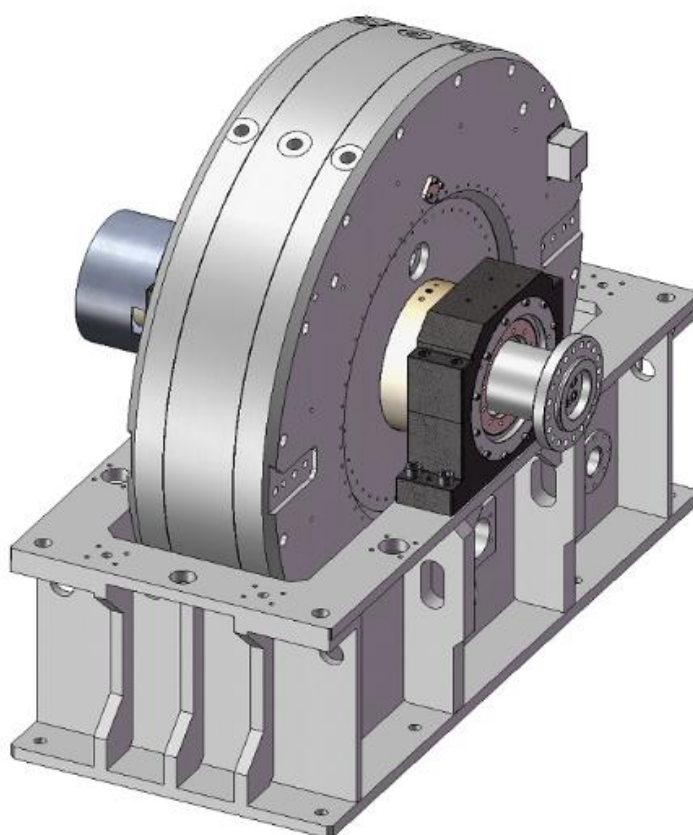


~Advanced Test System and Test Bench Engineering Professional~

Tokyo Plant Co., Ltd.

Product catalog



Eddy Current Dynamometer



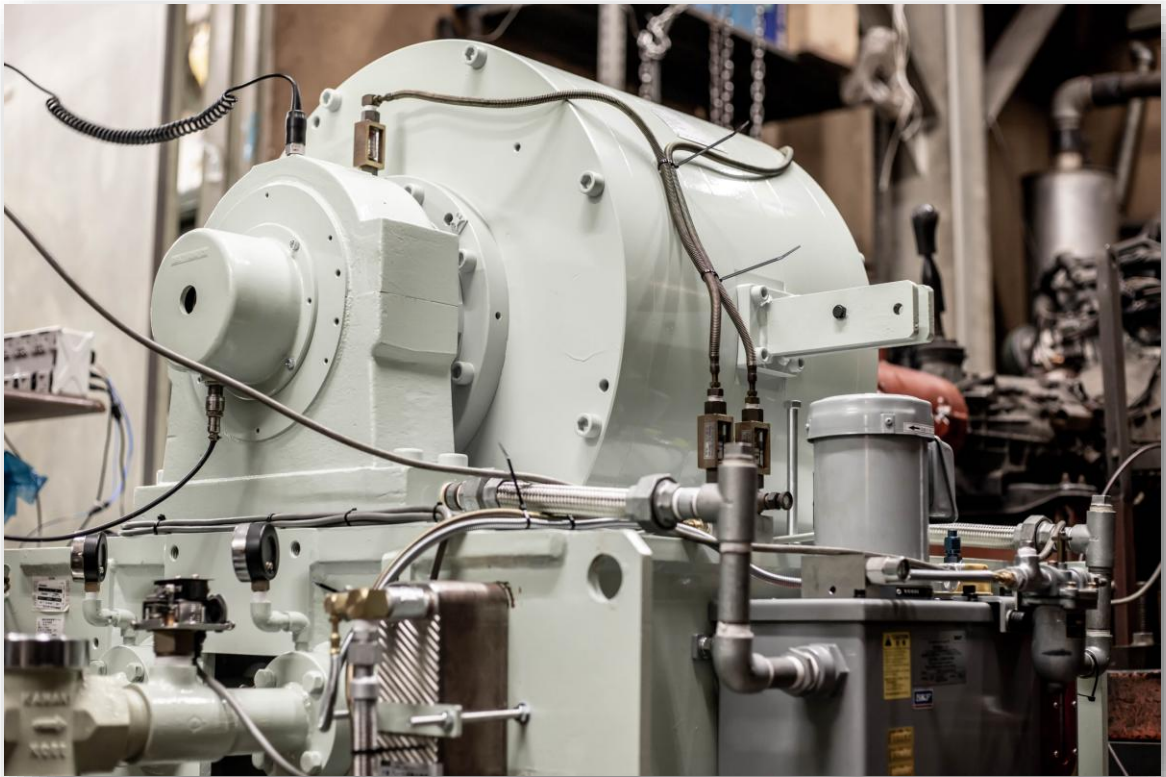
TOKYO PLANT Co., Ltd.
東京プラント株式会社

Last update 2026/08/13

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■ Overview

Our eddy current dynamometers offer high accuracy and exceptional durability, and are widely adopted by customers both in Japan and overseas.



■ Product Lineup

We offer one of the widest product lineups in Japan, covering capacities from 2.2 kW to 1,800 kW.

■ Track Record

Total units delivered: Over 1,000
Delivery regions:
Japan and more than 10 overseas countries

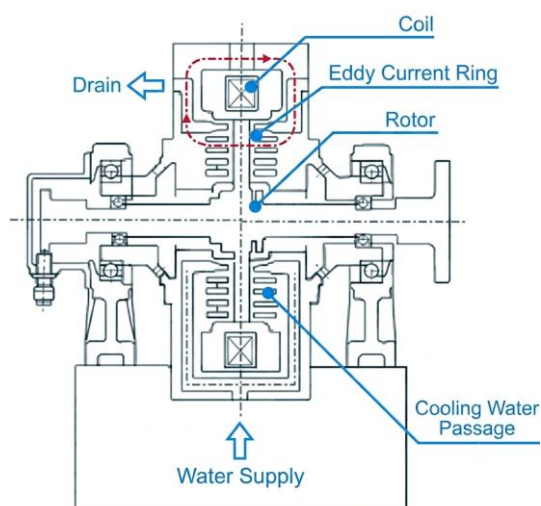
■ Major Customers (in no particular order)

Yanmar, Kubota, Mitsubishi Heavy Industries, IHI Shibaura, Hitachi, Kanzaki Kogyokoki, Shinko Engineering, Kawasaki Heavy Industries, CAT, Davies, Osaka Gas, Tokyo Gas, Makita, Honda R&D, SUBARU, Mitsubishi Motors, Aisin Seiki, Komatsu Zenoah, Showa Shell Sekiyu, General Sekiyu, Cosmo Oil, Panasonic, Bridgestone, Exedy, Mitsuboshi Belting, Daido Kogyo, Bando Chemical, Enuma Chain, JFE Technos, ACR, TYK, Ono Sokki, Unitta, The University of Tokyo, Chiba University, Tokyo University of Technology, Kogakuin University, Kyushu Institute of Technology, various other universities and technical colleges, domestic and international research institutions, racing teams, the Japan Ground Self-Defense Force, the Japan Maritime Self-Defense Force Technical School, and the U.S. Navy Atsugi Base, among others.
(Over 300 companies in total)

■ Key features

High performance	- With a low moment of inertia, our dynamometers enable highly repeatable testing with values equivalent to—or closely matching—those of actual engines and vehicles. - Speed, torque, and current control modes are provided as standard features. - The product lineup covers ultra-compact to large-capacity units, including high-speed and high-torque models. - In the event of overspeed or insufficient lubrication, an alarm signal is output, and relay contacts can also be accessed.
Compact Lightweight	- The required installation footprint is very small. - The weight of the same model has been reduced by 30% compared with the previous generation.
Easy operation	- Rotational speed and torque are provided as standard digital displays. - Analog voltage outputs for speed and torque are also available. - To prevent incorrect cable connections, all interfaces use connector-based wiring.
A wide range of optional features (paid option)	- With an automatic control system, the dynamometer supports constant-speed control, constant-torque control, and programmed operation. - It can also be used in a vertical installation orientation. - The center height can be customized according to your requirements. - Anchor-bolt positions for the dynamometer frame can also be manufactured to meet your specifications.

