

# tJRS Opta

## Threaded Joint Rate Simulator Bench



The tJRS Opta is the only fully automated Joint Simulator Bench that is based on a threaded fastener. This means that Joint conditions can be set up in the same way as in real fastener applications, and also the Joint can be automatically “backed off”. As a result, Tools can be tested off-line under the most realistic conditions of any automated Joint Simulator, in a quick and efficient manner.

The tJRS Opta combines many of Crane's proven class leading products along with innovative techniques based on simple mechanical principles, allowing the user complete confidence in the results of their Tool testing.

#### Key features

- ✓ A threaded fastener and nut
- ✓ Fully automated quick release of fastener
- ✓ Fully automated variable joint rate from soft to hard
- ✓ Tool testing in accordance with VDI/VDE2647
- ✓ Torque or force indicator and Data Collector
- ✓ Automatic greasing facility
- ✓ Comprehensive management software (OMS)
- ✓ Torque, Angle and Impulse count
- ✓ Track, Peak, 1st peak (click) and Pulse measurement
- ✓ User selectable frequency response
- ✓ Choice of measurement units
- ✓ 8 hours battery life with internal charger
- ✓ User selectable language options
- ✓ Password protection for user security



<b>Mounting:</b>	<p><b>330Nm &amp; 500Nm tJRS Opta.</b> On 4 wheels:- 2 fixed, 2 swivel with brakes. Wheel diameter 200mm.</p>
<b>Surface:</b>	<p><b>1000Nm tJRS Opta.</b> On a carrier that can accept pull truck or be left in a fixed location. Mounted on 4 feet.</p>
<b>Power/Battery:</b>	<p>Oil resistant engineering plastic. Powered by 2 x 12V sealed lead acid batteries that gives approximately 8 hours of typical use on a full charge. Internal battery charger is fitted to charge batteries in 10 hours from a 100-240V mains voltage. Operates when the batteries are being charged. PC receives power from the internal batteries, but if mains voltage is available, then this will be used instead to conserve battery charge. Self-powered USB hub with 4 connections is provided for peripherals to be attached to the PC.</p>
<b>Hydraulics:</b>	<p>Working pressure is 200 bar. Smaller beams work at lower pressure. Hydraulic washers take the clamp load and will be used to release the clamp load at the end of the tightening.</p>
<b>Controller:</b>	<p>Touch panel PC with solid state hard drive. Single licence of OMS for standalone use on the tJRS. OMS modules and SQL database. Threaded JRS Controller.</p>
<b>Operation:</b>	<p>Follows the guidelines in VDI/VDE 2647. A traffic light system operates to inform the operator when to run down the Tool. There are safety mechanisms in case the operator ignores the NO GO signal. Peak, Impulse and Click testing are permitted on the beam Joints. The operation time allows 30 rundowns in 3 minutes dependent on Tool and Joint type selected. The joint is automatically reset without the tool needing to be removed.</p>
<b>Environment:</b>	<p>Operates between +10C and +30C. Indoor use only.</p>
<b>Product codes:</b>	<p><b>TJMXX-0330-CRJEXX</b> 330Nm tJRS Opta <b>TJMXX-0500-CRABCX</b> 500Nm tJRS Opta. <b>TJ3FX-1000-CR01XX</b> 1000Nm tJRS Opta.</p>

