

KL



Maschinenbau

With the **EGGERS Dynamometer**
we make modern engine technology measurable.



NEW!
EGGERS-Dynamometer
PT 302

2023/24 Product Overview

EGGERS dynamometer, Software,
Consumption meters, Special test stands

Preface

As the KL-Maschinenbau GmbH & Co. KG, we are the European leader in the development and manufacture of power test stands for agricultural machines and engines. We are your specialist for the production and distribution of the internationally known, mobile PTO-brake EGGERS-Dynamometer.

Our products are used world-wide by well-known tractor manufacturers in the final inspection, training, and development. Numerous schools and research facilities, as well as a huge number of agricultural machine dealers rely on our products.

Beginning with the EGGERS dynamometer, a complete product range for customers in the field of engine technology has been developed over the years. Adapted to the requirements of the market, consumption meters, which are compatible with the EGGERS dynamometer, have been developed. These devices are convincing in terms of accuracy, handling, and economy.

Our "PowerControl" software is the perfect complement to our products and makes the work with it easier. In addition to logging tasks, the software can take control of the test stand and automatically determine the performance curve of the connected tractor. When the consumption meter is connected, the actual consumption data of the engine are also displayed in the software and can be viewed in relation to the full load curve.

In addition to the serial production of our tried and tested products, the construction of special test stands has become an important core of KL-Maschinenbau in recent years. Worldwide, customers from various industries, as well as technical colleges and other research facilities, rely on our knowledge and our products in this field.

At the production site in Rendsburg, highly qualified and experienced specialists are working in classical mechanical engineering, as well as in the latest methods and products. The experience, gained in more than 30 years of development and realization, as well as the involvement of experienced specialists of tractor and engine manufacturers and professors of technical colleges, promote a continuous adaptation to technical progress. Special designs of test stands are realized in close consultation with the customer according to their requirements.

Further solutions and products can be found in this product brochure or on the Internet at:

www.kl-maschinenbau.de

MADE IN GERMANY



Die Qualitätsmanagement-Norm ISO 9001 ist die national und international am weitesten verbreitete Norm im Qualitätsmanagement (QM).

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Software

Our software "PowerControl" offers the perfect addition to our products. It simplifies the work with the dynamometers and the consumption meters of KL-Maschinenbau.



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Consumption meters

Our consumption meters are the perfect addition to our test stands. They are, in addition to the compatibility with our dynamometers and our software, above all simple to operate and very precise.



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Special Test stands

Numerous manufacturers rely on our know-how in this area.



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PT 170

Dynamometer 300 kW



PT 170 SE



PT 170 E

PTO dynamometer PT 170

The EGGERS Dynamometer PT 170 impresses with its compactness. It also finds its place in workshops where spatial capacities are limited. It is available as mobile workshop version (PT 170 E), as well as on 80 km/h chassis (PT 170 SE).

With a performance range of up to 300 kW (408 HP) for a rapid test and 170 kW (231 HP) for a full load curve, the Dynamometer PT 170 already covers a large part of the tractors on the market.

Technical data	PT 170
Model variants	PT 170 E: Workshop version, mobile PT 170 SE: Road version, on chassis 80 km/h
Braking system	1 retarder (eddy current brake, wear-free)
Cooling medium	High performance electric fan (approx. 8500 m ³ /h)
Measuring range at 1000 min-1 and 20°C	Quick test: 300 kW (408 HP) Full load curve: 170 kW (231 HP)
<i>The measuring time depends on the size of the tractor and location.</i>	
max. speed	2500 1/min (optionally 3600 1/min)
max. torque	3600 Nm
Accuracy	< 1%
Display	digital display, speed, torque, Power in kW and HP
Strain gauge sensor	temperature compensated as standard
Rotation	in both directions as standard
Power supply	230 V, 16 A
Materials	Frame made of galvanized steel; hood made of GRP
Dimensions and weight	PT 170 E: L: 900 mm; B: 1000 mm; H: 1500 mm; Weight 525 kg PT 170 SE: L: 2350 mm; B: 1600 mm; H: 1350 mm; Weight 850 kg
Standard accessories	operating instructions, connection plug
Optional accessories	PTO shaft 1 3/4" 6T – 1 3/8" 6T, PTO half shaft 1 3/8" 21T, PTO half shaft 1 3/4" 20T, PTO half shaft 1 3/4" 6T, Tarpaulin, Software: "PowerControl" Bluetooth or cable connection to the PC, Fuel consumption measurement



