

TEST REPORT

Lucideon Reference: 194078 (QT57040/1/JB)/Ref. 3

Project Title: Load Testing of FH Brundle's Sleeve Fit Brackets

Client: FH Brundle
81/82 Middlemore Industrial Estate
Middlemore Road
Smethwick
Birmingham
B66 2EP

For the Attention of: Mr Danny Hull

Author(s): Mr Justin Fryer

Report Date: 21 November, 2019

Purchase Order No.: 613665

Work Location: Lucideon UK



Miss Joanne Booth
Testing Team
Reviewer



Mr Justin Fryer
Testing Team
Project Manager



CONTENTS

	Page
1 INTRODUCTION	3
2 TEST ARRANGEMENT	3
3 TEST METHOD	3
3.1 Vertical Load	3
3.2 Horizontal Load	3
4 RESULTS	4
PLATES	5
CHARTS	6-7
APPENDIX A - Figure	

1 INTRODUCTION

FH Brundle design and manufacture sleeve fit brackets to be used as architectural features in new and existing buildings in conjunction with various post based balustrade systems.

As part of their product development, they required a programme of testing to determine their products performance in accordance with British and European standards.

2 TEST ARRANGEMENT

1 No. concrete block of dimensions 2000 mm x 700 mm x 500 mm was fastened to the laboratory strong-floor.

A single post was bolted to the concrete block by representatives of FH Brundle.

A sleeve fit bracket was then attached to the post as per manufacturer's instructions by representatives of FH Brundle.

3 TEST METHOD

3.1 Vertical Load

A hydraulic ram was positioned directly below the sleeve fit bracket.

A calibrated load cell was attached to the hydraulic ram by way of a steel cage to measure the load during testing.

A calibrated Linear Voltage Displacement Transducer (LVDT), to measure the deflection directly above the sleeve fit bracket.

A load was applied steadily up to a maximum of 5 Kn.

Photographs can be seen in the Plates Section.

3.2 Horizontal Load

A reaction frame consisting of 2 No. steel stanchions and a steel cross-member was fastened to the laboratory strong-floor such that a ram could be clamped to the steel cross member at the same height as sleeve fit bracket.

A calibrated load cell was attached to the hydraulic ram by way of a steel cage to measure the load during testing.

A calibrated Linear Voltage Displacement Transducer (LVDT), to measure the deflection, was attached to the opposite side of the sleeve fit bracket as the load was applied.

A load was applied steadily up to a maximum of 3 kN.

Photographs can be seen in the Plates Section.



4 RESULTS

Orientation of Load Test	Maximum Load Applied (kN)	Deflection at Maximum Load (mm)
Vertical	5.31	2.74
Horizontal	3.05	8.53

NOTE: The results given in this report apply only to the samples that have been tested.

END OF REPORT

PLATES



Plate 1 - Typical Test Set-Up Vertical Loading



Plate 2 - Typical Test Set-Up Horizontal Loading

Chart 1 - Load Deflection Curve for Vertical Load Testing of FH Brundles Pro Railing Sleeve Fit Glass Clamps