■ Principle of operation and product structure



- When current is supplied to the ring-shaped coil fixed to the casing, it generates an electromagnetic flux path as shown by the arrows.
- As the gear-shaped rotor interrupts this flux path, eddy currents are produced, generating braking force. The heat generated during this process is removed by cooling water flowing through the inside of the casing.
- The braking force attempts to rotate the casing, and this reaction torque is measured by a load cell.

■ Main application of the products

Engine Performance Testing

Evaluation of output, torque, efficiency, and overall performance characteristics of various engines.

Durability and Endurance Testing

Long-duration operation to assess wear, reliability, and lifecycle performance.

Emission and Environmental Testing

Measurement and analysis of exhaust emissions under controlled load conditions.

Research and Development

Use in OEM and academic R&D facilities for prototype evaluation, calibration, and advanced engineering studies.

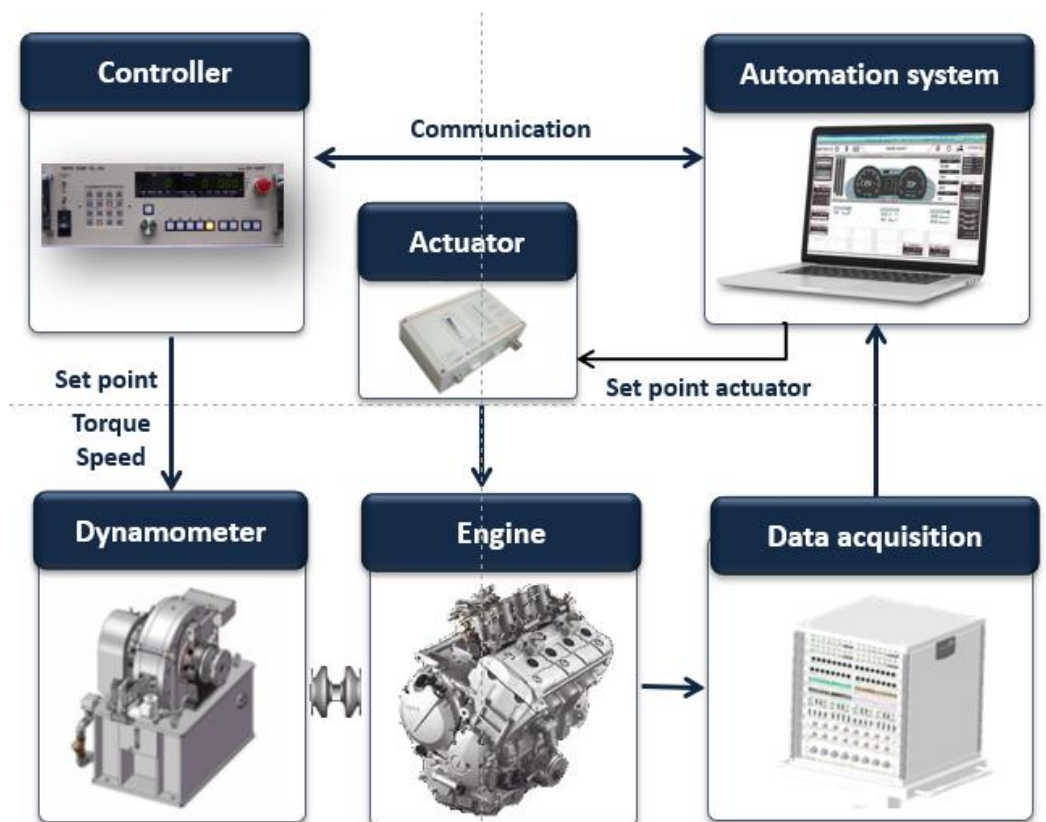
Quality Assurance and Production Line Testing

Verification of engine performance during manufacturing and final inspection.

Maintenance and Overhaul Facilities

Performance checks and diagnostics for large engines after overhaul or repair.

■ Typical system configuration

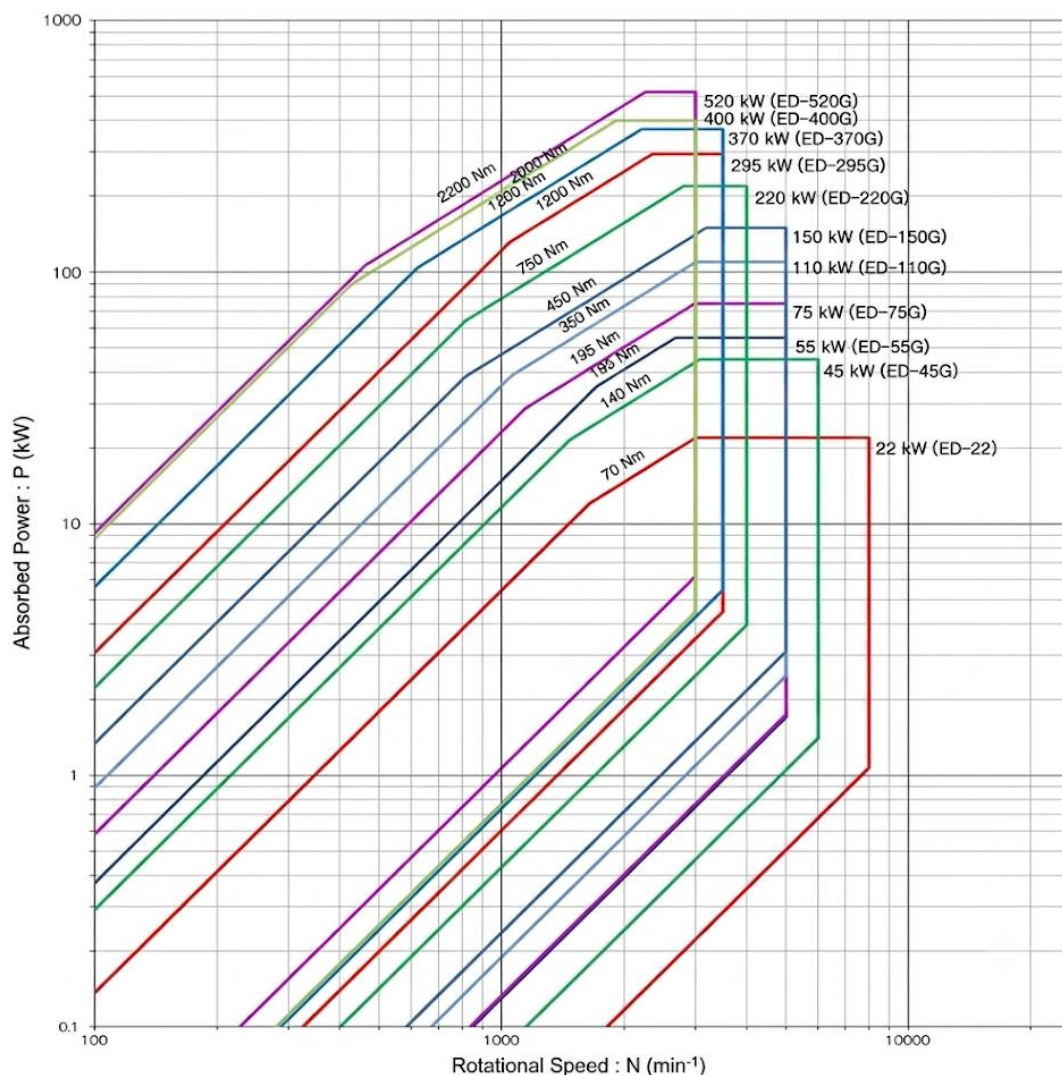


We are able to propose the optimal dynamometer, measurement system, and auxiliary equipment tailored to each customer's needs. If required, we can also support the selection of automation systems, data-acquisition sensors, test bench layout, shafts, and dampers. Please feel free to contact our Sales Department with your requirements. We will provide the most suitable proposal that aligns with your budget and technical expectations.

