

Specifications

Model	ZWARP I	ZWARP II
Drum diameter	920 mm (840, 920, 1050 mm)*	970 mm (840, 920, 1050 mm)*
Tire width	max. 335 mm	max. 335 mm
Free drum width	340 mm	340 mm
Vertical load	40 kN	max. 55 kN
Lateral load	40 kN	max. 40 kN
Actuator stroke	250 mm	330 / 250 mm
Tilt angle	max. $\pm 15^\circ$ ($\pm 25^\circ$)**	max. $+30^\circ$ / -15°
Drive engine	55 kW	190 kW
Speed	max. 150 km/h	max. 200 km/h
Weight	approx. 6.500 kg	approx. 7.500 kg
Drive events (Triaxial Mode)	-----	up to 3500 Nm

*) different drum types available

**) on request

References

Stahlschmidt & Maiworm, Germany	2001
RW-TÜV, Germany	2001
Ford USA (2 rigs)	2001
Ronal, Germany	2001
ITS, USA	1991
Lemmerz, Germany	1991
Michelin, France	1990
GM Opel, Germany	1990
Kronprinz, Germany	1989
BMW (2 rigs), Germany	1989
Volvo Car, Sweden	1988
Südrad, Germany	1988
Audi, Germany	1988
DaimlerChrysler, Germany	1987



ZWARP II Additional Features

- Simulation of braking events with original wheel/hub/brake assembly
- Simulation of drive torque
- Axial fan for cooling air and dust removal



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Biaxial Hydropuls™ test rigs for automotive wheels and hubs

About the product

Brake systems and wheel/hub assemblies are critical safety-relevant components of the vehicle chassis which are exposed to severe loads. Their reliability can only be safeguarded by performing tests in the laboratory under conditions which resemble actual loading conditions as closely as possible. A ZWARP test rig enables the simulation of all loads acting on the wheel/brake assembly which have a bearing on its service strength.

Applications

- Fatigue testing of wheels as part of a design validation process for release into production
- Rim roll accelerated durability testing: vertical input of high dynamic loads caused by road roughness and vehicle maneuvering, superimposed on the car weight component acting on a wheel
- Grist mill fatigue tests simulating severe cornering conditions, i.e. series of high lateral inbound and outbound loads superimposed on the corresponding vertical loads
- Specific service strength tests of wheel fastening and braking elements (bolts, discs etc.), hub units and truck twin wheel designs using supplementary rig equipment



Fig. 1: ZWARP I

Features

- Simultaneous radial and lateral loading of wheels using an original tire for load transfer from the rig to the test object.
- Variable wheel rotation, speeds up to 150 km/h
- Variable wheel camber positioning allows true in-service stress distribution within various fatigue sensitive wheel sections
- Low tire wear
- Compact sturdy design requires a minimum of floor space and no special foundation
- Handling comfort. Changing the wheels is a quick and easy operation

Benefits

- Optimum use of working space
- High basic seismic mass and extremely stiff frame design with low number of parts to avoid resonance
- Hydraulic crosshead positioning for fast installation and removal of specimens or application of a static preload
- Low moving mass and high stiffness make real-time simulation possible
- Full digital control with 19-bit resolution and outstanding repeatability