Test Report: 194078/Ref. 3

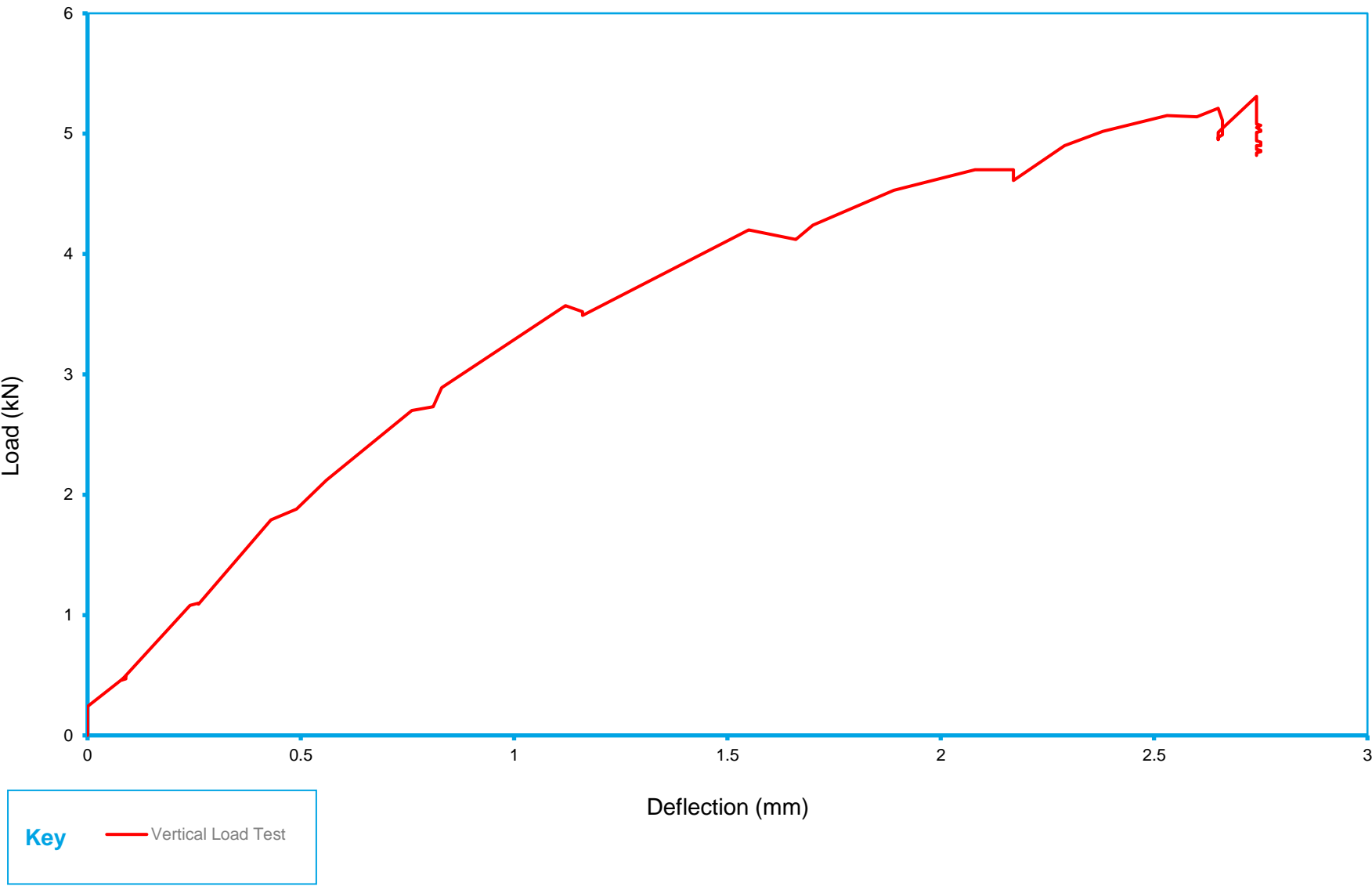
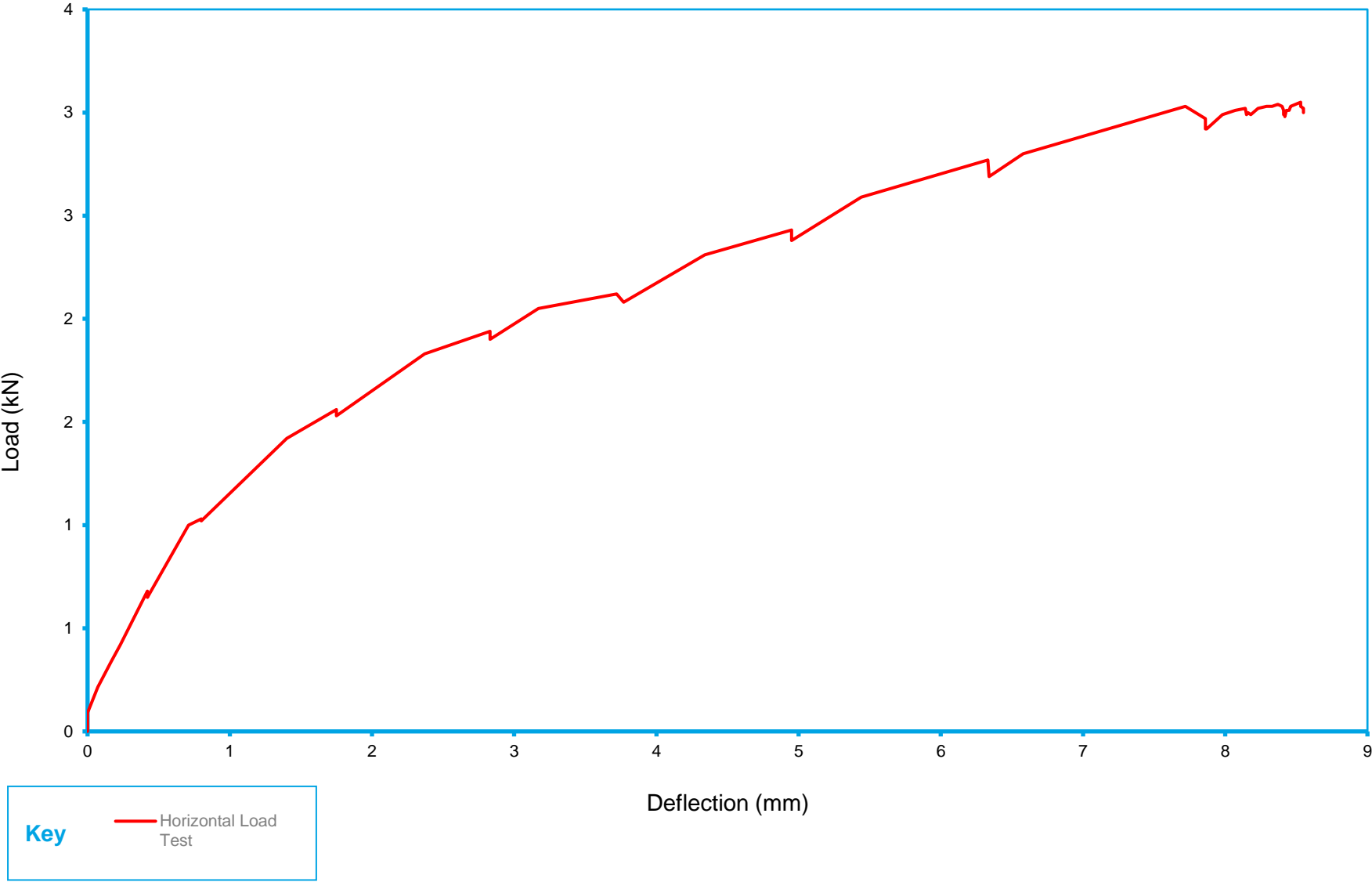