■ Product lineup

○ED-G type /(Reversible Type: Supports bidirectional rotational control)

This series offers an ideal lineup for testing small to medium-sized diesel engines.



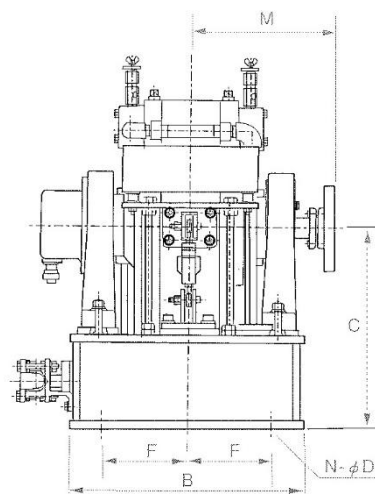
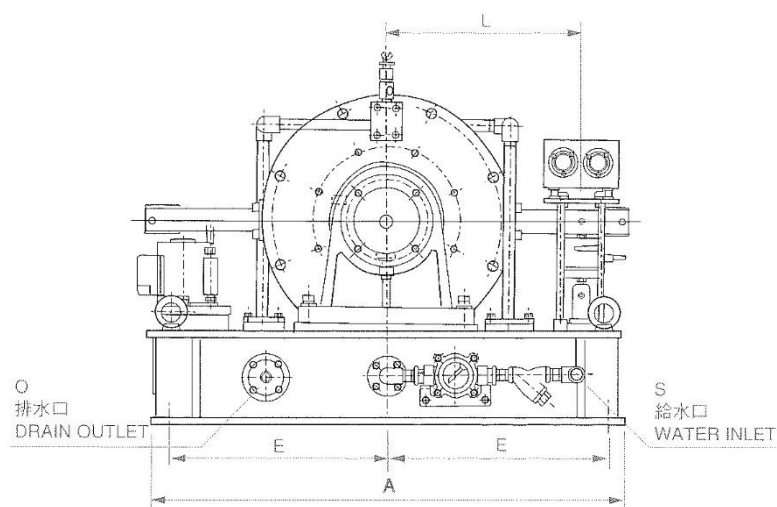
Model	Max power kW	Max torque Nm	Max speed min ⁻¹	Constant Torque range N.m	Moment of inertia kg.m ²	Required Water volume L/min
ED-22G	22	70	8,000	1,648~3,001	0.0105	12
ED-45G	45	140	6,000	1,470~3,069	0.025	24
ED-55G	55	196	5,000	1,717~2,679	0.0225	30
ED-75G	75	240	5,000	1,146~2,984	0.0375	40
ED-110G	110	350	5,000	1,059~3,001	0.0825	60
ED-150G	150	450	5,000	814~3,183	0.1175	80
ED-220G	220	750	4,000	814~2,801	0.25	120
ED-295G	295	1200	3,500	1050~2,347	0.625	160
ED-370G	370	1,600	3,500	620~2,208	0.8675	200
ED-400G	400	2,000	3,000	428~1,909	1	220
ED-520G	520	2,200	3,000	463~2,257	1.11	280

※Cooling Water Flow: Theoretical water supply volume calculated at a supply temperature of 30 °C and a discharge temperature of 60 °C.

※Specification Changes: Specifications are subject to change without prior notice due to improvements or updates.

■ Product lineup

○ED-G type : Dry weight and principal dimensions



Model	Weight Kg	Principle dimensions									
		A	B	C	E	F	L	M	N-φD	S(A)	O(A)
ED-22G	250	700	360	300	325	155	286.8	227	4-20	10	40
ED-45G	350	760	400	350	355	175	286.5	270	4-20	15	40
ED-55G	300	710	400	350	325	140	300	263	4-20	20	25
ED-75G	500	820	420	400	375	175	358.1	295	4-22	20	25
ED-110G	600	820	420	400	375	150	358.1	275	4-22	25	32
ED-150G	700	840	550	500	380	200	358.1	303	4-22	25	40
ED-220G	1,150	1,100	620	600	500	200	477.5	380	4-24	40	40
ED-295G	1,400	1,260	720	650	600	300	500	455	4-24	40	40
ED-370G	1,500	1,160	720	650	545	280	477.5	457	4-24	50	50
ED-520G	2,000	1,350	760	700	620	280	700	480	4-24	50	50

※Weight: Determined according to the base-frame specifications.

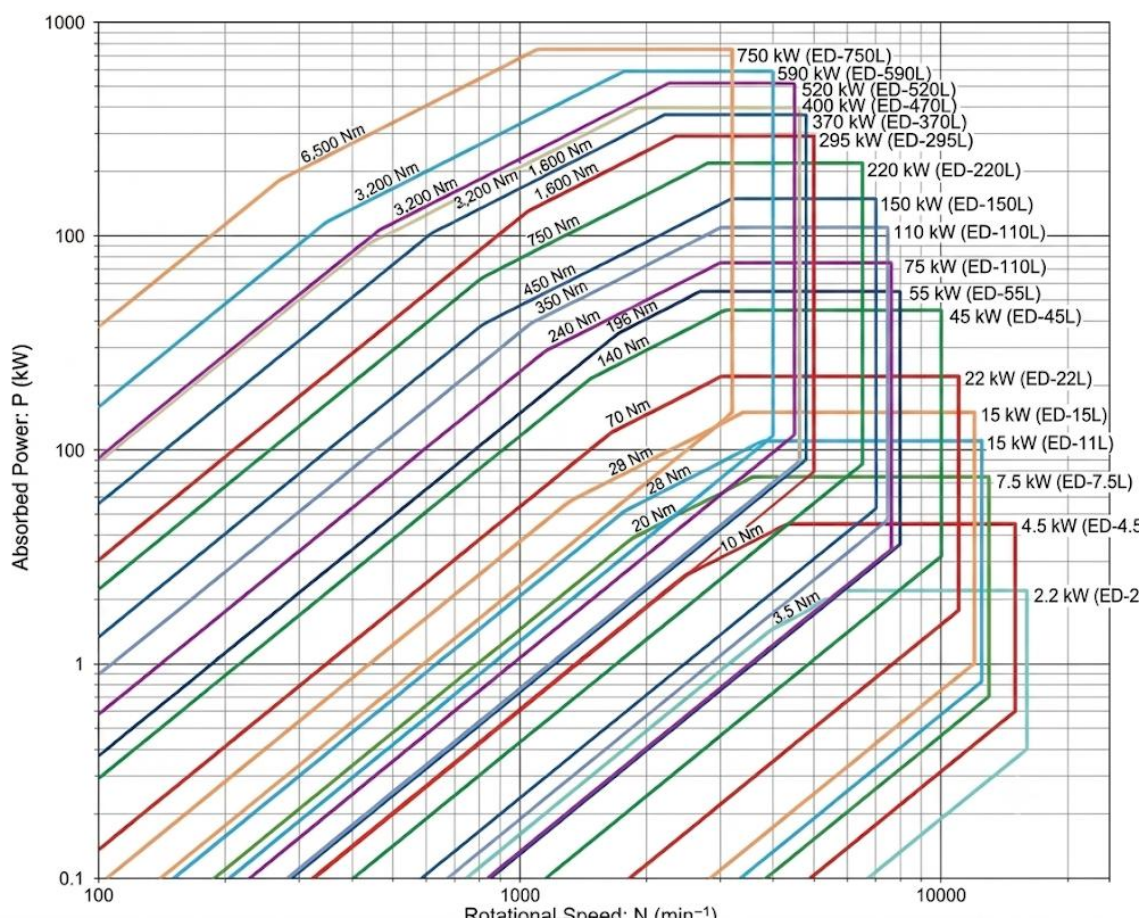
※Specification Changes: Specifications are subject to change without prior notice due to improvements or updates.

Standard Accessories	• Dynamometer main unit and mounting frame • Cooling-water discharge temperature sensor • Cooling-water flow meter
Paid options	• Dynamometer controller • Coupling flange on the dynamometer side • Calibration tools (required for dynamometer verification) • Custom center-height options beyond the standard frame specification • Bearing temperature sensor • Coil temperature sensor • Cooling-water inlet temperature sensor

■ Product lineup

○ED-L type /(Reversible Type: Supports bidirectional rotational control)

This product lineup is ideally suited for testing small to medium-sized diesel engines, as well as other diesel-based power units.



