TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

TESMEC

Independent Testing & Engineering Services

Report and Load Survey of: load verification of submitted adjustable steel telescopic props

Document number: *TES000207TR-1*
Client: *VR Access Solutions Ltd*

Address: *1 Swan Court Yard*
Charles Edwards Road
Birmingham
B26 1BU

Date of applied testing/survey: *Start date 30/11/2016 to 02/12/16*

Item description: *Free issue fabricated adjustable steel telescopic props*
Submitted sizes 0 to 3
Item finish green top coat
5 samples submitted per size for compressive load verification
2 number of each size at recorded closed height and 3 number submitted for extended height verification survey
Thread rolled O/D and nominal thread depth recorded per sample, collar I/D internal dimension recorded and collar to rolled thread backlash recorded as instructed.

Identification mark affixed to item: *No apparent identification marks affixed*

Client submitted drawing numbers: *Non submitted*

Client design review Ref: *To be conducted by client or analysis by others*

Quantity submitted for test: *50 fabrications submitted, 5 of each size subject to load verification*

Client submitted British standard or procedure number*: verbal client instruction only guidance from BS5507 failure load 1 degree 30 out of plumb*

Address of where testing /surveys were conducted: *TESMEC Limited;*
Independent Testing and Engineering services.
Test House
Unit 19, Newey Business Park
Sedgley Road West
Tipton, West Midlands
DY4 8AH

Number of pages contained in this report: 11

TESMEC
Independent Testing & Engineering Services

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

CONTENTS

Section 1

1.1. Test/survey requirements
1.2. Equipment and calibration

Section 2: Sample dimensional verification

2.1. Figure 2
2.2. *Size 0 to 3 verification table*

Section 3 Ultimate loads recorded and mode of failure

3.1. Size 0 to 3 load table

Section 4 digital images of typical modes of failure

Typical failure modes all sizes

Section 5 chemical analysis

5.1. Thread rolled tube
5.2. Load induced pin
5.3. Non load induced pin

Section 6 Concentrated pin load survey

6.1. Load displacement graph

6.2. Digtal image of failure

TESMEC
Independent Testing & Engineering Services

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

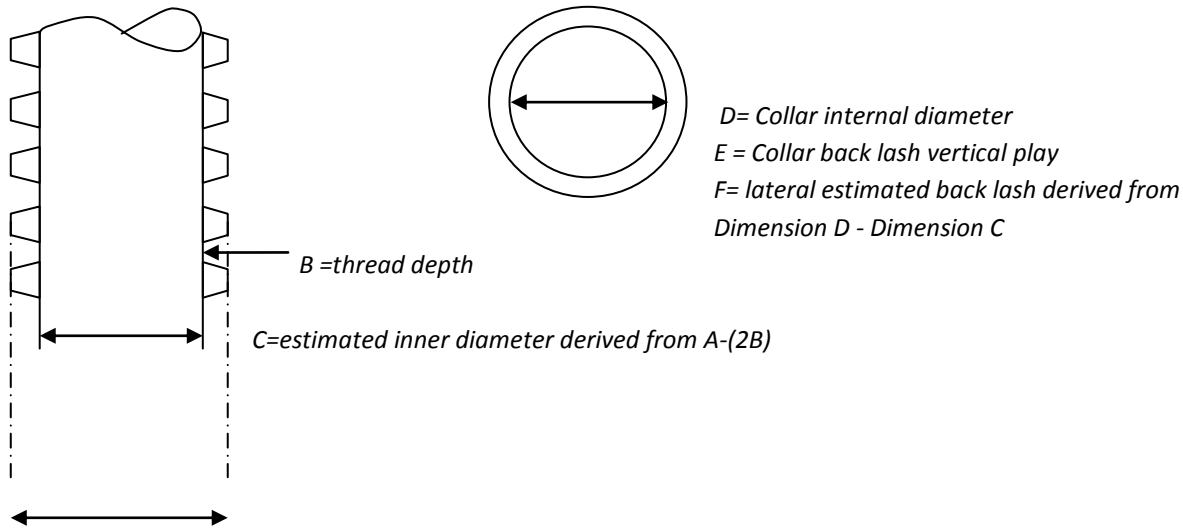
Section 1:

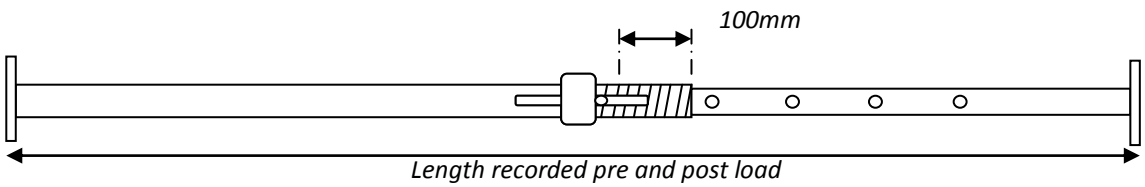
1.1 The client requested a compressive load study generally in accordance with BS 5507 to submitted telescopic props. 2 props of each submitted size was subject to compressive load application to failure in the closed height position and 3 of each size subject to compressive load application to failure in the open height position.
All tests conducted with the props 1 degree 30 out of plumb.

1.2. Test equipment.
Horizontal compressive test bed
Adjustable bed plate set at 1 degree 30 out of plumb
Calibrated hydraulic actuator complete with digital pressure gauge.
Measuring equipment.

Section 2. Requested dimensional verification

Reference figure 2.





All thread dimensions taken 100mm from end of outer tube thread profile.
One sample size 0 subject to pre load dimensional verification only.

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

2.1. Dimensional verification table

Prop size	*A mm*	*B mm*	*C= A-(2B)mm*	*D mm*	*E mm*	*F =D-C mm*
0	61.23	2.13	56.97	59.24	1.12	2.27
1	61.21	2.17	56.87	59.3	0.89	2.43
1	61.19	2.48	56.23	59.07	0.88	2.84
1	61.15	2.51	56.13	59.31	0.61	3.18
1	61.38	2.51	56.36	59.13	0.82	2.77
1	60.88	2.16	56.56	59.37	0.94	2.81
2	60.59	1.6	57.39	59.13	0.86	1.74
2	60.55	1.65	57.25	59.22	1.48	1.97
2	60.63	1.5	57.63	59.18	1.09	1.55
2	60.73	1.62	57.49	59.33	1.67	1.84
2	60.77	1.51	57.75	59.46	1.59	1.71
3	60.64	2.02	56.6	58.97	1.15	2.37
3	61.04	1.98	57.08	59.48	0.79	2.4
3	60.69	2.06	56.57	59.07	1.31	2.5
3	60.66	2.09	56.48	59.26	0.97	2.78
3	60.94	2.19	56.56	58.87	1.57	2.31

3.0. Load data sizes 0 to 3

3.1. Table 3 recorded load data

size	*Pre load height mm*	*Post load height mm*	*Max load kN*	*Mode of failure*
0	1120	1095	72.81kN	pin and collar distortion
0	1120	1100	80.41kN	pin and collar distortion
0	1800	1800	51.88kn	displaced from rig
0	1800	1788	64.97kn	collar displacement/slip
0	1800	1788	76.24kn	pin and collar distortion
1	1850	1846	64.97kn	collar displacement/slip
1	1850	1837	72.73kn	pin and collar distortion
1	3086	3083	41.74kn	inner tube bend
1	3084	3077	53.62kn	inner tube bend + pin
1	3085	3081	31.78kn	inner tube bend
2	2053	2040	74.74kn	pin and collar distortion
2	2056	2049	48.34kn	collar slip, pin distort
2	3309	3305	31.38kn	inner tube bend
2	3312	3305	34.09kn	inner tube bent
2	3308	3303	37.77kn	inner tube bent
3	2660	2645	78.49kn	Pin distortion and rig displacement
3	2664	2657	58.2kn	inner tube bent/ pin distortion
3	3928	3921	21.48kn	inner tube bent
3	3916	3916	22.65kn	inner tube bent
3	3925	3922	22.99kn	inner tube bent

