

Bringing structures to life

# ON-SITE | INSIGHT

USING TUBULAR SHORING SYSTEMS FOR VERTICAL PROPPING

**MODULAR  
VERTICAL**  
propping

**Speed and safety**

A versatile  
**solution**





# A better solution

The high strength capability of tubular shoring systems means fewer struts are needed and assembly time can be reduced, saving time and money, making them ideal for vertical support. All major components have robust integral lifting points for safer handling, and integral forklift points/stands and rotation stops enable safe storage of stacked sections. With only a few individual components, assembly is easier and faster, with different diameters of tubular shoring systems offering versatility.

## Vertical propping benefits:

### Economical:

Replacing a structural steelwork prop system with vertical shoring props is more economical, especially if the project has a short duration. The cost of buying steel, cutting it to length and assembling is far greater than hiring props, bolting them together and erecting.

### Versatile:

Modular equipment is all prepared off site and delivered straight to site, simply constructed on arrival in a safe and easy manner. This contrasts with having several deliveries of long steel sections which need to be cut to size and welded on site.

### Speed:

In emergency scenarios where a solution is required fast - for example if a structural fault was found on a road bridge - a vertical propping solution could be specified and installed extremely quickly, whereas a structural steel design would take far longer to design and assemble.

### Safety:

Using a vertical propping system significantly reduces health and safety concerns. Large components are not being handled at height as is the case with scaffold, with nuts and bolts being tightened and hot works required, making modular vertical propping a much safer installation solution.

# Introduction

Large props are used on construction projects where an adjustable, load-bearing member is required, providing an economical method for supporting elements such as new or existing bridges, large steel or concrete construction elements, ship / off-shore platform structures, or plant pedestals.

Historically, vertical shoring systems have relied on multiple load-bearing strut members, that required to be handled

and assembled individually, together with a substantial number of ledgers and diagonal braces that laterally restrain the struts against buckling. However, solutions have recently been developed to adapt props traditionally used horizontally in ground shoring applications for vertical use, offering a raft of benefits.



# TUBESHOR FROM ALTRAD RMD KWIKFORM

Tubeshor, the Hybrid Hydraulic Tubular Shoring System from Altrad RMD Kwikform, is the ideal product for vertical propping. Traditionally used for ground shoring applications, including propping waler beams or capping beams, it is available in a range of diameters to cater for projects of any size.

Tubeshor features an optimised cross section and five standard diameters, which can usually be configured to carry the load from the point of application to the foundation without lateral buckling restraints. This, together with the robust nature of the product, enables props to be assembled in entirety whilst horizontal on the ground which reduces work at height and improves operative safety.

With one end attached to the foundation via a Swivel Unit, the assembled prop can then be craned upright, and the top can be connected to existing structure at a single high level. Props are compact, enabling them to fit onto existing foundations which reduces enabling works, and the rapid assembly at ground level can help to shorten project duration.

Load duties vary with five different Tubeshor diameters, 320, 460, 610, 1060 and 1370 series props provide maximum load duties of 1400, 2500, 5000, 10,000kN and 15,000kN respectively. Tubeshor 1370, with its ultra-high 15,000kN maximum load capacity, and the possibility of use un-restrained in applications up to 80m high, is the premium load capacity proprietary shoring system on the market.

It stretches the envelope of applications where proprietary shoring can be used beyond familiar construction industry applications into offshore platform assembly and refurbishment, and shipbuilding.

## KEY FEATURES

- ✓ **Five sizes for any site needs:**  
320, 460, 610, 1060, 1370 Tubeshor diameters
- ✓ **Robust construction:**  
Heavy duty construction using grade S460 steel, designed to be less prone to damage.
- ✓ **Economical alternatives:**  
Burnout Packs and Weldable Stubs facilitate reduced cost options for versatile and economical longer-term propping solutions.
- ✓ **Increased stiffness under load:**  
Has market leading stiffness due to its ability to isolate and lock off the hydraulic element of the prop.
- ✓ **Fine length adjustment:**  
Tubeshor props are compatible with hydraulic ram units that provide fine length adjustment, hydraulic preload, lifting/lowering of load and load release.



# A PERFECT SOLUTION

When selecting a vertical propping solution, you should opt for a system that features versatile accessories to offer additional benefits.

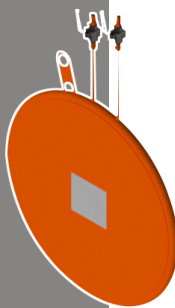
## Hydraulic Ram-Lock Units

provide the flexibility/convenience of hydraulic length adjustment, controlled lifting, lowering and pre-loading of shores, together with the security of full isolation of the internal hydraulic cylinders via threaded locking collars.