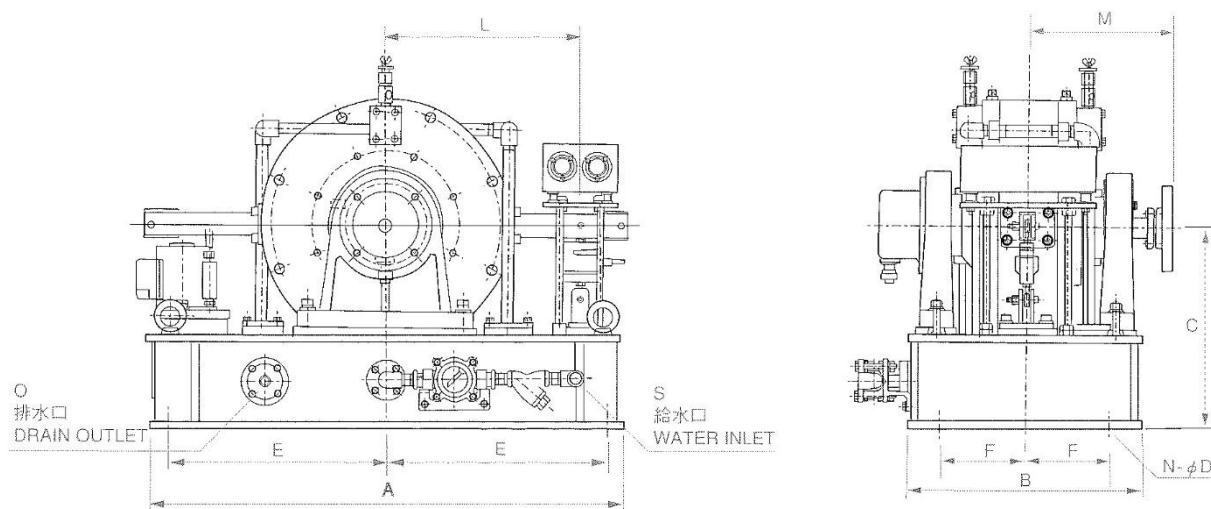
Model	Max power kW	Max torque Nm	Max speed min ⁻¹	Constant Torque range N.m	Moment of inertia kg.m ²	Required Water volume L/min
ED-2.2L	2.2	3.5	16,000	3,963~6,002	0.00017	1.2
ED-4.5L	4.5	10	15,000	2,443~4,297	0.00025	2.4
ED-7.5L	7.5	20	13,000	1,839~3,580	0.0025	4
ED-11L	11	28	12,500	1,786~3,751	0.0040	6
ED-15L	15	42	12,000	1,316~3,410	0.0053	8
ED-22L	22	70	11,000	1,648~3,001	0.0105	12
ED-45L	45	140	10,000	1,470~3,069	0.025	24
ED-55L	55	196	8,000	1,717~2,679	0.0225	30
ED-75L	75	240	7,600	1,146~2,984	0.0375	40
ED-110L	110	350	7,500	1,059~3,001	0.0825	60
ED-150L	150	450	7,000	814~3,183	0.1175	80
ED-220L	220	750	6,500	814~2,801	0.25	120
ED-295L	295	1,200	5,000	1,050~2,347	0.625	160
ED-370L	370	1,600	4,800	620~2,208	0.8675	200
ED-400L	400	2,000	4,600	428~1,909	1	220
ED-520L	520	2,200	4,500	463~2,257	1.11	280
ED-590L	590	3,200	4,000	346~1,760	1.8375	320
ED-750L	750	6,500	3,200	270~1,101	9.6	400

※Cooling Water Flow: Theoretical water supply volume calculated at a supply temperature of 30 °C and a discharge temperature of 60 °C.

※Specification Changes: Specifications are subject to change without prior notice due to improvements or updates.

■ Product lineup

○ED-L type : Dry weight and principal dimensions



Model	Weight Kg	Principle dimensions									
		A	B	C	E	F	L	M	N-φD	S(A)	O(A)
ED-2.2L	100	470	310	300	210	140	160	175	4-14	8	20
ED-4.5L	120	470	310	300	210	140	170	190	4-14	8	20
ED-7.5L	150	620	332	300	240	150	215	195	4-14	10	25
ED-11L	180	620	310	300	290	135	215	200	4-14	10	40
ED-15L	200	620	310	300	290	135	215	205	4-14	10	40
ED-22L	250	700	360	300	325	155	286.8	227	4-20	10	40
ED-45L	350	760	400	350	355	175	286.5	270	4-20	15	40
ED-55L	300	710	400	350	325	140	300	263	4-20	20	25
ED-75L	500	820	420	400	400	175	358.1	295	4-22	20	25
ED-110L	600	820	420	400	375	150	358.1	275	4-22	25	32
ED-150L	700	840	550	500	380	200	358.1	303	4-22	25	40
ED-220L	1,150	1,100	620	600	500	200	477.5	380	4-24	40	40
ED-295L	1,400	1,260	720	650	600	300	500	455	4-24	40	40
ED-370L	1,500	1,160	720	650	545	280	477.5	457	4-24	50	50
ED-520L	2,000	1,350	760	700	620	280	700	480	4-24	50	50
ED-590L	3,800	1,580	800	700	750	300	406	680	6-24	50	65
ED-750L	6,000	1,700	800	800	400	320	800	525	8-24	65	65

※Weight: Determined according to the base-frame specifications.

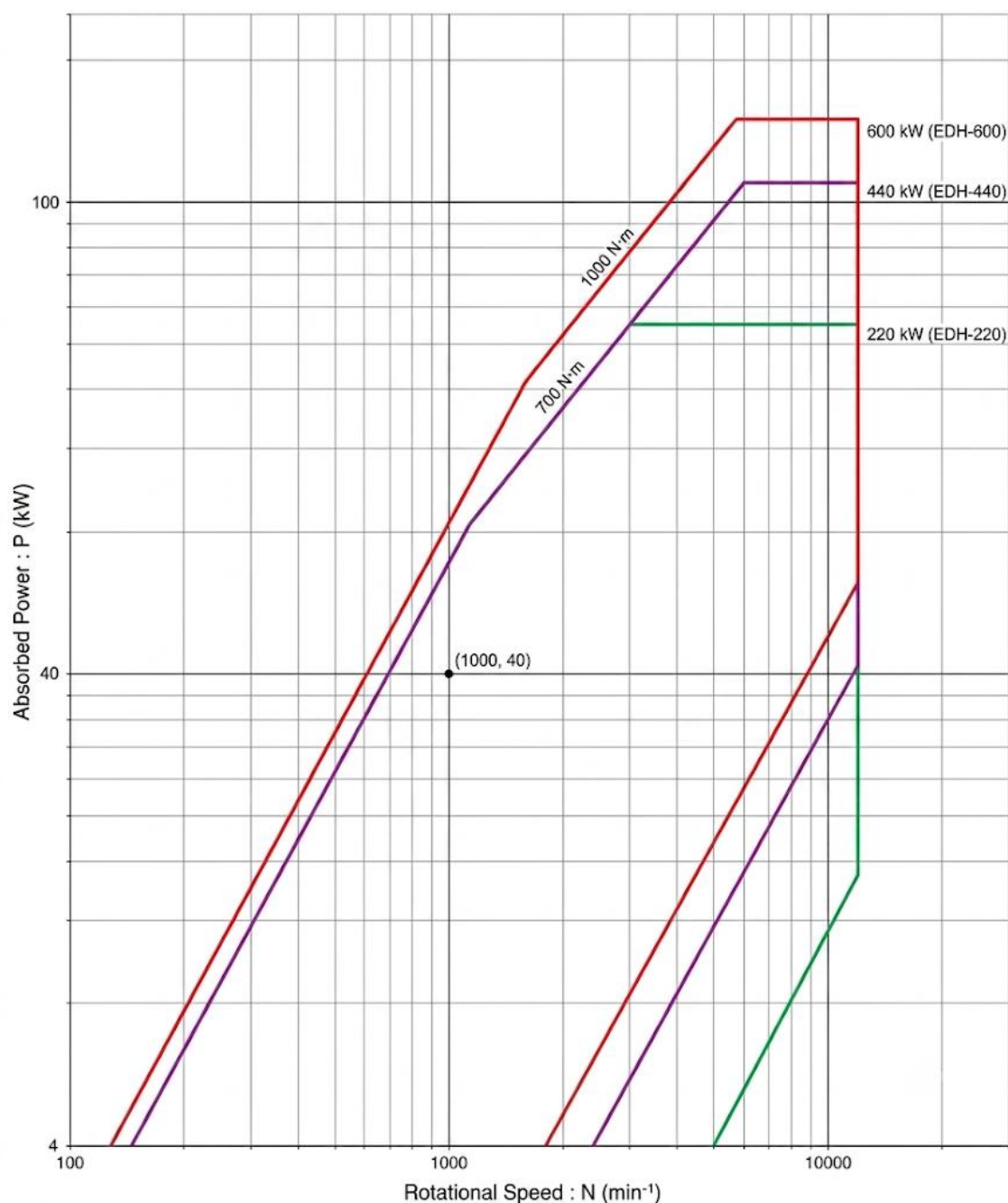
※Specification Changes: Specifications are subject to change without prior notice due to improvements or updates.

