

FAUNA Circus Ltd. - "It Shouldn't Have Legs" Research and rigging
 Drill House, Great Yarmouth March 1st-6th 2021

**Testing and certification of 'Net' rope set apparatus
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The structure was rigged under tension from three elevated points (truss) and three ground anchored points. The elevated truss is H30v equivalent, 7 x 4m rectangle and rigged square to the stage, but at 5.7m trim Downstage, 3.8m trim Upstage.

The structure is a knotted net made of spliced fibre yarn polypropylene three ply rope (EN ISO 1346). 12 mm rope is used for the outer framework (MBL 21.6kN) , with 10mm used for internal web-work (MBL 15.4kN). Each corner attachment node comprises 8-10 strands of rope tied to a 12mm gauge, 200mm diameter stainless steel ring (MBL 5800kg). The 6 nodes are attached to truss and ground anchor with 50mm ratchet straps (EN12195-2:2001 MBL 5000 daN). In live use these will be backed up with 2 ton WLL roundslings in case of failure.

The structure was rigged in the Drill House, Great Yarmouth and a 5 ton AJT Load Link placed in line at each attachment point in turn. The structure was brought back up to tension and the static load recorded. Then an 80kg performer moved dynamically on various locations across the structure, trying to generate the maximal force, which was measured as a peak load on the load cell. The two 4m hoist points for the truss were also measured with the load cell under static and dynamic conditions. There was insufficient clearance to attempt measurement on the two downstage chain hoists. The results are as below

Node	Static Tension (kg)	Peak Load (kg)	Min SWL component	Notes
A1 Ground USL	215	330	1000kg (ratchet at 5:1 safety ratio)	Opposite corner produced greatest load. Tension reduced to 130kg by 3 clicks released on ratchet
B1 Ground USR	275	410	1000kg (ratchet at 5:1 safety ratio)	Max load generated in same corner. 2 clicks off ratchet reduces tension to 170kg (max 315)
C1 Ground DSL	332	400	1000kg (ratchet at 5:1 safety ratio)	
A2 Truss USL	170	425	812kg (CPL 7m truss span)	Truss strength underestimate as not centre point.
B2 Truss USR	230	430	1160kg (Steel ring at 5:1 safety ratio)	Max load generated top same corner
C2 Truss DSL	170	430	812kg (CPL 7m truss span)	Max load generated near node B2. Truss strength underestimate
USL chain hoist	182	260	1000kg (Chain hoist WLL)	Max load generated centrally
USR chain hoist	198	280	1000kg (Chain hoist WLL)	Max load generated centrally

All peak loadings are well within the SWL of the components of this rig and configuration. The above should be used as guidelines for installation into venues – allocation of ballast or rating of ground anchor points particularly. Care should be given to rotational / shearing forces generate in the asymmetric rigged truss – use correct equalised slinging. Ground nodes may be equalised across multiple anchors if required.

