

# Wheel Fatigue Test Rig

CAPABILITY SHEET · TWO TESTS · A PROVED LOAD · A CRACK LOOKED FOR · ENGINEERED TO ORDER

## THE ONE IDEA

|                       |                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PRINCIPLE</b>      | A wheel needs two fatigue tests.                                                                                                                                |
| <b>WHY IT MATTERS</b> | The cornering test is aimed at the disc and the radial test also loads the rim and its fixing, so a wheel that passes one has not been shown to pass the other. |

## THE RIG

|                             |                                                                                                                                  |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>FRAME &amp; MOUNTING</b> | A stiff welded frame, and a hub and clamp that fix the wheel the way it is fixed in use, with the bolt torque written down.      |
| <b>LOADING</b>              | A cylinder, a power unit and a valve put the load on and hold it steady as the wheel turns, with a load cell in the load path.   |
| <b>CONTROL</b>              | A controller counts the turns, holds the load, logs every reading and stops the run on a rule written in the test plan.          |
| <b>INSPECTION</b>           | Stiffness is read through the test and the wheel is examined for cracks on a schedule, because stiffness alone can miss a crack. |

## THE METHOD

|               |                                                                                                                                                                              |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ORDER</b>  | Specify, mount, set, run, inspect and prove. Proving the load against a reference, and looking for the crack as well as reading the stiffness, are what a quick order skips. |
| <b>LIMITS</b> | Loads, speeds and cycle counts come from the standard the customer names and from the wheel, and are not printed here.                                                       |

## CONFIGURATIONS

|                              |                                                                                                                    |
|------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>RADIAL FATIGUE RIG</b>    | A wheel pressed on a rotating drum under a radial load, so that the rim and its fixing feel a push once each turn. |
| <b>CORNERING FATIGUE RIG</b> | A loading arm from the hub applies a rotating moment, so that the disc is bent, a push and a pull once each turn.  |
| <b>RIM TORSION RIG</b>       | A twist applied to the rim and its fixing through a fixture, where a torque test of the rim is called for.         |

## STANDARDS & SCOPE

|                       |                                                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>STANDARDS</b>      | Public references: SAE J328 for passenger car and light truck wheels, SAE J267 for truck and bus wheels and SAE J1204 for trailer wheels. |
| <b>SCOPE BOUNDARY</b> | It is the wheel fatigue test rig: not a general fatigue machine, not a shaft torsion machine, not an axle rig, and not a tyre test.       |
| <b>STATUS</b>         | Neometrix has quoted against successive wheel fatigue test rig requirements, and no delivered wheel fatigue test rig is claimed.          |

## DEFENCE PROGRAMMES DESK

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