1. PT 170 E

2. The extendable support foot is monitored by the electronics and ensures the necessary safety.



PT 302

Dynamometer 600 kW



PTO dynamometer PT 302

The EGGERS dynamometer PT 302 model series impresses with its great versatility and high braking performance. Thanks to the 3 different model variants, the customer can choose the dynamometer that is most suitable for their workshop:

- Mobile road version: PT 302 S
- Workshop version, stationary screwed: PT 302 W
- Mobile workshop version: PT 302 M

Our PT 302 series, with its 600 kW (816 HP) for the quick test and 340 kW (462 HP) for the full load curve, covers almost all tractor types currently on the market and some harvesting machines.

Technical data	PT 302
Model variants	PT 302 S: Road version, on chassis PT 302 M: Mobile workshop version PT 302 W: Workshop version, stationary screwed
Braking system	2 retarders (eddy current brakes, wear-free)
Cooling medium	Electric high-performance fans (approx. 17000 m³/h)
Measuring range at 1000 min-1 and 20°C	Quick test: 600 kW (816 HP) Full load curve: 340 kW (462 HP)
<i>The measuring time depends on the size of the tractor and location.</i>	
max. speed	2500 1/min (optionally 3600 1/min)
max. torque	7200 Nm
Accuracy	< 1%
Display	digital display, speed, torque, Power in kW and HP
Strain gauge sensor	temperature compensated as standard
Rotation	in both directions as standard
Power supply	400V/230 V, 16 A
Materials	Frame made of galvanized steel, hood made of GRP
Dimensions and weight	PT 302 S: L: 3650 mm; B: 1800 mm; H: 1670 mm; 1500 kg PT 302 M: L: 1830 mm; B: 1060 mm; H: 1500 mm; 1150 kg PT 302 W: L: 1810 mm; B: 730 mm; H: 1540 mm; 1098 kg
Standard accessories	operating instructions, connection plug, PTO shaft support (PT 302 S only), compartment for control panel (PT 302 S only), shock absorbers (PT 302 S only)
Optional accessories	PTO shaft 1 3/4" 6T – 1 3/8" 6T, PTO half shaft 1 3/8" 21T, PTO half shaft 1 3/4" 20T, PTO half shaft 1 3/4" 6T, Tarpaulin (only for workshop versions), Software: "PowerControl" Bluetooth or cable connection to the PC, Accessories for direct engine measurement, Fuel consumption measurement Double-Axle chassis





PT 401

Dynamometer 900 kW



PTO dynamometer PT 401

The EGGERS dynamometer PT 401 covers the complete spectrum of all performance classes for both tractors and harvesters.

Whether in the practical box trailer as the PT 401 K for mobile use, or stationary as the workshop version PT 401 W – you will get a lot of performance with this dyno. With a power of 900 kW (1224 HP) for the quick test and 510 kW (694 HP) for a full load curve, you can handle any engine.

Equipped with a torque measuring shaft in the drive train, the highest levels of accuracy are achieved. With this dynamometer you are also prepared for the future in terms of precision and performance. With ever performance increasing agricultural machinery and the growing demands on performance test benches, an EGGERS dynamometer PT 401 is certainly the first choice for future-oriented companies.

