Reich Kupplungen

Dipl.-Ing. Herwarth Reich GmbH

D2C
Designed to Customer

TOK coupling system

Highly flexible test bench shaft

Your drive is our strength. Your strength is our drive.

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D2C – Designed to Customer

The principle of Designed to Customer describes the recipe for success of REICH-KUPPLUNGEN: Utilizing our product knowledge, our customers are supplied with couplings which are developed and tailor-made to their specific requirements. The designs are mainly based on modular components to provide effective and efficient customer solutions. The unique form of close cooperation with our partners includes consultation, design, calculation, manufacture and integration into existing environments. Adapting our manufacturing to customer-specific production and utilizing global logistics concepts provides better after sales service - worldwide. This customer-oriented concept applies to both standard products and production in small batch sizes.

The company policy of REICH-KUPPLUNGEN embraces, first and foremost, principles such as customer satisfaction, flexibility, quality, prompt delivery and adaptability to the requirements of our customers.

REICH-KUPPLUNGEN supplies not only a coupling, but a solution: Designed to Customer.

Edition April 2013

The present TOK edition renders parts of the previous TOK catalogues obsolete.
All dimensions in millimeters.
We reserve the right to change dimensions and/or design details without prior notice.

General technical description

Test bench couplings are applied in miscellaneous test benches. By reason of manifold, specific requirements TOK system is designed according to the modular design concept, to be applicable on almost every engine test bench.

For specifi c requirements, e.g. special-test benches, the standard parts can be combined with specific-designed parts to derive solutions corresponding to individual conditions.

The torsional stiffness can be easily changed and adapted by simply replacing the fl exible elements, as well in service. The rubber element of the coupling is vulcanised to an inner and outer ring, thus enabling torque transmission without being affected by centrifugal forces at high speeds.

Modular design concept of the TOK – ZW coupling system

The most important attributes and advantages of the highly flexible TOK - ZW coupling system are:

- Lowest possible torsional stiffness utilizing two fl exible elements
- Simple adjustment of the torsional stiffness by changing of elements
- Compensation of axial-, radial- and angular misalignment
- Self-centering, backlash-free and maintenance-free
- Flanges adapted to DIN or SPICER bolt patterns, respectively on demand
- Variable installation lengths utilizing telescopic spacer shafts
- Ideal for highest speed
- Lowest possible weight by using high-tensile aluminium and CFRP

Technical Data (extract)

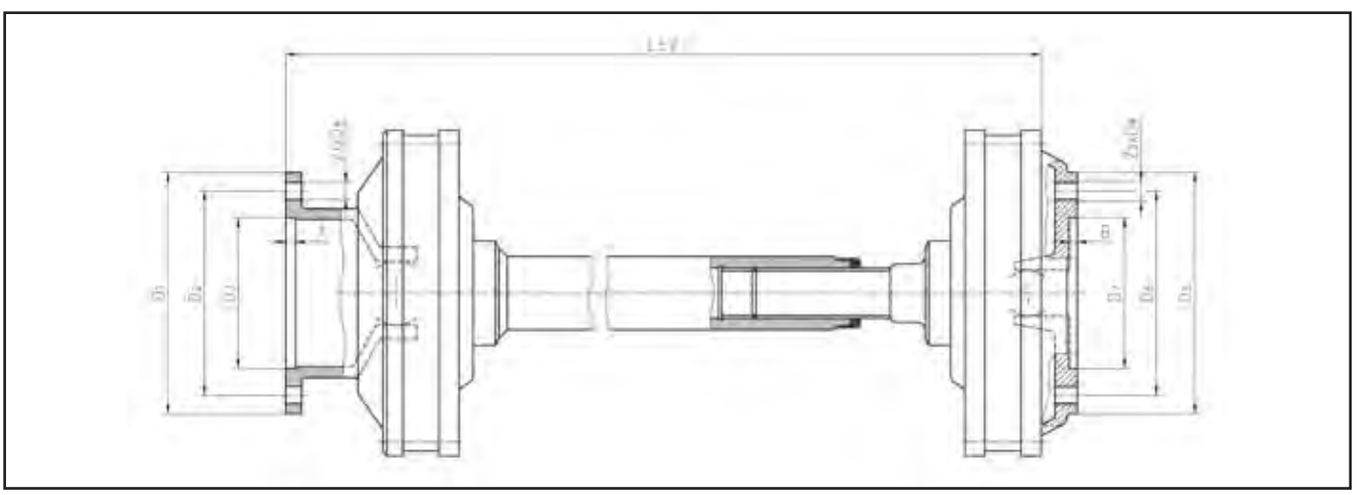
Coupling size	Element version[1)]	Nominal torque T_{KN} Nm	Maximum torque T_{Kmax} Nm	Vibratory torque[2)] $T_{KW\ (10Hz)}$ Nm	Relative damping Ψ	Dynamic torsional stiffness[3)] $C_{T\ dyn}$[*)] Nm/rad	Maximum speed n_{max} rpm
115	HN	100	250	60	0.4	135	10000
	WN				0.6	220	
140	HN	350	900	135	0.4	500	10000
	WN				0.6	800	
165	HN	600	1500	210	0.4	1150	10000
	WN				0.6	1800	
190	HN	1000	2500	330	0.4	2600	9000
	WN				0.6	3100	
225	HN	1600	4000	510	0.4	5300	8000
	WN				0.6	8000	
255	HN	2200	5500	690	0.4	5200	6000
	WN				0.6	7800	
320	HN	3750	9400	1155	0.4	13000	5000
	WN				0.6	18000	
510	HN	7500	20000	2280	0.4	23000	4000
	WN				0.6	32000	
700	HN	30000	60000	7530	0.4	105000	3000
	WN				0.6	140000	