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

Section 4: digital images

Images 4.1 and 4.2 showing typical bending when subject to load size 2 extended

Image 4.3. Showing typical bending when subject to load size 3 extended

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

Image 4.4 typical pin bending

image 4.5 showing collar slip

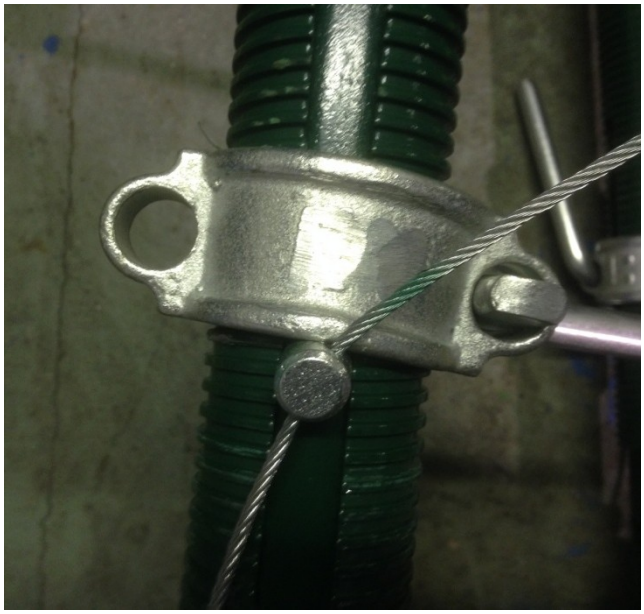


Image 4.6 and 4.7 typical pin and collar distortion

TESMEC
Independent Testing & Engineering Services

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

5.1. Thread rolled tube material analysis

SOUTHDOWN MATERIALS TESTING LIMITED

DESTRUCTIVE TESTING SERVICES

UNIT 5 TANSEY GREEN TRADING ESTATE, TANSEY GREEN ROAD, PENSNETT, BRIERLEY HILL, WEST MIDLANDS, DY5 4TL
Telephone No: 01384 482880 Fax No: 01384 482877 Email: southdown.smt@btconnect.com

TEST REPORT
No: A27033

Tesmec Ltd
Test House
Unit 19
Newey Business Park
Sedgley Road West
Tipton
West Midlands
DY4 8AH

SMT No: A4441-1
Customer O/No: -
Date Received: 30/11/16
Description: THREADED TUBE
Specification: -
Grade: -

Report Date: 1/12/16

SPECTROGRAPHIC ANALYSIS
(DOCUMENTED IN-HOUSE PROCEDURE TH63)

Tester & Test Date		B L EVANS	1/12/16
Element %		Results	Requirements
Carbon	C	0.11	
Silicon	Si	0.10	
Manganese	Mn	0.32	
Phosphorus	P	0.019	
Sulphur	S	0.015	
Chromium	Cr	<0.01	
Nickel	Ni	<0.01	
Molybdenum	Mo	<0.01	
Niobium	Nb	<0.01	
Copper	Cu	<0.01	
Titanium	Ti	<0.015	
Aluminium	Al	<0.005	
Vanadium	V	<0.015	
Cobalt	Co	<0.01	
Tungsten	W	<0.05	
Lead	Pb	<0.01	
Tin	Sn	<0.005	
Boron	B	<0.0010	
Nitrogen	N	<0.005	

- End of Report -

Authorised by: ..... K M Winnall – Test Technician
FOR SOUTHDOWN MATERIALS TESTING LIMITED

Test marked "NOT UKAS ACCREDITED" in this Report/Certificate are not included in the UKAS Accreditation Schedule for our Laboratory
Tests and opinions marked "SC" have been subcontracted.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This Test Report shall not be reproduced except in full, without written approval of the Laboratory
Results in this Report relate only to items tested

1178

Page 1 of 1

TESMEC
Independent Testing & Engineering Services

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

5.2. Pin post load material analysis

SOUTHDOWN MATERIALS TESTING LIMITED

DESTRUCTIVE TESTING SERVICES

UNIT 5 TANSEY GREEN TRADING ESTATE, TANSEY GREEN ROAD, PENSNETT, BRIERLEY HILL, WEST MIDLANDS, DY5 4TL
Telephone No: 01384 482880 Fax No: 01384 482877 Email: southdown.smt@btconnect.com

TEST REPORT
No: A27034

Tesmec Ltd
Test House
Unit 19
Newey Business Park
Sedgley Road West
Tipton
West Midlands
DY4 8AH

SMT No: A4441-2
Customer O/No: -
Date Received: 30/11/16
Description: BENT PIN
Specification: -
Grade: -

Report Date: 1/12/16

SPECTROGRAPHIC ANALYSIS
(DOCUMENTED IN-HOUSE PROCEDURE TH63)