Technical data	PT 401
Model variants	PT 401 K: Road version, on chassis PT 401 W: Workshop version
Brake system	3 retarders (eddy current brakes, wear-free)
Cooling medium	Electric high-performance fans (approx. 17000 m³/h)
Measuring range at 1000 min-1 and 20°C	Quick test: 900 kW (1224 HP) Full load curve: 510 kW (694 HP)
<i>The measuring time depends on the size of the tractor and location.</i>	
max. speed	2500 1/min (optionally 3600 1/min)
max. torque	9000 Nm
Accuracy	0,5% of the measured value
Display	digital display, speed, torque, Power in kW and HP
Transducer	torque sensor, rotating, contactless
Rotation	in both directions as standard
Spannungsversorgung	400V/230 V, 16 A
Materials	Frame made of galvanized steel; walls made of Multiplex, aluminum
Chassis (PT 401 K)	tandem chassis with automatic reversing system, 2-wing rear door, welded frame hot-dip galvanized, foldable automatic support wheel, 2 handles, fender supports, lockable stainless-steel closure, storage space for PTO shaft and PTO shaft halves
Dimensions and weight	PT 401 K: L: 3900 mm; B: 1750 mm; H: 2000 mm; Weight: 2100 kg, permissible total weight: 2700 kg, PT 401 W: L: 2400 mm; B: 1300 mm; H: 1600 mm; Weight 1800 kg
Standard accessories	operating instructions, connection plug
Optional accessories	PTO shaft 1 3/4" 6T – 1 3/8" 6T, PTO half shaft 1 3/8" 21T, PTO half shaft 1 3/4" 20T, PTO half shaft 1 3/4" 6T; Tarpaulin (only for workshop version), Software: "PowerControl" Bluetooth or cable connection to the PC; Accessories for direct engine measurement, Fuel consumption measurement





PT 501

Dynamometer 500 kW / 735 kW



PTO dynamometer PT 501

Dynamometer for continuous power up to 500 kW on the PTO shaft and up to 735 kW at engine speed

The EGGERS dynamometer PT 501 G was designed as a performance brake for long-term measurements and covers a large part of the tractors and harvesters available on the market, both in the usual performance measurements as well as in long-term load cycles.

With a continuous power of up to 500 kW at PTO speed and optionally up to 735 kW at engine speed, a wide range of applications can be implemented.

Equipped with a torque measuring shaft in the drive train, the highest levels of accuracy are achieved. To achieve the continuous running load, an alternator is used as the braking medium in this model, which directs the electricity generated to large load resistors and converts it into heat that can be easily dissipated.

The very high continuous braking performance of this EGGERS dynamometer remains constant and does not drop. In addition, the brake can be switched off (hot shut down) directly after the test – without after-cooling.

Technical data	PT 501 G	PT 501 G+
Model variants	PT 501 GS: Road version, on chassis PT 501 GW: Workshop version PT 501 GM: Modular workshop version	
Brake system	alternator and load resistors	
Cooling medium	4 high performance electric fans	
Measuring range at 1000 min-1 and 20°C	Any power up to 680 HP (500 kW) permanently	
Measuring range at 1800 min-1 and 20°C	Any power up to 680 HP (500 kW) permanently	Any power up to 1000 HP (735 kW) permanently
max. speed	2200 1/min	
max. torque	4750 Nm	
Accuracy	0,5% of the measured value	
Display	digital display, speed, torque, power in kW and HP	
Transducer	torque sensor, rotating, contactless	
Rotation	in both directions as standard	
Power supply	230 V, 16 A	
Materials	Frame made of galvanized steel, hood made of GRP and aluminium	
Dimensions and Weight	PT 501 GS: L: 4600 mm; B: 2050 mm; H: 1900 mm; 2600 kg, Permitted total weight: 3000 kg PT 501 GW: L: 3000 mm; B: 1400 mm; H: 1600 mm; 2800 kg PT 501 GM: 2 modules – dimensions configurable	
Standard accessories	operating instructions, PTO shaft support, compartment for control panel, storage space for PTO shaft and PTO shaft halves	
Optional accessories	PTO shaft 1 3/4" 6T – 1 3/8" 6T, PTO half shaft 1 3/8" 21T, PTO half shaft 1 3/4" 20T, PTO half shaft 1 3/4" 6T; Software: "PowerControl" Bluetooth or cable connection to the PC, Accessories for direct engine measurement, fuel consumption measurement	



1. Very large load resistors for consistently high performance
2. Roller shutters and a practical side flap enable perfect accessibility
3. Easily accessible spindle supports for secure set up
4. A support for the PTO shaft simplifies coupling



Software

Power Control

We offer our "Power Control" software with all dynos. In addition to documentation tasks, the software also takes over complete control of the EGGERS dynamometer and automatically carries out customer-specific measurements.