[1)] Rubber element versions: HN = 48° Shore A; WN = 55° Shore A; alternative versions on request

[2)] Continuous vibratory torque: $\pm T_{KW}$ at f = 10 Hz. Apply $T_{KW} \cdot \sqrt{\frac{10}{f_x}}$ for other frequencies f_x

[3)] For 2-rubber-element versions (inline), apply $C_{T\ dyn2} = \frac{C_{T\ dyn}}{2}$

Selection of the proper coupling size



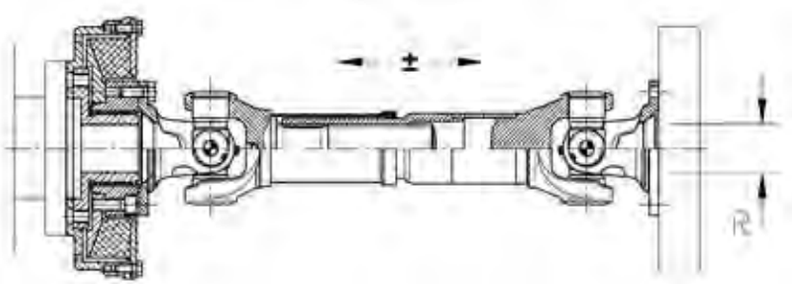
ENGINE side		**DYNAMOMETER side**		
Type		**Type**		
Engine Power P [kW]		Moment of inertia J [kgm²]		
Engine speed range n [rpm] (idle-maximum speed)		Connection dimensions (acc. above sketch)		
Maximum torque T [Nm]				
In-line / V engine (angle) (alternative: hamonic main degree)		**INSTALLATION CONDITIONS**		
Number of cylinders z		Installation length L	from	to
Total displacement V_H [ccm]		Telescoping length V	from	to
Moment of inertia J [kgm²] (engine + flywheel)		Misalignment	K_a=	K_r= K_w=
Connection dimensions (acc. above sketch)		Others		

Standard connection dimensions: DIN connections, SPICER connections, CV connections
Other connection dimensions on request.

Application examples and types of design

AC–VSK cardan shaft - Standard application

Highly fl exible coupling AC–VSK in combination with a cardan shaft for rotational speeds up to n_{max} = 7000 rpm. Seperate catalogue available.