Standard Accessories	• Dynamometer main unit and mounting frame • Cooling-water discharge temperature sensor • Cooling-water flow meter
Paid options	• Dynamometer controller • Coupling flange on the dynamometer side • Calibration tools (required for dynamometer verification) • Custom center-height options beyond the standard frame specification • Bearing temperature sensor • Coil temperature sensor • Cooling-water inlet temperature sensor

■ Product lineup

○EDH type /(Reversible Type: Supports bidirectional rotational control)

This product lineup is ideally suited for testing small to medium-sized diesel engines, Racing engines as well as other diesel-based power units.



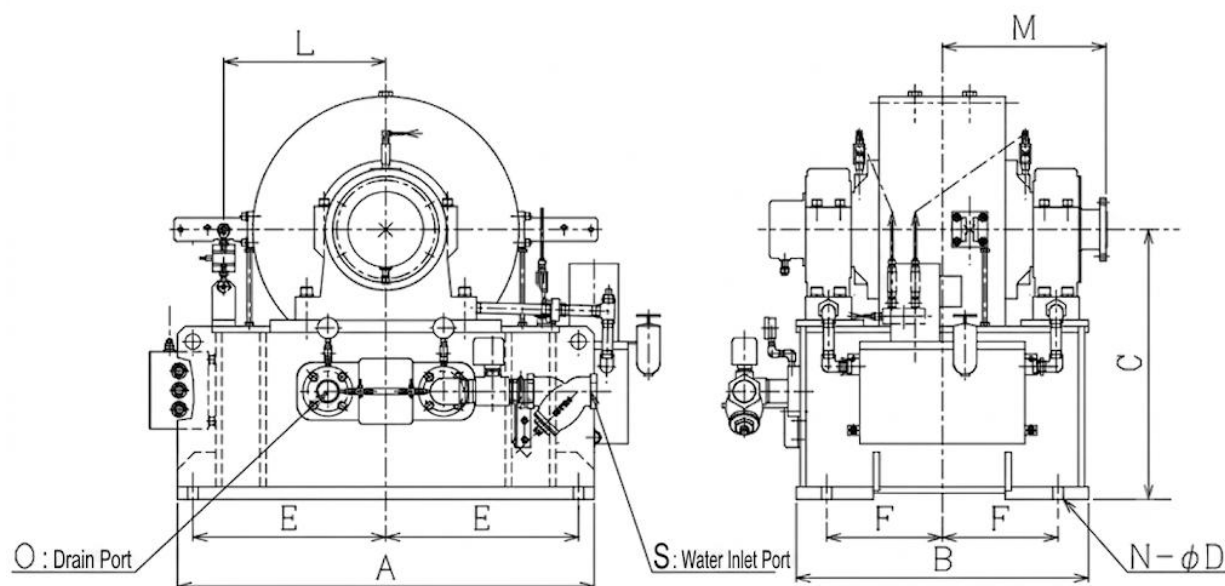
Model	Max power kW	Max torque Nm	Max speed min ⁻¹	Constant Torque range N.m	Moment of inertia kg.m ²	Required Water volume L/min
EDH-220	220	700	12,000	1,137 ~ 3,001	0.21	120
EDH-440	440	700	10,000	1,137 ~ 6,002	0.32	240
EDH-600	600	1,000	10,000	1,597 ~ 5,730	0.47	320

※Cooling Water Flow: Theoretical water supply volume calculated at a supply temperature of 30 °C and a discharge temperature of 60 °C.

※Specification Changes: Specifications are subject to change without prior notice due to improvements or updates.

■ Product lineup

○EDH type : Dry weight and principal dimensions



Model	Weight Kg	Principle dimensions									
		A	B	C	E	F	N- ϕD	L	M	S(B)	O(B)
EDH-220	1,000	870	800	500	400	365	4-24	360	363	40	40
EDH-440	1,500	1,080	758	700	500	300	4-27	420	424	50	50
EDH-600	2,000	1,080	900	700	500	350	4-27	420	495	50	50

※Weight: Determined according to the base-frame specifications.

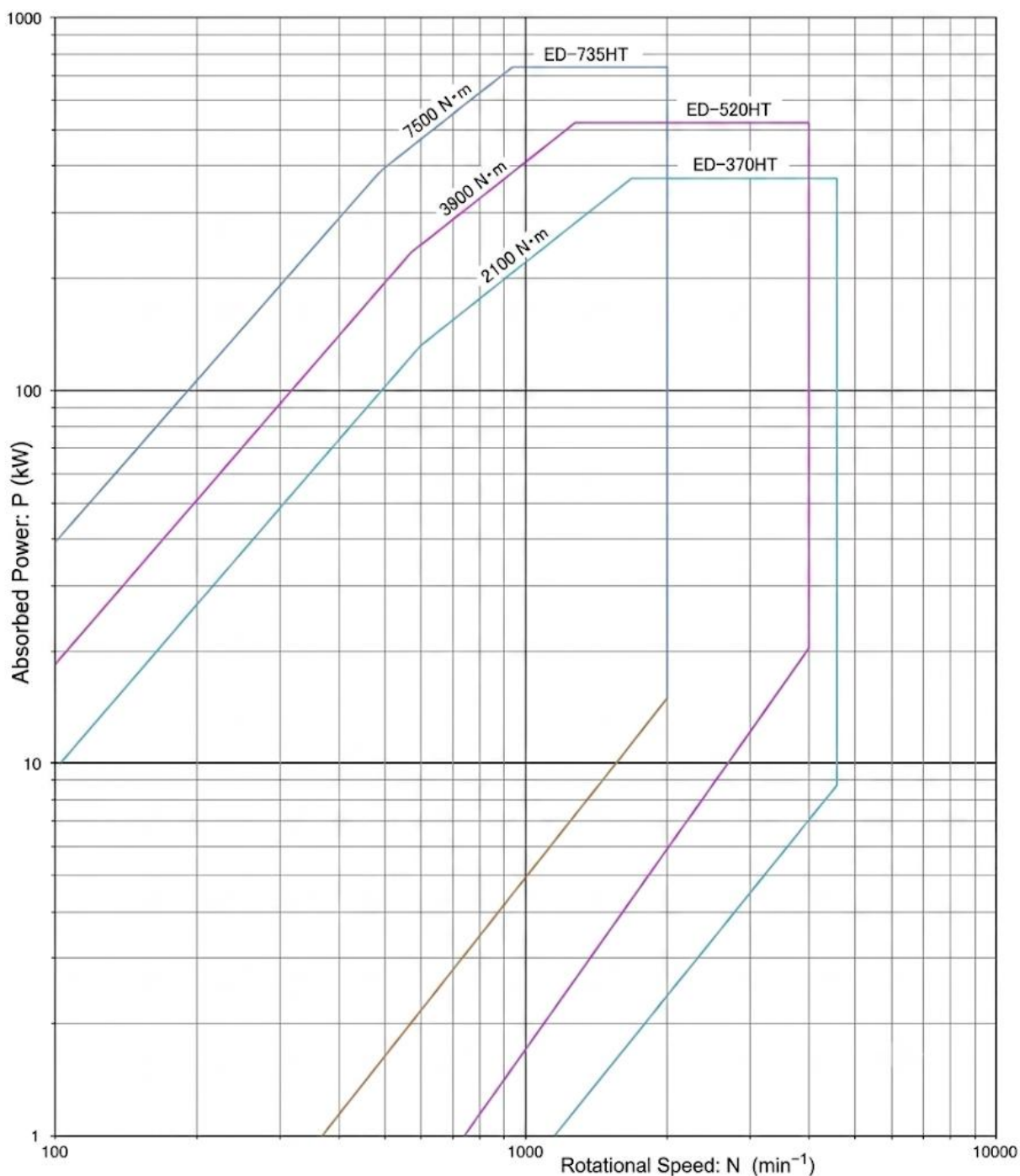
※Specification Changes: Specifications are subject to change without prior notice due to improvements or updates.