Automatic measurement

The "Power Control" software enables an automatic test process via the "Automatic Measurement" function to obtain comparable measurement results and performance curves. The intelligent evaluation, which runs in the background during the measurement, enables a precise analysis of the tractor's performance parameters and ends the measurement accurately and fully automatically after both the maximum power and the maximum torque have been documented.

Special measurement

With the help of special measurement, it is possible to create an automatic test sequence according to your own wishes directly in Power Control. Any points can be approached. When speed or torque values and the associated holding times are specified, this sequence is carried out automatically. The special measurement can also be used for long-term tests, as a speed value can be specified for, for example, one hour and then maintained automatically.

Compatible with consumption meters

When using one of our consumption meters, the consumption can also be measured at the same time as the performance curve and displayed in the software.



Data transfer

Data is transferred directly to the PC/laptop via Bluetooth connection or USB cable. Updates are available for download free of charge. All Windows based systems are supported.

Compensation of weather data

By entering the current weather data, the performance is extrapolated according to standards to obtain comparable measurement results. In this way, the factory specifications of the tractor, which are based on the same standards, are checked.

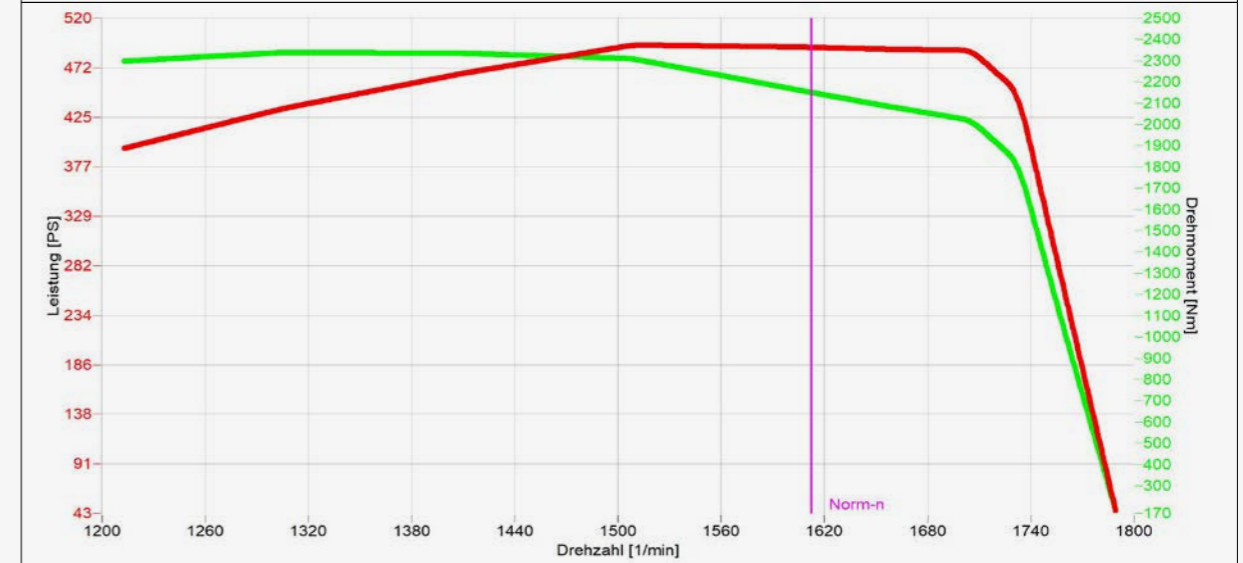
Software for special test benches

For special test benches, customers usually have their own wishes and ideas in software concerns. We are happy to offer individual adjustments to our software in this area. To ensure compatibility with customers' existing systems, completely new software solutions are also possible.

