Pre load	-0.48	1.89	109.52	-2.37	-
B Post load	-0.74	1.81	109.04	-2.55	1.31

A3.5

Load applied = 18.05KN (>30s)

Measurement points	Measurements post test load (mm)				
	Ex	Fx	Gx	Hx	E6
C Post load	-0.57	1.91	109.59	2.54	1.79

### Applied Loads



**PASSED**