



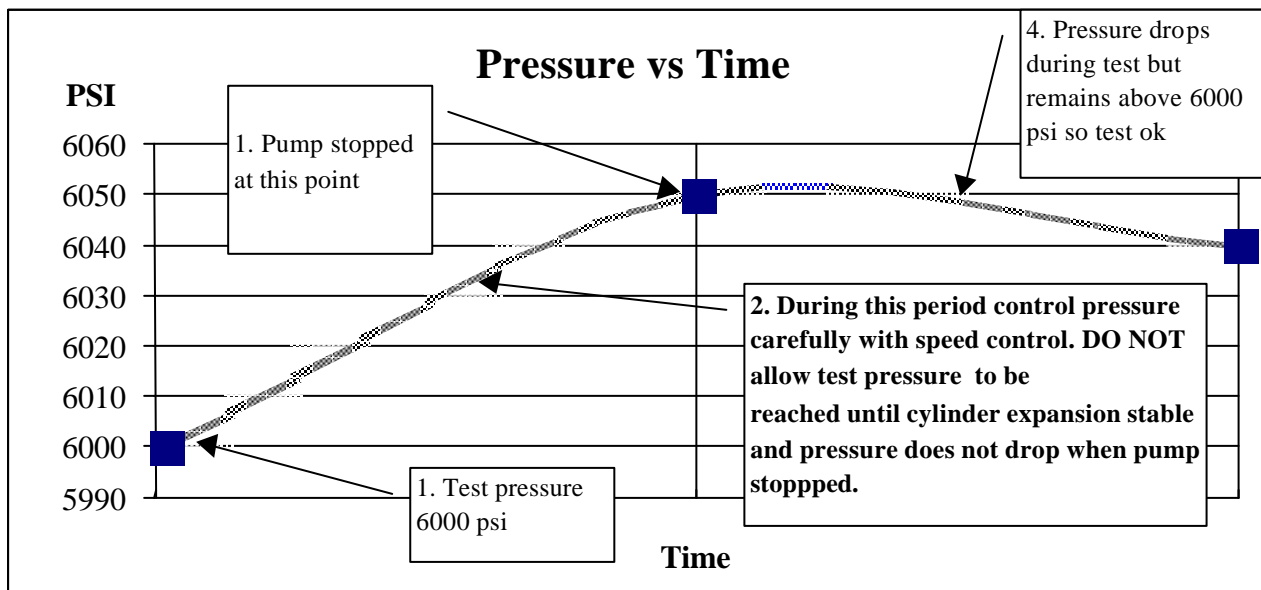
TECHNICAL BULLETIN

SUBJECT: COMPOSITE CYLINDER TESTING

Introduction

With aluminium, and especially fibre wrapped cylinders, the cylinders are slow to expand to the fully stretched condition. If the pump has stopped (because test pressure has been reached), any further **INCREASE** in size causes a **REDUCTION** in pressure. If the pressure drops below the set test pressure, the test must be aborted (per DOT requirements as test pressure "must be maintained for the duration of the test"). This may be seen as falling pressure at the start of the test.

1. Composite cylinders have a tendency to absorb water when placed in the jacket, To prevent the apparent decreasing expansion, they should be either stood in water for a time prior to the test outside of the jacket, or held in the jacket until the expansion reaches a stable value (with no pressure applied) before the test is commenced.
2. In the chart, chosen test pressure is 6,000 psi. Normally for a non-composite cylinder the pump would be stopped at this point. This is point 1.
3. If the pump is run slowly up the section of the curve at 2, the slowly increasing expansion will be matched by pump pressure rise. It is recommended that the pump is stopped at less than 90% of test pressure (5,400 psi in this example) and pressure observed. Any decrease in pressure should be counteracted with the pump control to maintain pressure.
4. If the pressure during 2 is controlled with the pump speed control valve to be VERY slow, then when the pressure increase is stopped for monitoring, the cylinder will have virtually stopped expanding and minimal pressure drop will be observed.
5. With some cylinder types this is sufficient for a successful test, however certain cylinders will need to have the pressure released to zero at this point and the test repeated as above
6. If experience shows the cylinder does continue to expand very slightly, or there is, perhaps a small system leak, stop the pump at a slightly higher pressure, say + 50 psi so the test will not need to be aborted unless it drops below 6,000 psi. This is shown below. This is not the recommended method but may assist if difficulty is found. It is better to observe the correct technique and cure all leaks!



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