

TEST REPORT

FL90/CF/D400 Cover Test

Client: Fibrelite Composites Ltd.

Date: 07/04/06

Cover

The cover supplied is an FL90/CF/D400 and of composite construction. It has one access hole with a cast aluminium lid 300mm in diameter. A red sealing ring is on both the cover and aluminium lid.

No. on edge of cover – 06 1829 90 D/S

The cover was seated in a previously tested frame.
The serial no. on the frame is 11380, Model FL90



Photo.1

Test Rig

The test rig consists of a 'giant mecano' frame bolted to the floor and supporting the Enerpac 50 tonne hydraulic cylinder. (Photo 2)



Photo. 2

The cover and frame were sat on steel channels and plates with steel shims to pack and level.

Test

The test was carried out in accordance with BS EN 124, Class D400.

The load was applied to the cover through a 250mm diameter by 45mm thick steel block with a 250mm diameter by 25mm rubber pad between the block and cover.

The load was measured using a 1000kN load cell (serial no. 3243N) and digital load indicator (serial no. D.I.B.1).

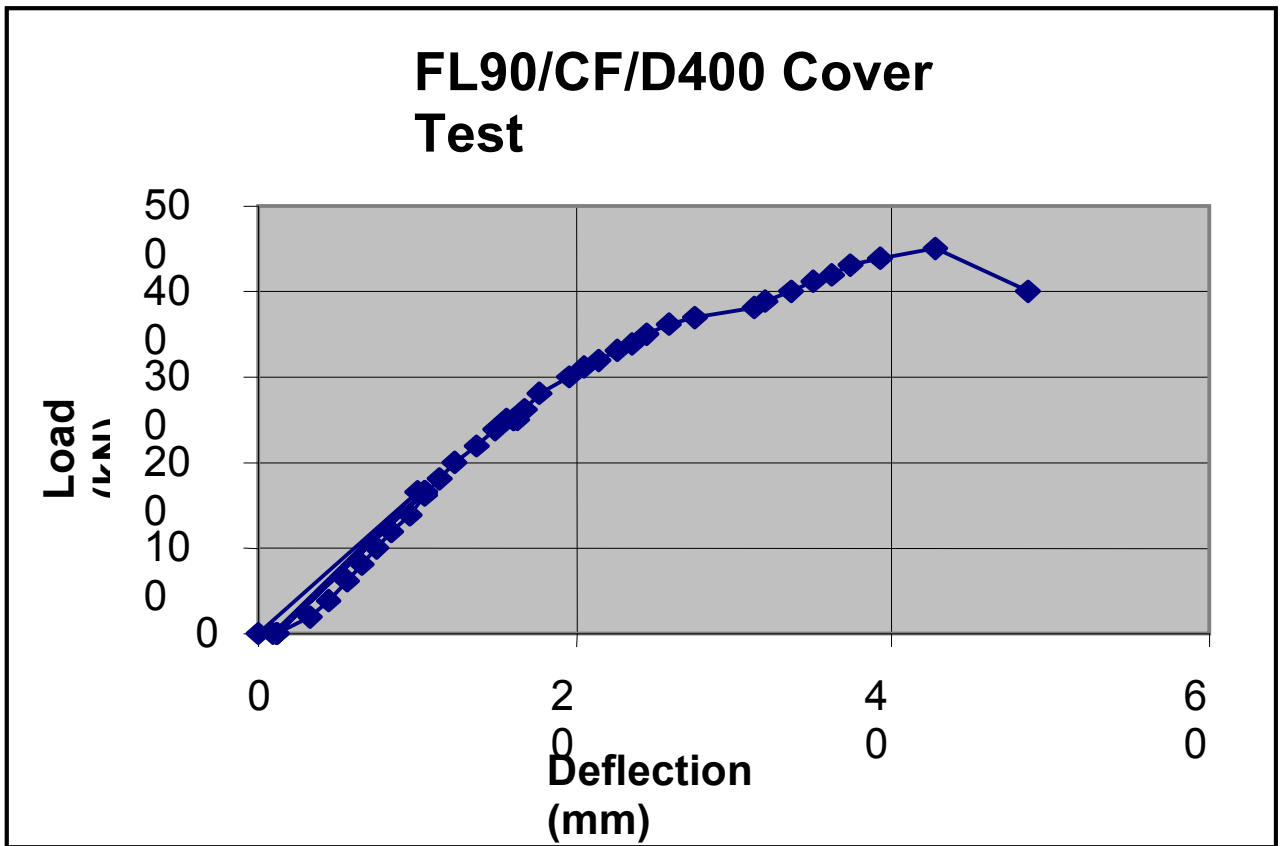
The deflection was measured at the centre on the underside of the cover using a dial indicator.

