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IN CONFIDENCE TO THE CLIENT

REPORT NO: MT-13/037-D

LOAD TESTING OF CORONET ADJUSTABLE HEIGHT SCREW SCAFFOLD JACKS

CLIENT: CORONET SCAFFOLD GROUP SUZHOU CO., LTD
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DATE OF TEST: MARCH 14TH TO MARCH 15TH 2013

DATE OF REPORT: JUNE 18TH 2013

TEST SYNOPSIS:

A consignment of adjustable height screw jacks to be used with scaffolding assemblies, were delivered to the MTS laboratory for load testing (see Fig.1). The screw jacks were constructed from a solid steel threaded shaft, a cast metallic screw adjusting nut and a flat steel base-plate.

At the request of the client, the screw jacks were to be load tested in accordance with AS/NZS 1576.2:2009 – APPENDIX H, to determine whether the jack assemblies could withstand factored loads commensurate with the specific requirements of SECTION 4: PERFORMANCE REQUIREMENTS. Furthermore, the dimensional, geometrical and configurational attributes of the screw jacks were to be recorded to determine the jack's compliance with AS/NZS 1576.2, CLAUSE 3.3.

Prior to testing, the physical dimensions and identification details of the test items were recorded as follows:

<i>Identification Markings:</i>	<i>AS/NZS 1576.2, Coronet0912</i>
<i>Flat base-plate:</i>	<i>150mm x 150mm x 7.3mm thick.</i>
<i>Overall Length:</i>	<i>650mm</i>
<i>Threaded shank:</i>	<i>450mm long (to underside of nut) x 34mm diameter</i>
<i>Adjusting nut:</i>	<i>58mm diameter x 30mm deep</i>

TEST PROCEDURE:

Load testing was conducted using a calibrated universal testing machine (UTS). All tests were conducted with the adjustable screw nut in the maximum height position. In accordance with AS/NZS 1576.2: 2009 – Appendix H, the screw jacks were subjected to eccentric loading using a tapered steel loading plate fitted beneath the jack's baseplate. Load testing was conducted using a length of scaffold tube fitted over the protruding length of the jacks exposed shank (see Fig.2).

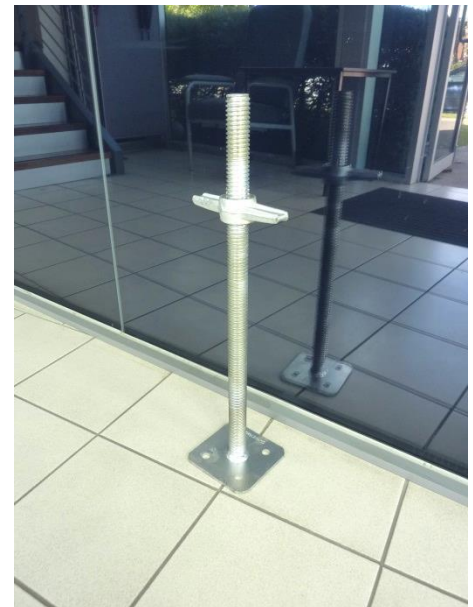


FIG.1
ADJUSTABLE SCAFFOLDING JACK

Proof load testing was conducted by progressively applying a compressive test force of **60kN** over a period of three (3) minutes. The proof load test force was sustained for 15 minutes. Upon removal of the test load, the shank of the scaffold jack was inspected for a change in straightness. Furthermore, a test to confirm that the adjusting nut could be screwed freely along the entire length of the working extension was also conducted.

At completion of proof load testing the adjustable base jack was then re-loaded until failure. The ultimate test load and failure mechanism for each screw jack was recorded.

Testing was conducted by Test Engineer Daniel Humfrey, as authorised by Structural Engineer Rod Wilkie. Testing was conducted in an enclosed environment at the MTS laboratory.