**tJRS Opta Technical Specification:**

<b>Measurement units:</b>	<b>330Nm tJRS Opta.</b> Maximum Torque: 330Nm. Minimum Torque: 1Nm. <b>500Nm tJRS Opta.</b> Maximum Torque: 500Nm. Minimum Torque: 1Nm. <b>1000Nm tJRS Opta.</b> Maximum Torque: 1000Nm. Minimum Torque: 1Nm.
<b>Weight:</b>	Depends on configuration.
<b>Beams:</b>	<b>500Nm tJRS Opta.</b> 500Nm, 100Nm and 10Nm beam. <b>1000Nm tJRS Opta.</b> 1000Nm, 330Nm and 25Nm beam.
<b>Bolts and Nuts:</b>	Bolts and nuts are replaceable and removable from the top. Each bolt, thread and under collar nut has its own automatic greasing system. Adaptors provided to connect the Transducer to the nut on the bolt.
<b>TorqueStar Opta:</b>	Standard TorqueStar Opta with Opta Management Software automatically selects the required CheckStar.
<b>CheckStar:</b>	Each CheckStar has a military connector allowing it to be removed. The tJRS Opta identifies which CheckStar Opta and beam are being used. <b>500Nm tJRS Opta.</b> ¾" drive Rotary UTA with Angle for use on the 500Nm beam. ½" drive Rotary UTA with Angle for use on 100Nm beam. ¼" drive Rotary UTA with Angle for use on 10m beam. <b>1000Nm tJRS Opta.</b> 1" drive Rotary UTA with Angle for use on the 1000Nm beam. ½" drive Rotary UTA with Angle for use on 330Nm beam. 3/8" drive Rotary UTA with Angle for use on 25m beam.
<b>Dimensions:</b>	<b>330Nm &amp; 500Nm tJRS Opta.</b> 1100mm (1200mm including handle) x 600mm x 940mm (L x W x H). Base above floor = 230mm. <b>1000Nm tJRS Opta.</b> 1400mm x 700mm x 940mm (L x W x H) Base above floor = 140mm.
<b>Reaction posts:</b>	Standard reaction posts at appropriate positions that can take the forces generated by the Torque. The posts will slide fit in their holders for ease of use.

## Product Description

The tJRS Opta from Crane Electronics is the latest generation Joint Rate Simulator featuring a system covered by several patents. As with all products in the Opta range the tJRS integrates seamlessly into the OMS software package to provide a complete Torque measurement solution.

Traditionally, automated Joint Simulators have used friction brake systems in place of a threaded fastener. The reasons for this were to overcome the two main issues which are having to reverse, or back-off, after each rundown and the cumbersome nature of reconfiguring the Joint characteristic.

Whilst friction brakes can easily be reset, removing the back off issue, they introduce many of their own problems often resulting in the simulator having significantly different properties to actual Joints the Tools will be used on.

The revolutionary tJRS Opta combines the benefits of using a threaded fastener with the convenience of a fully automated simulator.



### Key Advantages over a friction brake system

**Low Inertia** - As per the assembly operation, the tool only has to drive a nut onto a bolt with a standard in-line transducer. No large, high mass, hard to drive braking systems which greatly affect the performance of the tool. Fixed relationship of Torque vs Angle. With a threaded fastener, the Torque vs Angle relationship is not time based. Therefore variations in tool speed will not change the Joint rate.

**Designed for use with Impulse Tools** - Threaded fasteners do not continue to tighten between pulses which adversely affects results.

**Temperature Variations** - The effects of temperature on the system, specifically Angle drift are many times lower with a threaded fastener.

**Repeatability and Linearity** - Both are significantly superior with the threaded fastener in the tJRS Opta.

**Maintenance and Service** - As with all mechanical systems periodic servicing and maintenance is required. The threaded fastener in the tJRS Opta is designed for high usage and is automatically lubricated for longer life. When the nut and bolt do require replacing, it is a simple task which can be performed by the user. This removes the need for expensive and time consuming servicing of complicated braking mechanisms.

The tJRS Opta system removes the need to reverse the fastener, or remove the Tool drive during the back off process. This makes it an ideal Tool for improving the efficiency of Tool certification. It is particularly important when testing higher Torque Tools, many of which do not have a reverse gear.

Another major advantage of using a Joint Simulator is the ability to change the Joint conditions through a software interface rather than time consuming mechanical re-configuration. Crane has pioneered the use of its patented twin beam systems using high quality precision materials.