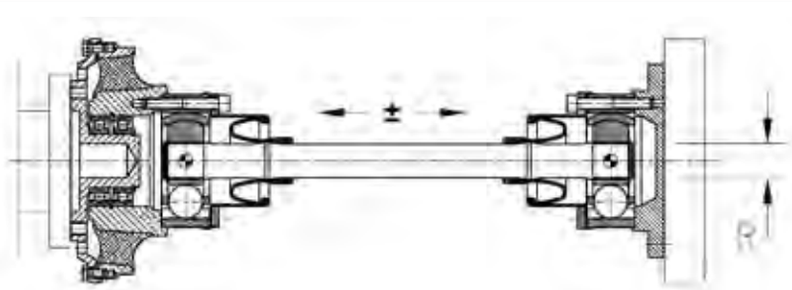


TOK–ZW with intermediate shaft

Highly flexible double element coupling TOK – ZW with intermediate shaft for length adaptation of the space between engine and dynamometer. The coupling has got a low torsional stiffness and operates in case of axial, radial and angular misalignment as a cardan shaft. Rotational speed up to n_{max} = 10000 rpm.

TOK–ZW with constant velocity shaft

Highly flexible coupling TOK–CV in combination with a constant velocity shaft for smooth running even at highest rotational speed up to n_{max} = 10000 rpm.



Technical note

The technical data applies only to the complete coupling or the corresponding coupling elements. It is the customer's/ user's responsibility to ensure there are no inadmissible loads acting on all the components. Especially existing connections, like bolt connections, have to be checked regarding the transmittable torque, if necessary other measures, e.g. additional reinforcement by pins, may be required. It is the customer's/user's responsibility to make sure the dimensioning of the shaft and keyed or other connection, e.g. shrinking or clamping connection, is correct.

REICH-KUPPLUNGEN have an extensive programme of couplings and coupling systems to cover nearly every drive configuration. Furthermore customized solutions can be developed and be manufactured also in small series or as prototypes. Calculation programmes are available for coupling selection and sizing. - Please challenge us!

Safety precautions

It is the customer's and user's responsibility to observe the national and international safety rules and laws. Proper safety devices must be provided for the coupling to prevent accidental contact.

Check all bolted connections for the correct tightening torque and fit after a short running period preferably after a test run.

Questionnaire

(Please return copy of this sheet duly filled in)

From (stamp)

Contact person: _____

Department: _____

Tel.:_____ Fax:_____

Maschinenfabrik
Dipl.-Ing. Herwarth Reich GmbH
Post box 10 20 66

D - 44720 Bochum

Inquiry: ☐ **Order:** ☐

_____

_____

General system details:

Environmental conditions/place of installation: _____

_____

Load: uniform ☐ medium shock ☐ heavy shock ☐

Ambient temperature at the coupling: _____ °C

Daily period of operation: _____ hours/day

Starting frequency: _____ per hours

Displacement:

ΔK_a:_____ mm / ΔK_r: _____mm / ΔK_w: _____ °

Input side:

Prime mover: Diesel engine / hydraulic / electric motor

Others: _____

Nominal power:_____ kW at speed: _____ rpm

Speed range: from _____to_____ rpm

Max. starting/shock torque:_____ Nm

Output side:

Driven machine: _____

Nominal power:_____kW

Max. load torque: _____ Nm

In case of uneven torque load:

from_____ to _____ Nm

Balancing: yes ☐ no ☐

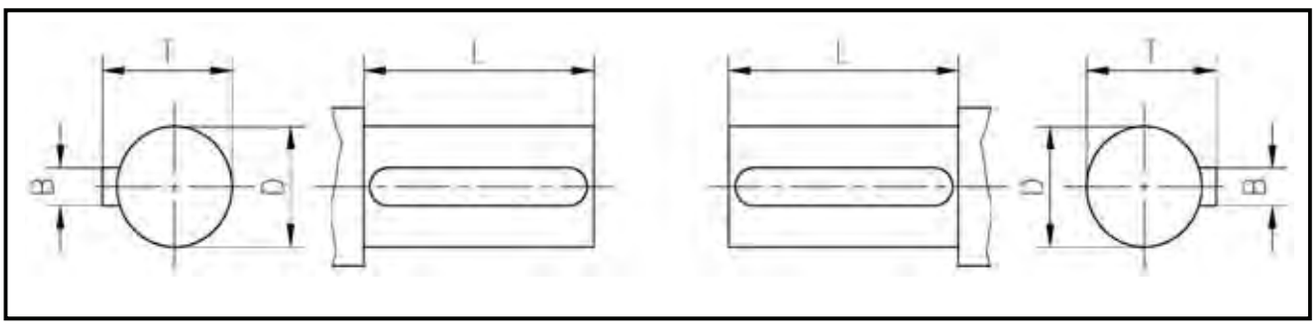
Balancing speed: _____ rpm / grade: G =_____