Tester & Test Date		B L EVANS	1/12/16
Element %		Results	Requirements
Carbon	C	0.16	
Silicon	Si	0.14	
Manganese	Mn	0.51	
Phosphorus	P	0.013	
Sulphur	S	0.013	
Chromium	Cr	<0.03	
Nickel	Ni	<0.01	
Molybdenum	Mo	<0.01	
Niobium	Nb	<0.01	
Copper	Cu	<0.01	
Titanium	Ti	<0.015	
Aluminium	Al	<0.05	
Vanadium	V	<0.015	
Cobalt	Co	<0.01	
Tungsten	W	<0.05	
Lead	Pb	<0.01	
Tin	Sn	<0.005	
Boron	B	<0.0010	

- End of Report -

Authorised by: ..... K M Winnall – Test Technician
FOR SOUTHDOWN MATERIALS TESTING LIMITED

Test marked "NOT UKAS ACCREDITED" in this Report/Certificate are not included in the UKAS Accreditation Schedule for our Laboratory
Tests and opinions marked "SC" have been subcontracted.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This Test Report shall not be reproduced except in full, without written approval of the Laboratory
Results in this Report relate only to items tested

1178

Page 1 of 1

TESMEC
Independent Testing & Engineering Services

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

5.3. Non load induced pin material analysis

SOUTHDOWN MATERIALS TESTING LIMITED

DESTRUCTIVE TESTING SERVICES

UNIT 5 TANSEY GREEN TRADING ESTATE, TANSEY GREEN ROAD, PENSNETT, BRIERLEY HILL, WEST MIDLANDS, DY5 4TL
Telephone No: 01384 482880 Fax No: 01384 482877 Email: southdown.smt@btconnect.com

TEST REPORT
No: A27035

Tesmec Ltd
Test House
Unit 19
Newey Business Park
Sedgley Road West
Tipton
West Midlands
DY4 8AH

SMT No: A4441-3
Customer O/No: -
Date Received: 30/11/16
Description: STRAIGHT PIN
Specification: -
Grade: -

Report Date: 1/12/16

SPECTROGRAPHIC ANALYSIS
(DOCUMENTED IN-HOUSE PROCEDURE TH63)

Tester & Test Date		B L EVANS	1/12/16
Element %		Results	Requirements
Carbon	C	0.18	
Silicon	Si	0.16	
Manganese	Mn	0.48	
Phosphorus	P	0.016	
Sulphur	S	0.015	
Chromium	Cr	0.03	
Nickel	Ni	<0.01	
Molybdenum	Mo	<0.01	
Niobium	Nb	<0.01	
Copper	Cu	0.01	
Titanium	Ti	<0.015	
Aluminium	Al	<0.05	
Vanadium	V	<0.015	
Cobalt	Co	<0.01	
Tungsten	W	<0.05	
Lead	Pb	<0.01	
Tin	Sn	<0.005	
Boron	B	<0.0010	

- End of Report -

Authorised by: ..... K M Winnall – Test Technician
FOR SOUTHDOWN MATERIALS TESTING LIMITED

Test marked "NOT UKAS ACCREDITED" in this Report/Certificate are not included in the UKAS Accreditation Schedule for our Laboratory
Tests and opinions marked "SC" have been subcontracted.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

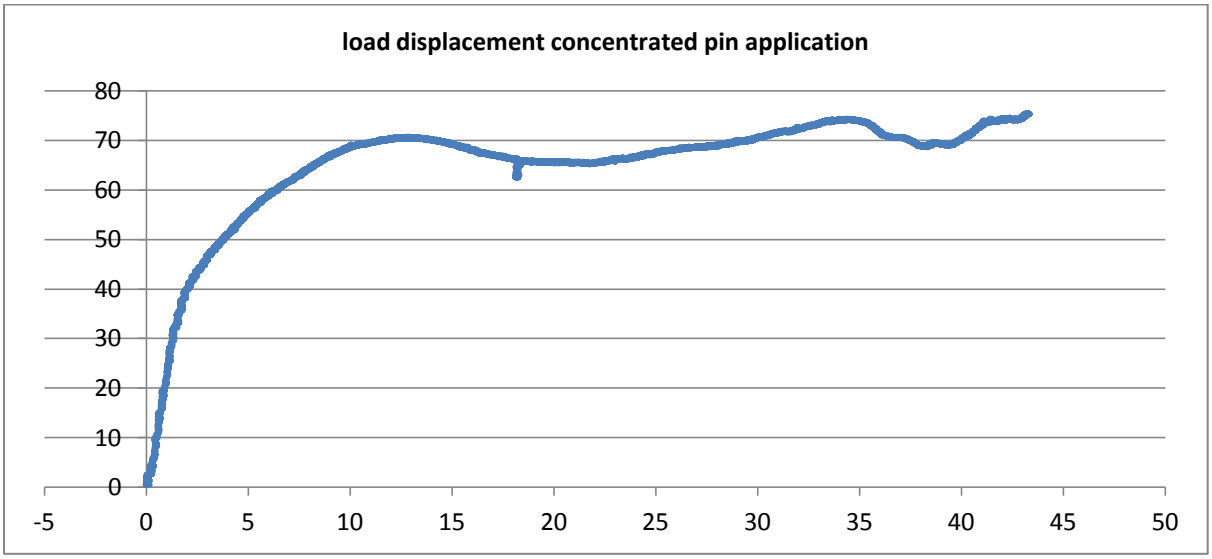
Results in this Report relate only to the items tested

