ADELAIDE TOOLING PTY.LTD.

A.C.N. 056 598 246

TOOLMAKERS AND MANUFACTURES

DESIGN AND MANUFACTURE - PRESS TOOLS - MECHANICAL TEST RIGS

13 MYUNA STREET REGENCY PARK, SA 5010 PH (08) 3333 3333

Customer:	Test Requirements	Job Number
K2 Components	WSX3 Testing	K2937-22

Scope:

To test the compliance of Galvanised Steel Tube to be used in a builders temporary supply installations. To be compliant to WSX3 classification in accordance with AS/NZS 3013;2005 Results of testing are only applicable to pipe supplied by K2 Components and similar products may not achieve the same result any may not be deemed fit for purpose.

Methodology:

Test to be conducted in accordance with AS/NZS 3013:2005 - Appendix D Mechanical Test Method - Impact test.
Test Rig to be developed in accordance with figure D1

AS/NZ 3013:2005 Appendix D. Mechanical Test Method- Impact Test Rig Compliance

Table 3.2

No 3: Heavy, 50 J

Minimum Drop Height = 0.1 M

Total Mass (KG)	Specimen Height (M)	Drop Height (M)
10	0.061	0.571
20	0.061	0.316
30	0.061	0.231
40	0.061	0.189
50	0.061	0.163
60	0.061	0.146
70	0.061	0.134
80	0.061	0.125
90	0.061	0.118
100	0.061	0.112
110	0.061	0.107
120	0.061	0.104
130	0.061	0.100

$$h = \frac{J}{g.m} = \textit{height of specimen}$$

where

h = drop height, in metres (minimum of 0.1 see paragraph D5)

J = impact load, in joules (see Column 2 of Table 3.2

g = gravitational acceleration, in meters per second

m = total mass of impactor and adjustable masses, in kilograms

Impactor drop height to be set in accordance with calculation above, Specimen to be removed from pre conditioning and secured in test rig. Confirm specimen temperature with certified infrared thermometer then apply first impact within 60 seconds of removal from pre conditioning chamber and complete all impacts within 300 seconds. To achieve a WSX3 classification deformation will need to be less than 40% Record measurements of deformation results.

Results:

Test Date: 17/08/2022
Test Time: 12:30 pm
Test Location: 13 Myuna Street Regency Park

Part Number	Description	Impactor Weight (kg)	Impactor Height (mm)	Specimen Temperature	Pre Test (mm)	Post Test (mm)	Deformation Percentage	Pass/Fail WSX3
GPV50-100-40/40	Gal Pipe 40nb (Outer Diameter 48.3 thickness 2.3mm)	40	0.061	-15	48.08	42.37	11.65%	PASS
GPV50-100-40/50	Gal Pipe 50nb (Outer Diameter 60.3 thickness 2.3mm)	40	0.061	5	48.71	43.06	11.59%	PASS
GPV50-100-40/40	Gal Pipe 40nb (Outer Diameter 48.3 thickness 2.3mm)	40	0.061	75	48.7	42.87	11.97%	PASS
GPV50-100-40/50	Gal Pipe 50nb (Outer Diameter 60.3 thickness 2.3mm)	40	0.061	-15	59.81	54.45	8.96%	PASS
GPV50-100-40/50	Gal Pipe 50nb (Outer Diameter 60.3 thickness 2.3mm)	40	0.061	5	59.95	54.14	9.69%	PASS
GPV50-100-40/50	Gal Pipe 50nb (Outer Diameter 60.3 thickness 2.3mm)	40	0.061	75	59.96	53.38	10.97%	PASS

Assessment

K2 Components has requested WSX3 testing to be conducted on all pipe to access its compliance when used as part of an assembly for consumer mains within the Electrical Safety (General) Regulations 2019. It has come to the Victorian electrical industries attention various persons and/or entities may or may not have sufficient understanding or technical knowledge to assess in the field installation practices for compliance with WS classification to Australian Standard 3013 and that standards testing requirements.