Testprotokoll		KL-Maschinenbau Büsumer Str. 73 - 75 24768 Rendsburg	
Auftragsnummer	13112023-3		
Auftraggeber	Kunde 001		
Datum / Zeit	13.11.2023	09:45:07	
Prüfer			



Typ	Fahrzeugnummer	Betriebsstunden	Baujahr	Drehzahlverhältnis	
Beispieltyp 9123	5302305118	128	2023	1790:1110	
maximale Leistung [PS]	bei Drehzahl [upm]	maximales Drehmoment [Nm]	bei Drehzahl [upm]	Nenn Drehzahl	Luftdruck [mbar]
494.00	1503	2338.00	1300	1700	
Bemerkungen		Drehmomentanstieg [%]	Ansaugtemperatur		
		15.80			



	DZ	DZ ZW	DM	Leist.	Bem.
	[upm]	[upm]	[Nm]	[PS]	
1	1790	1110	7	2	
2	1753	1087	1057	264	
3	1727	1071	1824	449	
4	1700	1054	2019	489	
5	1650	1023	2087	490	
6	1601	993	2159	492	
7	1503	932	2309	494	
8	1405	871	2334	467	
9	1300	806	2338	433	
10	1201	745	2294	392	

EGGERS Dynamometer					Unterschrift
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Consumption meters

Our consumption meters are a useful addition to our PTO dynamometers. These work on all tractor engines currently on the market. They can be used both in interaction with our EGGERS dynamometers and independently.

Fuel consumption meters



AdBlue consumption meter



Fuel consumption meter FCM-100

The mobile fuel consumption meter FCM-100 is a fuel consumption meter developed for installation in vehicles and stationary engines.

Despite the small size, an accuracy of less than 1% is achieved. The electronics are housed in an additional housing and connected to the measuring device via cable. Alternatively, the evaluation electronics can be omitted, and an evaluation is carried out via the connection to the EGGERS dynamometer.

Fuel consumption meter FM3-100

The FM3-100 is a stationary fuel consumption meter. With an integrated cooler, the intervention in the system remains as low as possible to consistently generate precise measured values. The built-in pump for venting the system further simplifies handling. Here too, the evaluation can alternatively be carried out directly via the EGGERS dynamometer.

AdBlue consumption meter ABM 90

Rising urea costs are also turning it into an economic factor that can no longer be neglected. The AdBlue consumption meter ABM 90 is designed for use on the EGGERS dynamometer. It enables a precise recording of the AdBlue consumption during the performance measurement.

Special test stands

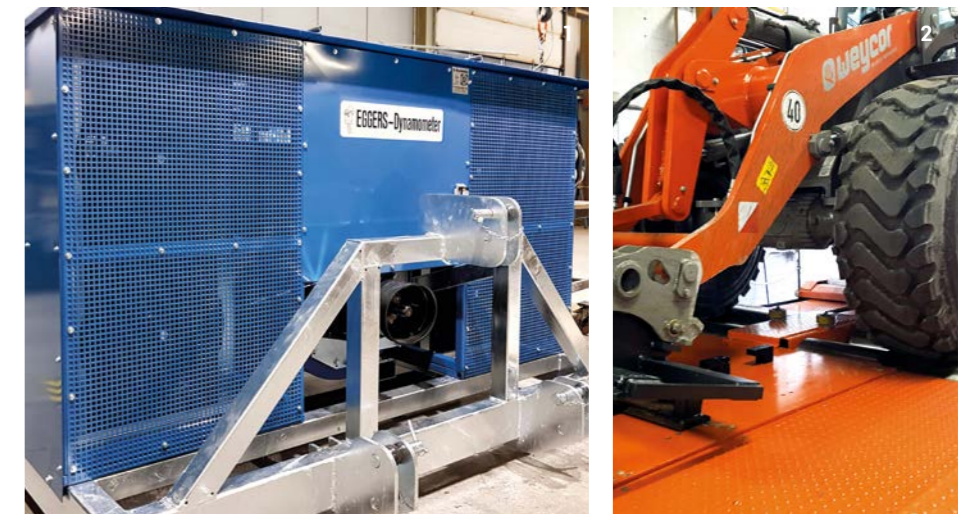


Special test stands

In addition to the various models of EGGERS dynamometers that are serial-produced at KL-Maschinenbau, the manufacturer also offers individual solutions.

Numerous manufacturers of agricultural and construction machinery rely on special test benches from KL-Maschinenbau. Our products can be found in the experimental and testing departments as well as in the final inspection.