Balancing with keyway: yes ☐ no ☐

Annotations: _____

_____

Shaft dimensions:

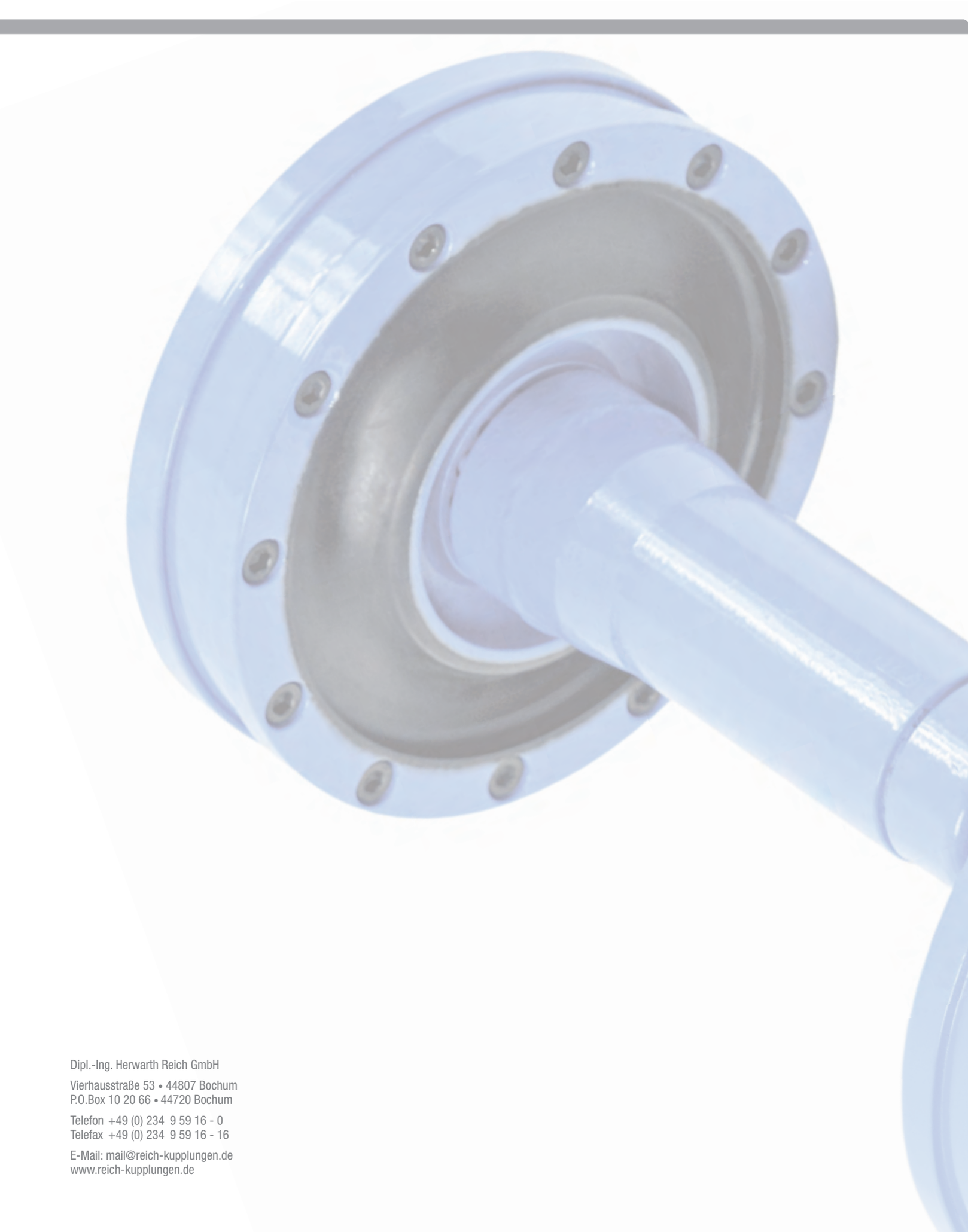


Further coupling design specifications (e.g. with brake drum/brake disc/material): _____

_____

_____

Further details of the complete system / principle sketch of installation situation:



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