It shall be noted regardless of the mechanical protection for the purpose of construction site consumer mains wiring enclosure heavy duty non-metallic conduit must be used beyond the additional mechanical protection requirements; as such consumer mains in electrical installations on construction and demolition sites must not be enclosed metallic tubes, pipes or trunking alone.

Regulation 214

Electricity Supplies - Construction and development sites
(a) from the point it exits the ground up to the point it enters the enclosure, be enclosed in compliant heavy duty non-metallic conduit and,
(b) from the point it exits the ground up to a point that is within 100mm of the point at which it enters the enclosure, to be provided with additional mechanical protection that is of a construction that meets the mechanical protection of WSX3 specified in Appendix F of AS/NZS 3013

WSX3 Testing - Temperature Validation

In accordance with AS/NZS 3013:2005 - Appendix D Mechanical Test Methods - Impact Test

Specimens shall be tested in ambient air temperature of 23 Deg C ± 3 Deg C

Specimens shall be pre-conditioned for 4 hours to -15, 5, 75C ±3C

WSX3 Testing temperatures were validated using FLUKE certified InfraRed Thermometer 62 Max

Specifications	62Max
Temperature	-30c to 500c
Accuracy (Calibration geometry with ambient temperature 23 C	≥0 C ±1.5C ≥-10 C to 0C ±2C ≤ 0C ±3C
Response Time	≤500ms (95% of reading)
Temperature Coefficient	± 0.1 C/C or ±0.1 %/C of reading whichever is greater
Optical resolution	10:01
Operating Temperature	0C to 50C

-15C

5C

75C

MECHANICAL TEST METHOD
APPENDIX D
E4 TEST METHODOLOGY (d)

Tests shall be carried out with specimens pre-conditioned to each extreme of the proposed operating temperature range. Such temperatures shall be selected from the following values in degrees Celsius

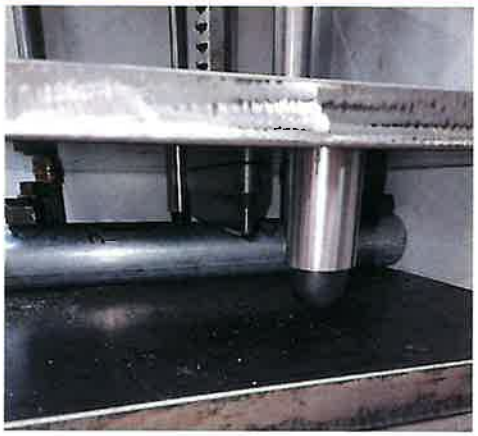
-25, -15, 0, +5, +40, +60, +75, +90, +110.

Specimens shall be prepared for test by being conditioned for 4 hour at the selected test temperature. The conditioning chamber shall be maintained at the test temperature ±3C or ±3%, whichever is the greater..

K2 Components has nominated that the extreme operating temperature range for this product to cover all environmental conditions at -15C to +75C

Results Verification

Results of testing undertaken in line with AS/NZS 3013:2005 were conducted by independent third party, Trung Nguyen and Rolf Suzle from Adelaide Tooling Pty. Ltd. To validate steel piping for K2 Components

Test Item	Specimen in Testing Rig	Deformation Measurement
GPV50-100-40/40 Gal Pipe 40nb (Outer Diameter 48.3 thickness 2.3mm)		
GPV50-100-40/50 Gal Pipe 50nb (Outer Diameter 60.3 thickness 2.3mm)		

Conclusion

In its opinion Adelaide Tooling has conducted all relevant test for K2 Components Pty Ltd in accordance with AS/NZS 3013;2005 WSX3 classification standards and regulations.
It is Adelaide Tooling's opinion K2 Components items GPV50-100-40/40 and GPV50-100-40/50 pass the requirements and are designated a classification of WSX3

It shall be noted Adelaide Tooling approves the WSX3 classification as an individual tested product, however as required by the electrical safety act 1998 , each individual electrical installation must be individually inspected, in situ, on site after the responsible electrical installation worked and the associated registered electrical contractor have certified a certificate of compliance for the prescribed electrical installation work.

TRUNG NGUYEN

MARK REID

Appendix - Test Rig Photographs