TEST DATA:

Test data for each screw jack is provided in the following table:



**FIG.2
TEST SETUP**

Test Number (#)	Post-Test Proof Load Change in Straightness (mm)	Post-Test Proof Load Movability of Adjusting Nut (Pass/Fail)	Ultimate Failure Load (kN)	Mode of Failure
1	0.17	Pass	130.3	Lateral Buckling of Threaded Shank
2	0.23	Pass	136.7	Lateral Buckling of Threaded Shank
3	0.25	Pass	136.5	Lateral Buckling of Threaded Shank

GEOMETRICAL OBSERVATIONS:

The Coronet screw jacks were examined and measured for dimensional requirements in accordance with AS/NZS 1576.2 Clause 3.3. Dimensional and configurational details of the jacks were recorded as follows:

- The shank of the adjustable screw jack had an extension adjustment of 450mm: **PASS**
- When fully extended, the length of the shank that remained in the scaffold standard exceeded 165mm: **PASS**
- The adjusting nut incorporated a spigot to accommodate and positively locate the end of the scaffold standard: **PASS**
- The baseplates of the jacks have a surface area of 22500 mm²: **PASS**
- The shank was a loose fit and allowed full-length insertion inside the tube. The total compliance between the internal bore of the standard and jack shaft was measured to be 6.3mm: **PASS**
- The baseplates were fabricated using a nominal 7.3mm thick steel baseplate: **PASS**

TEST OBSERVATIONS:

Proof Load Test

The adjustable screw jacks all supported the **60kN ≈ 6.12 tonne** test load at the maximum adjustable height of 450mm without failure or excessive plastic distortion. The average post-test change in shank straightness was recorded as 0.22mm, less than the permissible curvature tolerance of 2.0mm. The adjusting nut of each scaffolding jack could be readily turned by hand for the full length of the threaded section of shank upon removal of the test force.

Ultimate Strength Test

Testing of the scaffold jacks for ultimate load capacity resulted in plastic bending failure of the solid threaded shank. Post-test observations of the jack's components did not reveal any sign of cracking or rupture in the screw jack components or welded connections.

The strength for the jacks calculated in accordance with AS/NZS 1576.2: 2009, Clause 4.2(c) is computed to be **53.8kN \approx 5.48 tonnes**.

SUMMARY:

Testing as described and reported herein verifies that the Coronet adjustable height scaffolding screw jacks have met the performance requirements for load testing as strictly stated in AS/NZS 1576.2:2009 Section 4.2 and 4.3.

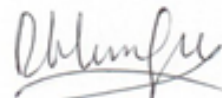
Tests conducted for geometrical, dimensional and configurational attributes confirm that the screw jacks meet the requirements of AS/NZS 1576.2:2009 Section 3.3 for the specific tests conducted.

Notes:

- 1) Melbourne Testing Services Pty Ltd shall not be liable for loss, cost, damages or expenses incurred by the client or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Melbourne Testing Services Pty Ltd be liable for consequential damages including, but not limited to, lost profit, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested.
- 2) This report only indicates compliance of the screw jack in its state at the time of testing. It should not be taken as a statement that all similar screw jacks in all states of repair, would also be found to comply.
- 3) It remains the responsibility of the client to ensure that the samples tested are representative of the entire product batch.
- 4) As described and reported herein, the load performance attributes of the adjustable height screw jacks is specific to the requirements of AS/NZS 1576.2-2009 Appendix H.
- 5) MTS shall take no responsibility for the installation procedures used for the screw jacks as described herein
- 6) As described and reported herein, all comments regarding conformance with dimensional and configurational attributes are strictly limited to those dimensions or properties stated in AS/NZS 1576.2:2009 Clause 3.3.
- 7) MTS shall take no responsibility for the compliance of adjustable height screw jacks as described herein other than for the specific requirements as stated in AS/NZS 1576.2-2009 Clause 3.3, Clause 4.2, Clause 4.3 & Appendix H.



**ROD WILKIE
AUTHORISED SIGNATORY**



**DANIEL HUMFREY
TEST ENGINEER**