Standard Accessories	• Dynamometer main unit and mounting frame • Cooling-water discharge temperature sensor • Cooling-water flow meter
Paid options	• Dynamometer controller • Coupling flange on the dynamometer side • Calibration tools (required for dynamometer verification) • Custom center-height options beyond the standard frame specification • Bearing temperature sensor • Coil temperature sensor • Cooling-water inlet temperature sensor

■ Product lineup

○ED-HT type /(Reversible Type: Supports bidirectional rotational control)

This product lineup is ideally suited for testing small to medium-sized diesel engines, as well as other diesel-based power units.



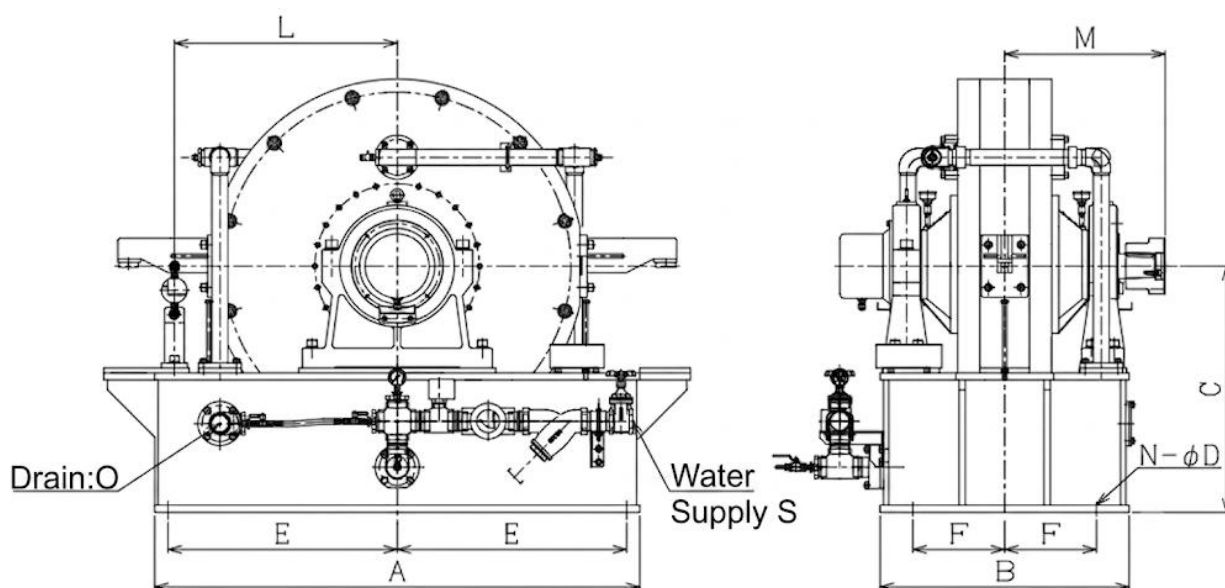
Model	Max power kW	Max torque Nm	Max speed min ⁻¹	Constant Torque range N.m	Moment of inertia kg.m ²	Required Water volume L/min
ED-370HT	370	2,100	5,500	598 ~ 1,682	1.04	200
ED-520HT	520	3,900	4,000	568 ~ 1,273	1.84	280
ED-735HT	735	7,500	2,000	492~936	9.8	390

※Cooling Water Flow: Theoretical water supply volume calculated at a supply temperature of 30 °C and a discharge temperature of 60 °C.

※Specification Changes: Specifications are subject to change without prior notice due to improvements or updates.

■ Product lineup

○ED-HT type : Dry weight and principal dimensions



Model	Weight Kg	Principle dimensions									
		A	B	C	E	F	N-φD	L	M	S(B)	O(B)
ED-370HT	2,500	1,000	720	745	450	250	4-24	555.6	474	50	50
ED-520HT	3,000	1,480	760	750	700	280	4-24	680	490	50	50
ED-735HT	6,500	1,740	800	800	820	350	8-28	800	550	65	65

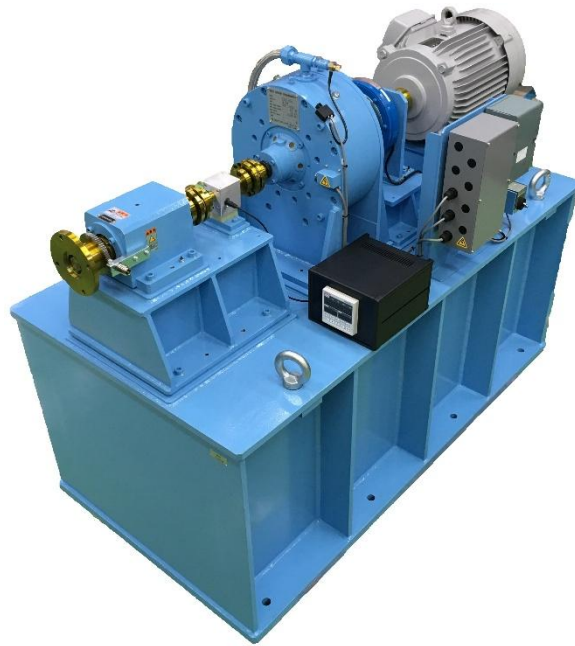
※Weight: Determined according to the base-frame specifications.

※Specification Changes: Specifications are subject to change without prior notice due to improvements or updates.

Standard Accessories	• Dynamometer main unit and mounting frame • Cooling-water discharge temperature sensor • Cooling-water flow meter
Paid options	• Dynamometer controller • Coupling flange on the dynamometer side • Calibration tools (required for dynamometer verification) • Custom center-height options beyond the standard frame specification • Bearing temperature sensor • Coil temperature sensor • Cooling-water inlet temperature sensor

■ Custom specifications

○ EDB type



This non-reaction (non-swing) type eddy-current dynamometer uses a torque flange instead of a load cell, enabling high-accuracy torque measurement. (The measurement accuracy varies depending on the manufacturer and specifications of the torque flange.) It is ideally suited for emission-related testing conducted by off-road engine manufacturers, such as NRTC transient cycles.

The dynamometer main unit can be selected from our existing product lineup.