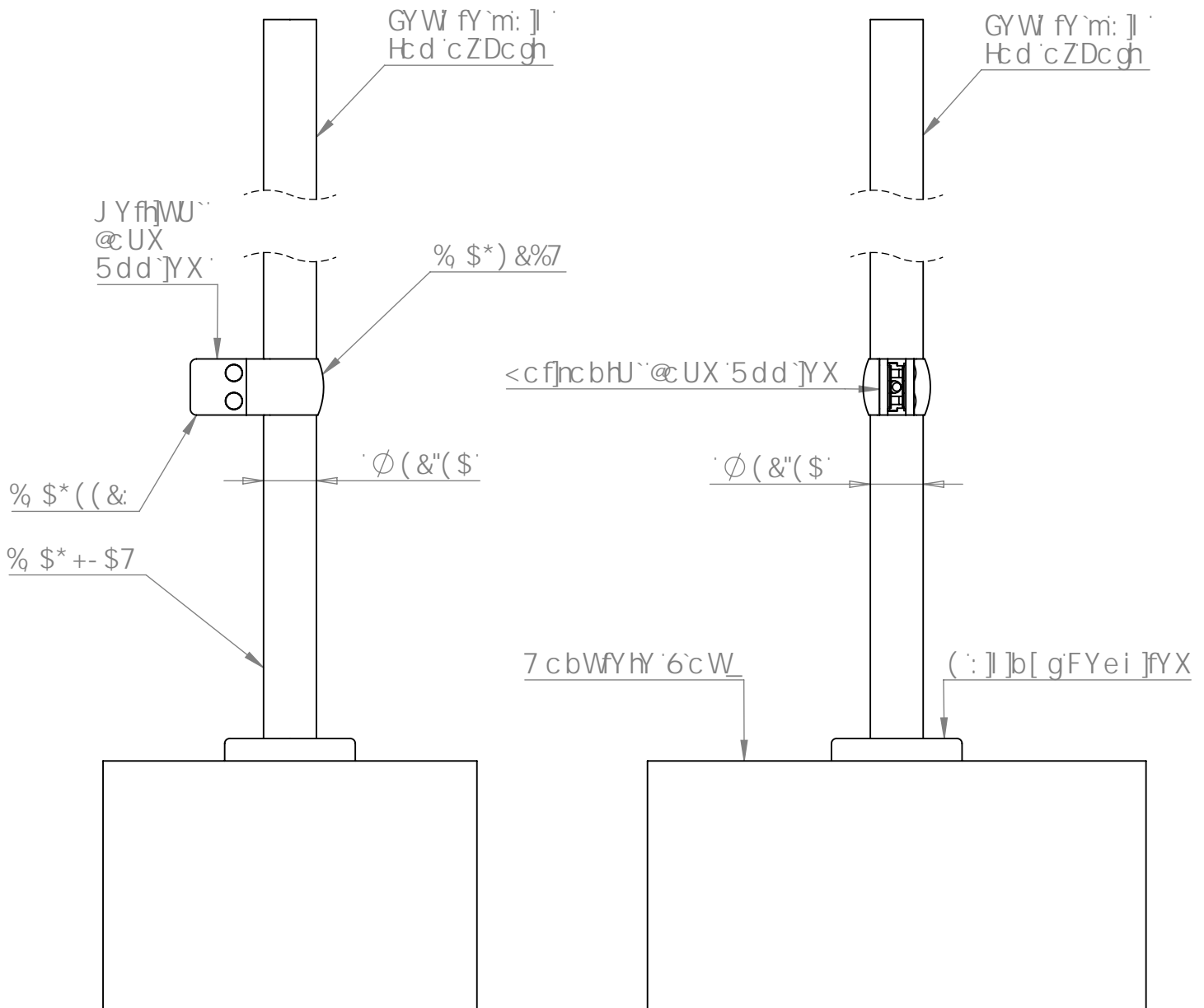
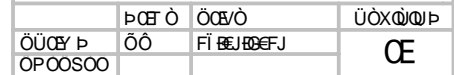