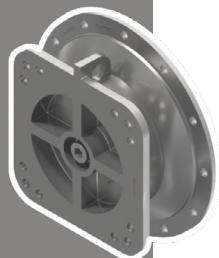
## Flat Jacks

provide a low-cost alternative where only small prop length changes are required, for instance during the change out of permanent works bridge bearings. Flat Jacks can be releasably water filled for short duration work or cementitious grout can be used for a secure load lock off in longer duration/ cyclic load applications involving the support of live road or rail traffic.



## Spherical Bearers

which provide a 5-degree rotation in any axis, take up angular tolerances in foundations and supported structures, often eliminate the need for messy and time-consuming grout at these interfaces, whilst ensuring concentric prop loading and thus maximising allowable propping loads.

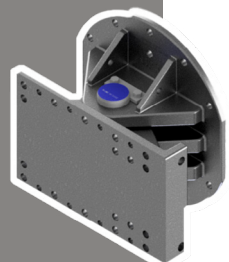


## Swivel Units

provide a moment release at one or both ends of the prop and can be rotated up to 60 degrees, enabling sloping foundations and supported structures to be accommodated without the need for specially fabricated equipment. When combined with a Foundation Wedge, this enables the props to be assembled horizontally, followed by safe and simple raising to the vertical.

For the highest load capacity projects and/or those in free-standing applications, props can be laced and braced together into ultra-high capacity Trestles and Towers with connection to the system ring flanges.

It's advisable to choose a tubular shoring solution with components that come with the comfort of CE/UKCA certification, with quality control during manufacture in accordance with EN1090, and design/ testing in accordance with EN Standards, such as Tubeshor.



# APPLICATIONS

Vertical propping is ideal for a range of applications, and can be used in a range of environments in different industries, such as:

## 1. Large Bridges – construction and refurbishment

Bridges for road, rail and metro projects can pose some of the most complex construction challenges. Factors such as the length of the bridge in question, the construction sequence and its location and proximity to other structures can all have an impact on the best equipment solutions for the job.

## 2. Ship Building

Navigating the complexities of vessel dimensions, specifications, and the intricacies of the shipbuilding process requires a tailored approach to construction support. Similar to bridge construction, the size and design of the ship significantly impact the selection of construction methods and the need for specialized equipment. The effective integration of these factors is essential to ensure that the construction support systems are precisely aligned.

## 3. Offshore Platform Construction

Constructing offshore platforms, whether for oil and gas exploration or renewable energy projects, demands precision in addressing the complexities of platform dimensions, specifications, and the intricacies of the construction process. The size and design of the platform significantly influence the choice of construction methods and specialized equipment. Seamless integration of these factors is paramount to align construction support systems accurately.





# CASE IN PRACTICE

## HINKLEY POINT C

Location	Somerset, UK
Client	Bylor
Project	Hinkley Point C - Unit 1 Reactor Building
Equipment used	Tubeshor, Megashor



### Overview

Altrad RMD Kwikform supplied the hydraulic, ultra-high duty propping system Tubeshor to supporting the project's largest pre-cast concrete module. Coming in at a huge 862 tonnes, the pre-cast concrete was lifted and installed in the reactor building.

The 2500kN internal hydraulic cylinder provided precise level adjustment, raising/lowering, pre-loading and load control, with speedy adjustment with no need to procure separate jacks. The 4500kN load capacity screw lock-off collar with hard, low friction coating and two-start thread offers long product life, fast adjustment, and isolation of hydraulic systems for improved safety and higher prop stiffness.

The Tubeshor Spherical Bearing Units feature 5 degrees rotation in any direction at both ends, allowing them to take up angular tolerances at the ends of props, and reduce the need for grouting and ensure concentric prop loading. Plus Megashor push-pull prop stabilisers offer a robust 'off the shelf' option to enable accurate plumbing and lateral support of props.



## AL SHINDAGHA CORRIDOR

Location	Dubai
Client	China State Engineering Company
Project	Al Shindagha Corridor
Equipment used	Tubeshor



### Overview

Altrad RMD Kwikform provided temporary shoring access towers for a new road network in Dubai, UAE, as part of the AED5.035 billion (US\$1.37 billion) Shindagha Corridor project, supplying two 16-metre-high, free standing shoring towers for the construction of an extension to the Shindagha Bridge.

Due to the project's high loads and space restrictions, the company provided its Tubeshor system for the works. It was the first time the hybrid hydraulic tubular shoring system had been used on in a vertical support tower configuration. High lateral loads demanded the use of substantial ledger and brace elements that connected to the Tubeshor uprights via system Tubeshor Nodes. This required Altrad RMD Kwikform to design a special connector that enabled the tubes to be connected to horizontal members.





RMD  
KWIKFORM

Bringing structures to life

## ON-SITE | INSIGHT

Website: [rmdkwikform.com](http://rmdkwikform.com)

Email: [info@rmdkwikform.com](mailto:info@rmdkwikform.com)