Our specialty are test benches for measuring torque, speed and thus performance. The scope of application here is very broad; a measurement can be carried out on practically any rotating shaft. The torque range can be between 1 and 50,000 Nm. Speed measurements and controls for all common speeds can be implemented.



1. Mobile 500 kW continuous performance test bench: The 3-point mount enables measurements while driving.
2. Roller test bench for the testing department of a wheel loader manufacturer
3. Mobile dynamometer based on the PT 302. The 3-point mount enables measurements while driving.



KL-Maschinenbau GmbH & Co. KG

Büsumer Straße 73 – 75
24768 Rendsburg, Germany
Tel: +49 4331 8685880
info@kl-maschinenbau.de

Dealer list

With the help of the dealer directory, you can find a trading partner in your area:

Australia

Diesel Tune NZ
625 Halswell Junction Road,
Hornby South, Christchurch

Telephone: 0508 886 348
Mobile: 021 283 4401 (+64)
Email: craig@dieseltunenz.co.nz
Web: <https://www.dieseltunenz.co.nz/>

Belgium

Verolub NV, Mr. Yves Lefèvre
Klaverbladstraat 2A
B - 3560 lumens

Telephone: 0032/01346 0800
Email: y.lefevre@verolub.be
Web: www.verolub.be

Brazil

Dipl.-Ing. Gerd Henrique Keese
Caixa Postal 413
96010-971 Pelotas RS Brasil

Telephone: 0055/ 53 8109 2390
Mobile: 0055/ 31 8608 2069
Email: henrique@dinamometro-eggert.com
Web: www.dinamometro-eggert.com

China

Chongqing Santuy Technology Co, Ltd

Telephone: 0086/ 23 67285551
Email: dynos@santuy.com
Web: www.kl-maschinenbau.cn

Germany, Denmark, Austria and Italy

Christiansen factory representatives
Dorfstraße 28
24977 Grundhof

Telephone: 0049/ 0 463 6976 8150
Mobile: 0049/ 0 17 1731 3775
Email: gerd.christiansen@t-online.de

England

Lynx engineering - Nick Ewbank
Wharf Works Long Buckby
Northampton NN6 7PP

Telephone: 0044/ 1327 843215
Email: info@lynx-engineering.co.uk
Web: <https://lynx-engineering.co.uk/category/dynamometers/>

Estonia, Latvia and Lithuania

Animo LTD
Parka Str. 21
LV-4701 Valka

Telephone: 0037/ 1 2941 5678
Email: animo@apollo.lv
Web: <https://www.animold.lv/lv>

France

Eggers France
3 Rue des Puits Gingsheim
67270 Wingersheim les 4 bans

Telephone: 03.88.96.79.20
Email: contact@eggertfrance.fr

Ireland

Eggers Agri Dynamometers
Mr. Kevin Killeen
Clonfeight Inch
Co. Clare Ennis, Ireland

Telephone: 00353/ 87 3711 156
Email: kkillenagri@gmail.com
Web: <https://www.eggert-agridynamometers.ie/>

Netherlands

Dijkstra Technical Support
Mr. Johan Dijkstra
Noordermeerweg 49c
8313 PW Rutten

Telephone: 0031/ 52726 2957
Email: info@dijkstratechnicalsupport.nl
Web: www.dijkstratechnicalsupport.nl

New Zealand

Diesel Tune NZ
625 Halswell Junction Road,
Hornby South, Christchurch

Telephone: 0508 886 348
Mobile: 021 283 4401 (+64)
Email: craig@dieseltunenz.co.nz
Web: <https://www.dieseltunenz.co.nz/>

Poland

Truck Serwis Robert Pliszka
Ul. W. Witosa 98
76-251 Kobylnica

Telephone: 0048/ 5984 10906
Mobile: 0048/ 6016 48613
Email: truck_serwis@wp.pl

Switzerland

Rolf Kettl
Federal dipl. Master agricultural
machinery mechanic
Bunde 324
4233 Meltingen CH

Mobile: 0041/ 79 407 93 54
Email: info@kettl-tech.ch
Web: www.kettl-tech.ch