Chart 2 - Load Deflection Curve for Horizontal Load Testing of FH Brundles Pro Railing Sleeve Fit Glass Clamps



Test Report: 194078/Ref. 3





Ô[} &^} d æ^ a Á[ā c Š[æ Á ^ • • Á - Û | ^ ^ ç ^ Á ō / Ó æ \ ^ È

[illegible]

Ôæ!^Á~ó!æ!Á•ç*ÁÁæ&!æ&ÁæÓUÂFì€EFFFóæ!•ÁÁæ!æ!~ó!æ!æ*È

V@·~Á·σΔ á|á||{ ÁPÁ} |á|Á|^cÁÁāā:ā|~^o|āē] ā * Á · c { Á /ā/h|āē · āāÁÁ
+|Á·ÁÁ āāā āāāē · dāā/ā·ā } āē Á · dā āā/ ÁŌUÁ F| ē GFFŌCēā:|/ā āā āāē | ~ āāā * /ÁŌ /ā h Á :āāā

H'gh-b'5VWc'fXUbVW'	DUffgFYei jfYX'	: ci bXUhc'b'A UYfjU''	5bVXcf: j j b[H'ghHndY
6G'9B '*% \$.&\$%%	%l '% \$*) &%f %l '% \$*((&	7') k jh ['UggZVfygZU [fY [UHY ghY &\$a a 'gi a d' %\$ \$) \$+) *' 'l': 6B '='&l '%\$* 'l' %*	<c fnc bHU''Dc jh@c UX 'c Z: jhb [
6G'9B '*% \$.&\$%%	%l '% \$*) &%f %l '% \$*((&	7') k jh ['UggZVfygZU [fY [UHY ghY &\$a a 'gi a d' %\$ \$) \$+) *' 'l': 6B '='&l '%\$* 'l' %*	J YfhjWU''Dc jh@c UX 'c Z: jhb [