○ ED-M type



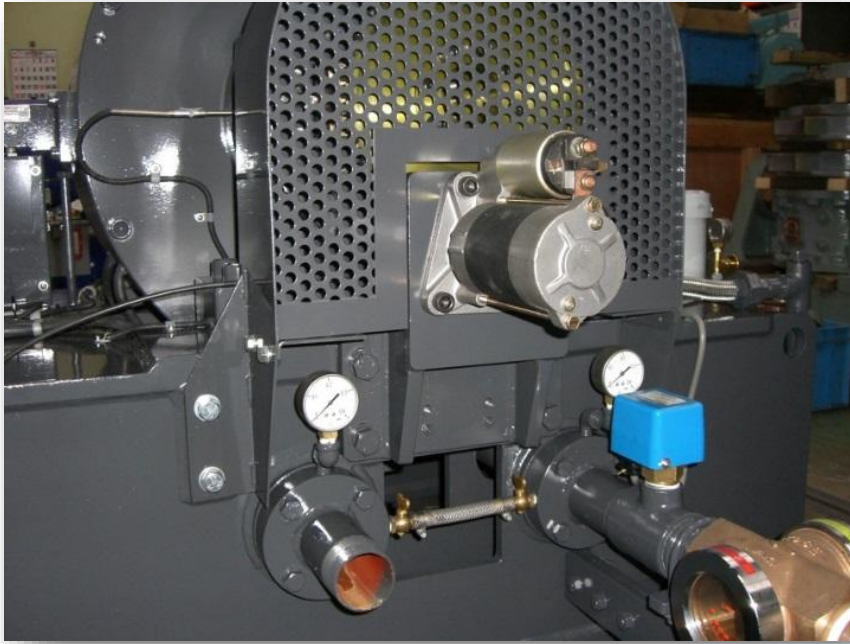
The rear side of the eddy-current dynamometer can be connected to a motor via an electromagnetic clutch.

The motor output specifications can be defined according to customer requirements. This configuration is ideal for motoring tests, cranking tests, and noise-and-vibration evaluations, as well as hot and cold testing.

The dynamometer main unit can be selected from our standard product lineup.

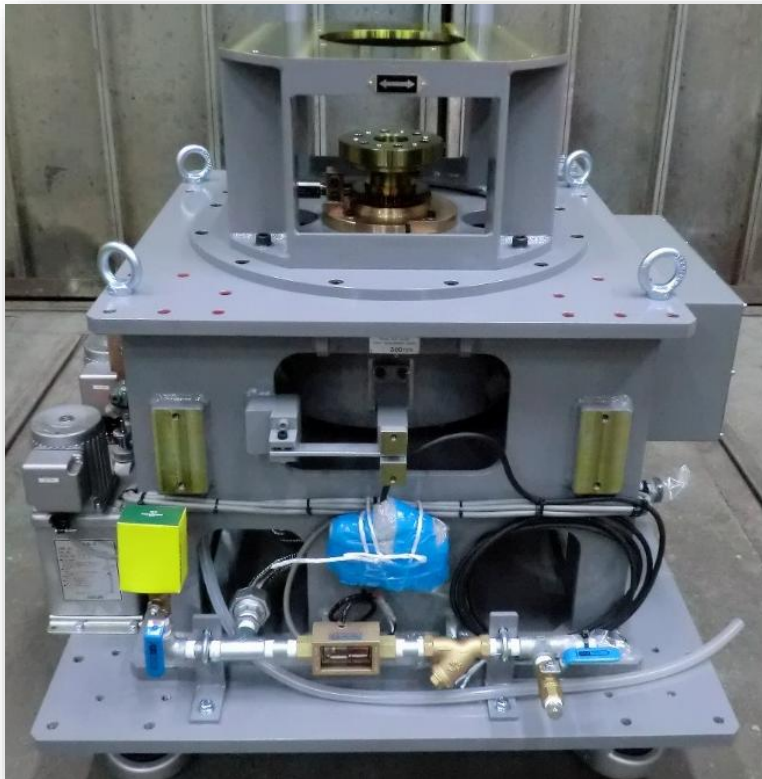
■ Custom specifications

○ED-S type



A starter motor can be mounted on the rear side of the eddy-current dynamometer. The starter motor output specifications can be defined according to customer requirements. It is also possible to install the customer's own vehicle-mounted starter motor. The dynamometer main unit can be selected from our standard product lineup.

○ED-V type



The eddy-current dynamometer can be installed in a vertical orientation and connected directly to the unit under test(UUT). Optional accessories include shaft couplings and mounting stands for the UUT. The dynamometer main unit can be selected from our standard product lineup.

■ Custom specifications

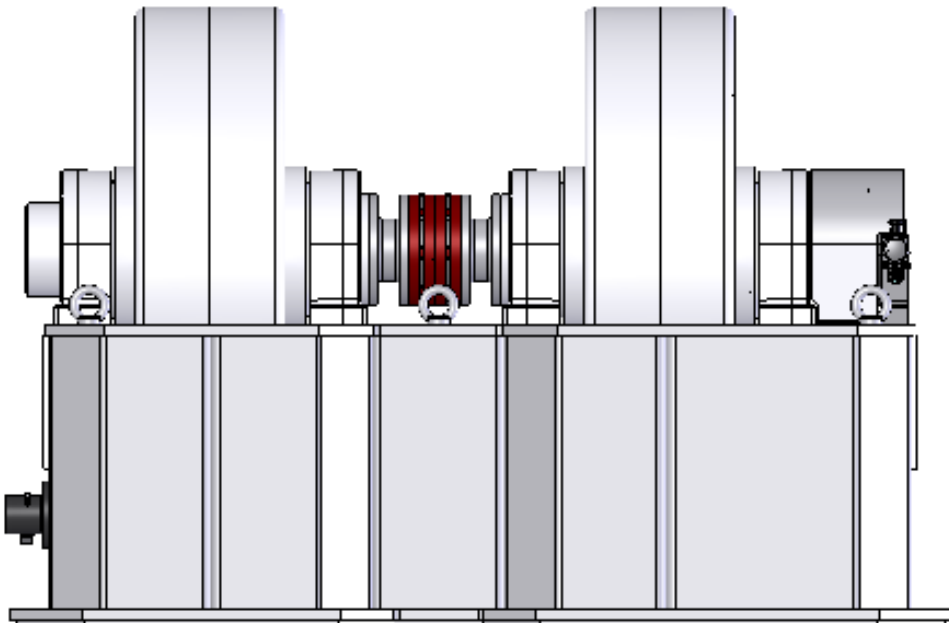
○ED-B type



We also have experience manufacturing custom eddy-current dynamometers with capacities exceeding 750 kW.

All manufacturing specifications are defined according to the customer's requirements.

○Tandem Machine



Two eddy-current dynamometers can be connected in parallel to accommodate testing of large engines.

All manufacturing specifications are defined according to the customer's requirements.

The dynamometer main unit can be selected from our standard product lineup.

■ Lineup of Optional Products

○Dynamometer controller(Automatic type)



○Outline

This controller is a dedicated unit for eddy-current dynamometer.

It serves as a measurement and feedback-control system for testing with eddy-current dynamometer. The controller includes functions for measuring rotational speed and torque, manual or automatic control of the test specimen's speed and torque, and alarm functions for detecting and handling system abnormalities.

○Main specifications

Model	DY-1000T
Control mode	Manual Control: Torque and speed are controlled based on the potentiometer settings adjusted manually by the operator. Constant-Speed Control: Feedback control is executed to maintain the specified rotational speed. Constant-Torque Control: Feedback control is executed to maintain the specified torque. External Control: Automatic operation is performed via an external automation system.
Accuracy	Constant-Speed Control: $\pm 5 \text{ min}^{-1}$ Constant-Torque Control: Within $\pm 0.3\%$ F.S. <i>Note: Depending on the condition of the engine and dynamometer, PID tuning settings, cooling-water pressure, and external disturbances, the actual control accuracy may fall outside the specified range.</i>
Alarm set and monitor	Emergency Stop: Stops control operation when an abnormal condition occurs and the emergency stop button is activated. Overspeed Monitoring: Monitors the upper limit of the dynamometer's maximum rotational speed. Overload Monitoring: Monitors the upper limit of the dynamometer's maximum torque capacity. Cooling-Water Inlet Temperature: Monitors the dynamometer cooling-water temperature (30°C). Cooling-Water Discharge Temperature: Monitors the dynamometer discharge-water temperature (60°C). Bearing Temperature: Monitors the dynamometer bearing temperature (80°C). External Alarm Input: Monitors external connected equipment via contact-signal input.
Input/Output	Analog Voltage Input/Output (DC 0–10 V)
Power supply	Three-phase AC 200 V, 50/60 Hz, 13 A
Main	Main Unit Only: W480 mm×H150 mm×D350 mm (Cabinet-mounted type) With Case: W500 mm × H193 mm × D350 mm
Weight	Main Unit: Approx. 10 kg

■ Paid Optional Products

○Automation system MORPHEE



MOPRHEE main screen (Reference)

Product Overview

This system provides essential functions for test benches, including data acquisition, programmed operation, and test-sequence configuration. In addition to these core capabilities, it implements a comprehensive set of advanced features such as automation, integration with ECU calibration workflows, and real-time model execution on the test bench.