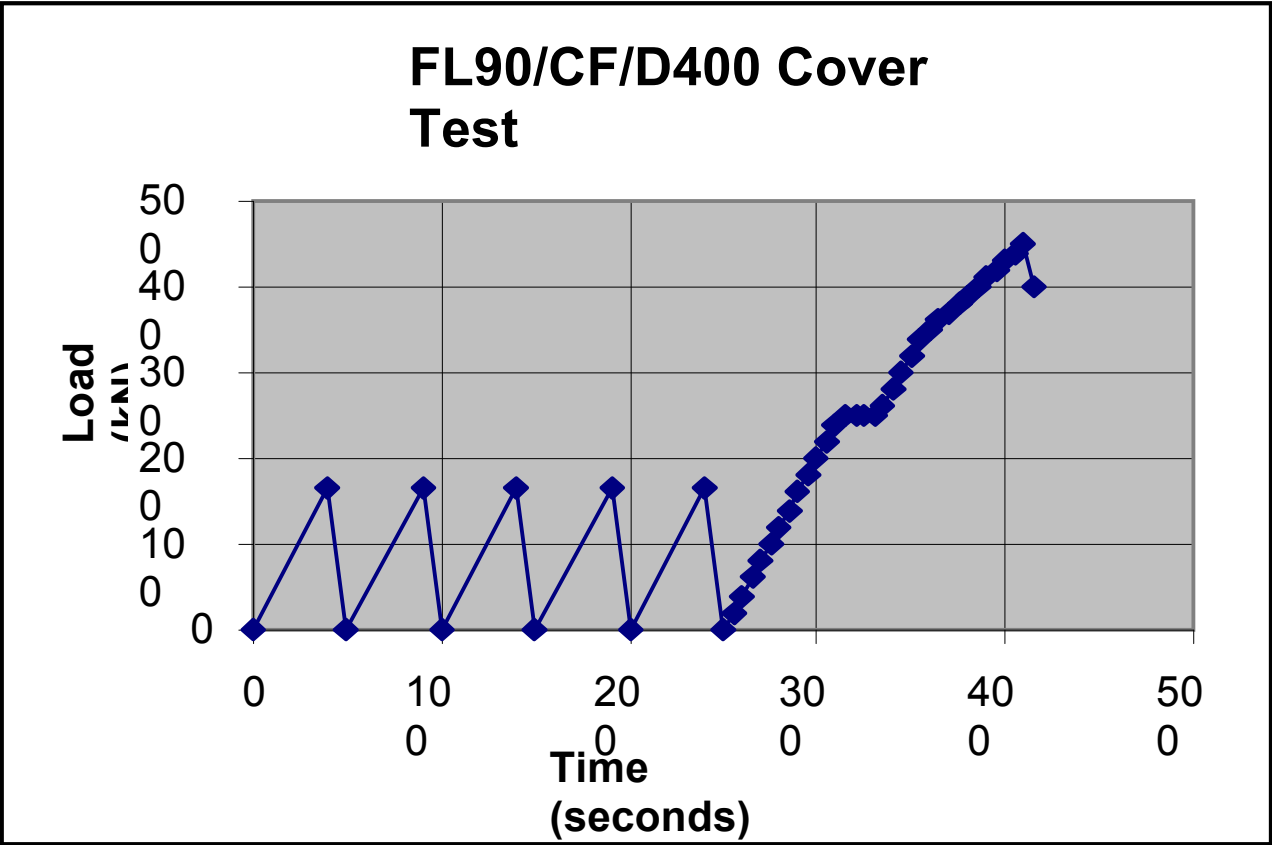
The cover was loaded to 2/3 of the test load and then released. This was repeated five times. It was then loaded to the test load and held for thirty seconds. After the thirty seconds the cover was then loaded to failure.

Results

Load (kN)	Deflection (mm)	Remarks
0	0.00	
166.5	10.15	
0	0.89	
166.5	10.39	
0	1.06	
166.5	10.47	
0	1.13	
166.5	10.59	
0	1.22	
166.5	10.62	
0	1.25	
20	3.25	
40	4.52	
60	5.55	
80	6.57	
100	7.58	
120	8.52	
140	9.50	
160	10.42	
180	11.35	
200	12.35	
220	13.74	
240	14.88	
250	15.75	
250	16.08	
250	16.18	
250	16.24	
260	16.83	
280	17.82	
300	19.58	
310	20.45	
320	21.57	
330	22.75	Loud crack (port cover cracked)
340	23.67	
350	24.58	Loud bang (more cracks in port cover)
360	25.99	

370	27.52	
380	31.22	
390	32.05	
400	33.69	
410	35.06	
420	36.17	
430	37.47	
440	39.17	
450	42.72	Failure
400	48.48	





In accordance with EN124 Clause 8.3.1 the permanent set of the cover was 1.25mm which is within the permissible stated in Table 8 of the standard. ($1/300 \times 900 = 3.0\text{mm}$).

The cover also held the test load with no visible signs of cracks.

After the initial test load was achieved the cover was loaded further and at 445kN the cover failed.

On inspection two cracks had appeared on the top surface and the frame had bulged out slightly leaving a gap between cover and frame. (See photo.3)



Photo.3

Photograph 4 shows both cracks on top face after removal of cover from test rig.



Photo.4

Photograph 5 shows cracking to underside of the cover after removal from test rig.



Photo.5

The aluminium port cover showed cracking to top face and serious cracking to webs on the underside. (Photo.6)



Photo.6

The frame showed no signs of damage.

M.A.Salisbury
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