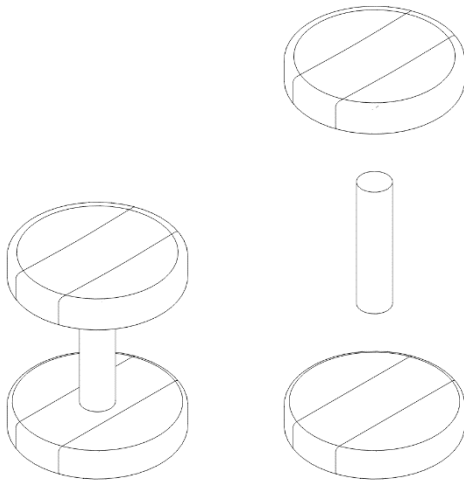


professor max irvine **engineers**



Skupa Vijac Stool Structural Analysis Report

14 April 2021

Revision A

Prepared by	Reviewed by	Status	Revision	Date
WW	MG	For review	A	14/4/21

Introduction

The purpose of this report is to summarise the strength, stability and structural adequacy of the current design of the Skupa Vijac Stool, based on the design drawing Screw Stool Screw Bowl Rev A.

Assumptions

Material assumptions

	Assumed F grade	Density (kg/m ³)	Modulus of Elasticity (GPa)	Joint group	f _b (MPa)	f _t (MPa)	f _c (MPa)	f _s (MPa)
American Oak/Walnut	F14 seasoned	750 (oak) 615 (walnut)	12.3	JD3	36	22	27	3.3

Load Assumptions

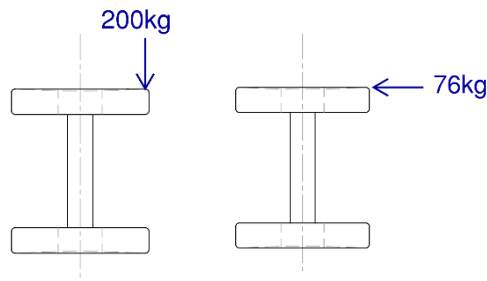
The following load cases were considered for each element, with standard cases as recommended in AS-NZS 4442-2018, AS 4688.1-2018 and AS 4688.1-2000 as well as extreme ultimate load cases. Since there are no test levels for tables, we will assume similar test levels for seating as a conservative analysis approach.

Element	Loading
Skupa Stool	1) 160kg static central point load (Test Level 4) 2) 200kg static central point load (Test Level 6) 3) 160kg static edge point load (Test Level 4) 4) 200kg static edge point load (Test Level 6) 5) 76kg leg forward static load (Test Level 5, 6) 6) 76kg leg sideways static load (Test Level 5, 6)

Analysis Results

Turned timber leg capacity

The 70mm diameter solid timber thread has adequate capacity to support up over 200kg vertical point loading and 76kg lateral load at its edge, and therefore able to achieve a Test Level 6 seating load as per AS4688.2.



A minimum embedment depth of 50mm is required for the top and bottom of the timber leg.

A safety factor of 1.5 is recommended to be adopted for the stool to account for manufacturing and installation tolerances.

Results Summary

Skupa Furniture	Failure load (kg)	Maximum safe working load SF=1.5 (vertical failure loads)
Vijac Stool	>200kg Edge Point Load	200kg Edge Point Load