

FLAT BIO END CAP TEST REPORT





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Report Ref	Description	Date Issued
00012	Hydro Pressure Test ¾", 1-1 ½", 2" and 2 ½" Flat Bio End Caps.	02/NOV/2012

1. Purpose

End caps are used in bio processing of pharmaceutical media and are designed to seal a sanitary flange against normal operating pressures (normally 2bar). This report has been generated to record the hydro pressure that ¾", 1-1½", 2" and 2½" Flat Bio End Caps can withstand without leakage.

2. Background

The ¾", 1-1 ½" and 2" were hydrostatic pressure tested at 10bar for 10 minutes to establish their sealing capabilities.

The 2 ½" was tested at 7bar for 10 minutes to establish its sealing capability. The tests were designed to simulate and exceed normal "in use" operating conditions.

3. Summary

A total of 40 tests were evaluated by means of hydrostatic pressure testing 4 sizes of End Caps.

4. Scope

The scope of work was to:

Test 1: To establish that the ¾" Flat Bio End Cap can hold a pressure of 10bar for 10 minutes without leaking. This test was repeated 5 times.

Test 2: To establish that the 1-1½" Flat Bio End Cap can hold a pressure of 10bar for 10 minutes without leaking. This test was repeated 5 times.

Test 3: To establish that the 2" Flat Bio End Cap can hold a pressure of 10bar for 10 minutes without leaking. This test was repeated 5 times.

Test 4: To establish that the 2½" Flat Bio End Cap can hold a pressure of 7bar for 10 minutes without leaking. This test was repeated 5 times.

5. References

N/A

6. Equipment and Materials

The equipment required for the Flat Bio End Cap hydro pressure test:

Table 1 - Test Equipment

Item#	Test Equipment	Calibration
1	Hydro Pressure Test Power Pack Trojan Type J	N/A
2	SM Pressure Gauge Ref 2322243	Calibrated: Aug 2012
3	Dial Torque Wrench	Calibrated: 17/Aug/2012

The materials required for the Flat Bio End Cap hydro pressure test:

Table 2 – Materials

Item	Part Number	Batch No.
¾" Flat Bio End Cap	PEC-050-075-FC	1A
1" Flat Bio End Cap	PEC-100-150-FC	1A
2" Flat Bio End Cap	PEC-200-FC	1A
2 ½" Flat Bio End Cap	PEC-250-FC	1A
¾"Gasket	N/A	MJA499
1" Gasket	N/A	233793
2" Gasket	N/A	207904-023
2 ½" Gasket	N/A	11603-1

7. Results

Each size of Flat Bio End Cap was clamped and sealed to a suitably sized stainless steel flange incorporating a silicone gasket. Using a calibrated torque gauge the clamp wing nut was tightened to 2Nm.

Following Pressure Test Rig Work Instructions WI019 v 2, the hydrostatic pressure was slowly increased to 10bar when testing the ¾", 1 -1 ½", 2" End Caps and 7bar when testing the 2 ½" End Cap. Once the pressure had stabilized for 10 seconds, the pressure was held for 10 minutes and the End Cap seal was monitored for any water leakage. No leakage is deemed a pass.

Sample	Description	Pressure	Pass	Fail
1	¾" Flat Bio End Cap	10bar	✓	N/A
2	¾" Flat Bio End Cap	10bar	✓	N/A
3	¾" Flat Bio End Cap	10bar	✓	N/A
4	¾" Flat Bio End Cap	10bar	✓	N/A
5	¾" Flat Bio End Cap	10bar	✓	N/A



Photos showing clamped ¾" End Cap, Test Pressure, and Wing Nut Torque value.

Sample	Description	Pressure	Pass	Fail
1	1-1 ½" Flat Bio End Caps	10bar	✓	N/A
2	1-1 ½" Flat Bio End Caps	10bar	✓	N/A
3	1-1 ½" Flat Bio End Caps	10bar	✓	N/A
4	1-1 ½" Flat Bio End Caps	10bar	✓	N/A
5	1-1 ½" Flat Bio End Caps	10bar	✓	N/A



Photos showing clamped 1 - ½" End Cap, Test Pressure, and Wing Nut Torque value.

Sample	Description	Pressure	Pass	Fail
1	2" Flat Bio End Caps	10bar	✓	N/A
2	2" Flat Bio End Caps	10bar	✓	N/A
3	2" Flat Bio End Caps	10bar	✓	N/A
4	2" Flat Bio End Caps	10bar	✓	N/A
5	2" Flat Bio End Caps	10bar	✓	N/A



Photos showing clamped 2" End Cap, Test Pressure, and Wing Nut Torque value.

Sample	Description	Pressure	Pass	Fail
1	2½" Flat Bio End Caps	7bar	✓	N/A
2	2½" Flat Bio End Caps	7bar	✓	N/A
3	2½" Flat Bio End Caps	7bar	✓	N/A
4	2½" Flat Bio End Caps	7bar	✓	N/A
5	2½" Flat Bio End Caps	7bar	✓	N/A



Photos showing clamped 2 ½" End Cap, Test Pressure, and Wing Nut Torque value.



8. Conclusions and Recommendations

- All of the $\frac{3}{4}$ ", 1 - 1 $\frac{1}{2}$ ", 2" Flat Bio End Caps passed the acceptance criteria of no visible leaks with the naked eye when subjected to 10bar hydrostatic pressure for 10 minutes.
- The 2 $\frac{1}{2}$ " End Cap passed the acceptance criteria of no visible leaks with the naked eye when subjected to 7bar hydrostatic pressure for 10 minutes.
- There were no visual distortions of the End Caps to the naked eye post testing.

From all the testing that has been carried out it can be concluded that when $\frac{3}{4}$ ", 1 - 1 $\frac{1}{2}$ ", 2" Flat Bio End Caps are used in conjunction with silicone gaskets to seal off sanitary fillings, at a torque of 2Nm, they can hold a pressure of 10bar for 10 minutes without any visible leaks to the naked eye.

From all the testing that has been carried out it can be concluded that when 2 $\frac{1}{2}$ " Flat Bio End Caps are used in conjunction with silicone gaskets to seal off sanitary fillings, at a torque of 2Nm, they can hold a pressure of 7bar for 10 minutes without any visible leaks to the naked eye.

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