This not only simplifies the setup process, but also provides the user with an incredibly linear and repeatable test facility. As the Joint conditions are stored in the database against each Tool, the user can also be assured that the same conditions are recalled whenever a given Tool needs testing.

The linearity and repeatability of the tJRS Opta follows the guidelines in VDI/VDE 2647 - "Transducers for nutrunning systems – Guideline for dynamic checking of Tools according to ISO 5393".

tJRS Opta is designed with the latest 3D solid modelling Tools and built on Crane excellence. Within the tJRS Opta there are many years of highly successful tried and tested components:

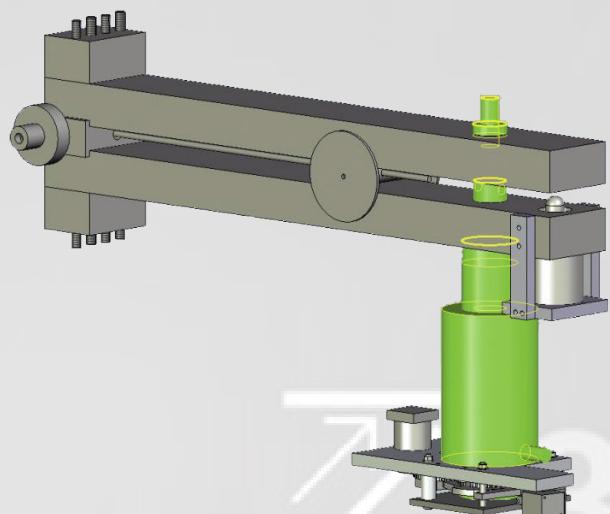


CheckStar transducers that set the gold standard for unbeatable performance and reliability.

TorqueStar Opta measurement system.

Threaded fastener material and design technology with special coatings to ensure high usage durability.

OMS software package which makes the tJRS Opta the heart of a complete Torque measurement and quality system.



The tJRS Opta is a modular system which allows the user to select from a number of Torque ranges, or beams. This ensures the configuration of a unit which best meets customer requirements. The modular design also enables specific custom units.

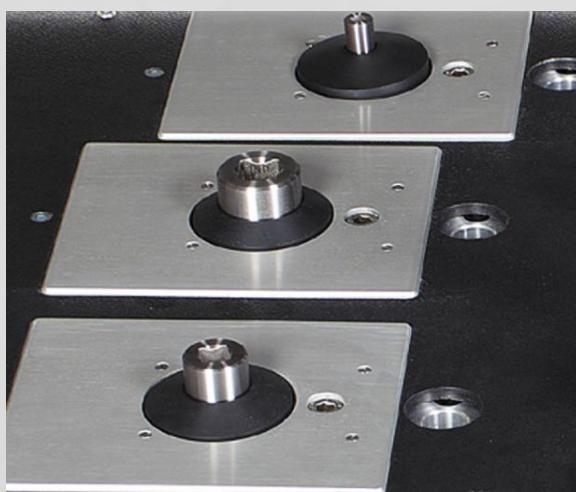
For units with multiple beams, the tJRS Opta automatically selects the Transducer to use and informs the operator via a clear graphical notification. For an even greater degree of control when testing Tools that are particularly susceptible to excessive inertia, or when Tools have non-standard drive sizes, the Transducer on the beam can be changed for a more suitable size. This ensures the user is always using the appropriate device and removing the need for drive adapters that often cause inaccuracies.



The tJRS Opta can either be configured as a stationary unit or mounted on wheels to provide mobile operation. The onboard batteries are designed to give a full shift of normal operation on a single charge.

In addition to the mobile operation, tJRS Opta also allows the operator to use in-line Transducers and the readout to certify tooling in-situ when it cannot be readily accessible for testing directly on the simulator. This ensures all Tool management is performed in common within the same database.

A popular optional accessory for the tJRS Opta is the Wrench test fixture. This convenient addition expands the range of the tJRS Opta to encompass certification of hand operated Wrenches in compliance with ISO6789.



# Complete torque management systems from Crane Electronics



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