Page 1 of 1

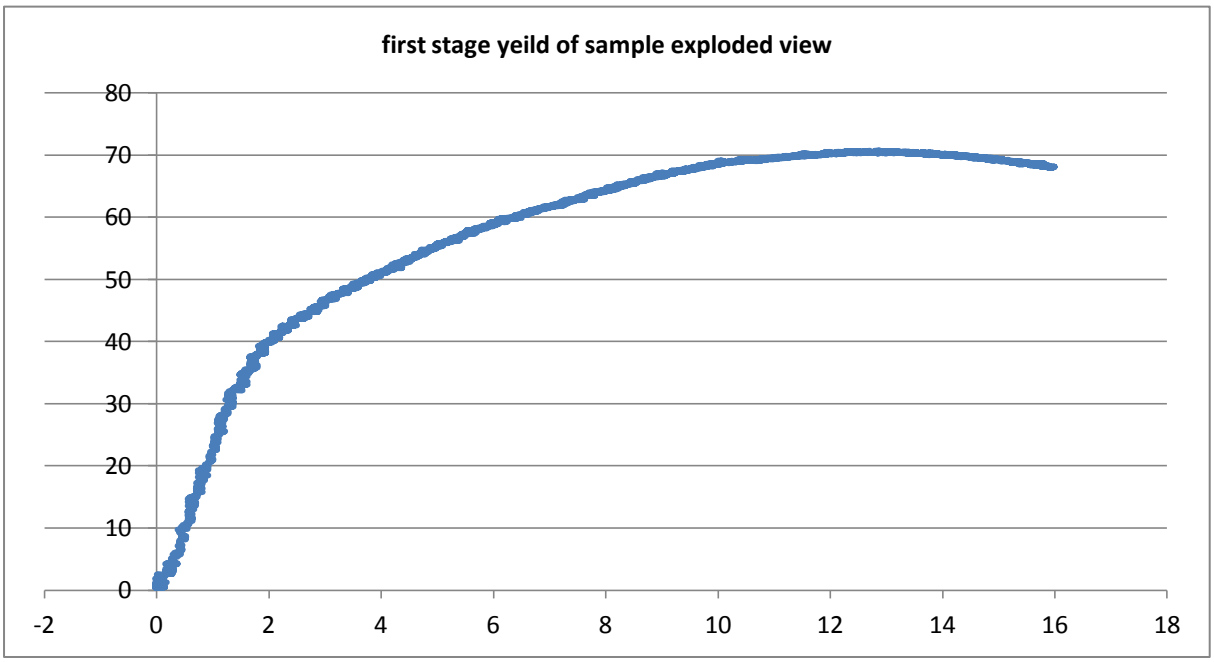
TESMEC
Independent Testing & Engineering Services

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

Section 6 Concentrated pin load survey



Maximum recorded peak load 75.46kN



TESMEC
Independent Testing & Engineering Services

TESMEC Limited: Test house, Unit 19 Newey Business Park
Sedgley Road West, Tipton, West midlands
DY4 8AH
Telephone: 07947 103 644

Pre load image

post load image

END OF REPORT

Testing conducted by TESMEC Limited; Independent Testing and Engineering Services
Test House, unit 19 Newey Business Park
Sedgley Road West
Tipton
West Midlands
DY4 8AH
Date of report issue: 2nd November 2016

Signed:

Mr S.J.Rogers Testing services Manager
Mr A Farmer Test technician.
On behalf of TESMEC Limited.

Report and testing conducted for:
VR Access Solutions Ltd
1 Swan Court Yard
Charles Edwards Road
Birmingham
B26 1BU