These functions enhance the reliability of testing on the bench and contribute to reducing workload in bench testing, vehicle testing, and calibration processes.

MORPHEE is developed and distributed by ENORISE.

○Sensor terminal box (MIO)



Product Overview

In engine and drivetrain bench testing, highly robust and scalable I/O modules are essential.

The sensor relay box allows flexible configuration of modules and signal types—such as temperature, pressure, analog, digital, and contact signals—based on the customer's specific requirements.

○Product Overview

We provide various utilities required for test benches according to customer requirements.

To reduce engine torsional vibration, we also perform optimal selection of shafts and dampers.



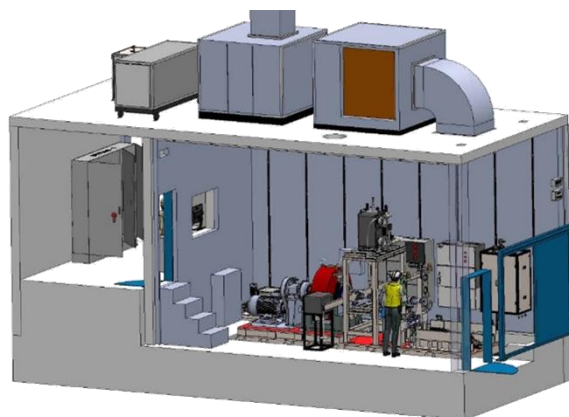
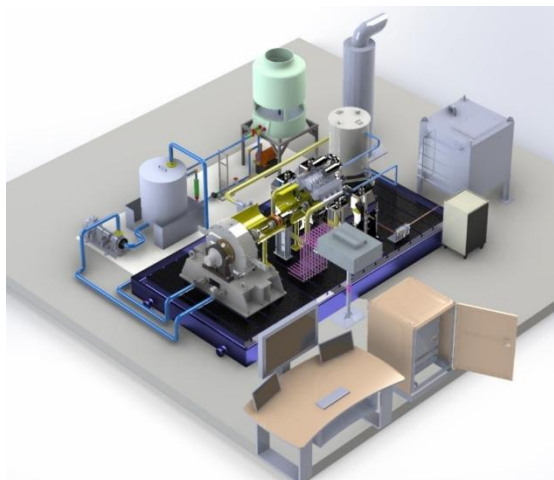
Engine Mounts and Mobile Universal Base



Shafts, Dampers, Custom Adapters, and Safety Covers for Shafts

■ Turn-key project

This solution is ideal for customers who are pressed for time due to daily research and development activities, or whose development teams require significant manpower, resulting in a high workload for facility engineers and a greater need for outsourcing various tasks. We participate from the customer's planning stage to support the entire process.



- ✓Startup of entire engine test facility
- ✓Test cell renovation
- ✓Startup of engine production line

Upgrade or Installation of auxiliary equipment
Cooling tower, power-receiving panel, air-conditioning system, T-slot surface plate, custom silencer, intake/exhaust system, fuel-supply system, and more.



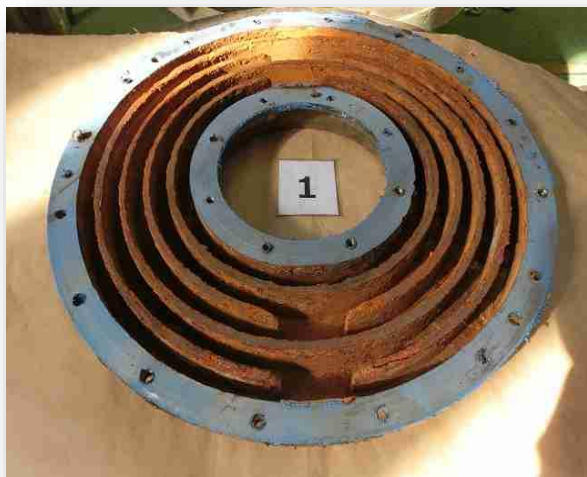
End of test bench

■ Maintenance and after-sales service

Even people who pay close attention to their daily health can only make a rough judgment about how they feel on a given day; without the support of a specialist, it is impossible to accurately understand the internal condition of the body.

Similarly, test equipment experiences slight wear on numerous components each time a test is performed. The oil used to minimize this wear also deteriorates and is consumed over time and with repeated operation. Because test equipment does not possess the natural ability to regenerate, its condition must be checked through regular maintenance. By performing the necessary servicing, the equipment can be kept in optimal condition.

Regular maintenance is essential to ensure accurate data measurement on test equipment.



Regular maintenance prevents failures before they occur.

Especially in continuous endurance testing or other harsh operating conditions, bearings and various seals wear out more quickly and therefore require periodic replacement. After maintenance is completed, we perform detailed inspections—such as calibration checks and operational tests—before shipment to ensure the equipment's condition. Only test systems that meet our strict quality standards are delivered back to the customer.



Recommendation for Regular Inspections

To ensure continuous and accurate data acquisition on test benches, we recommend performing regular inspections once every six months to one year, in addition to routine maintenance. Our engineers can provide on-site service anywhere in Japan and worldwide. (Regular maintenance and periodic inspections are offered as paid services.)

■ Spare Parts and Calibration Services

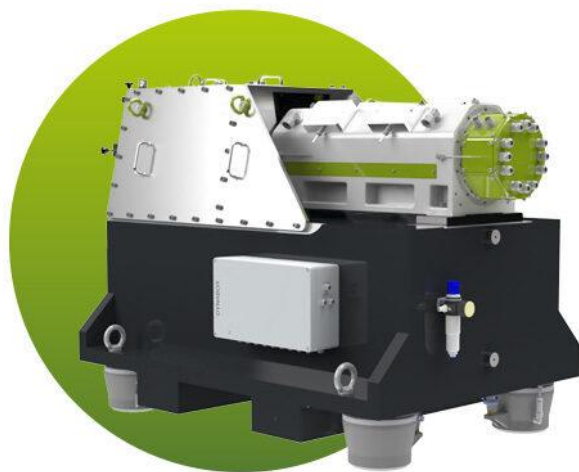
We can supply individual spare parts for dynamometers, including load cells, rotation detectors, and other sensors. We also provide calibration services for load cells and display units, with pickup and return handling. Please contact us when calibration is required according to your internal maintenance schedule. (Advance reservation is necessary.)



■ Related products

○ AC dynamometer, motor test bench

Our company also manufactures and sells AC electric dynamometers and motor test benches. We offer a wide product lineup ranging from a few kilowatts up to 1,000 kW, supporting high torque and ultra-high-speed operation exceeding 30,000 rpm. These systems require minimal installation space and allow cost-effective load-performance testing for a wide variety of engines. They are widely adopted by customers both in Japan and overseas.



For further details, please refer to the product catalog for our AC dynamometers.

■ Rental and Refurbished hydraulic dynamometers

Reducing Initial Costs

To meet customer needs, we offer rental services and refurbished (rebuilt) dynamometers.

Typical Customer Requirements

Sudden testing schedules requiring immediate access to a dynamometer.

Insufficient budget allocation.

Preference to expense the cost rather than capitalize the asset.

Rental

Maximum rental period: 2 years

Inventory is limited; please contact us for availability each time.

Refurbished Units

Fully overhauled products (nearly equivalent to new condition)

One-year warranty included

Note: Coupling flanges and mounting bases (height adjustment) must be newly manufactured.

Calibration Certificate

A calibration certificate for the dynamometer—required for ISO compliance and similar standards—will be provided.

Inquiry Process

Please feel free to contact our sales representatives by phone, email, or through our website.

○Frequently Asked Inquiries

Planning

Please share your plans for test cell and test bench commissioning, equipment upgrades, or modifications.

Quotation

Please provide information on the intended use of the dynamometer, test contents, engine specifications, measurement items, test patterns, and schedule.

Repair inspection

Please provide the model and serial number of the product you are using, as well as your preferred date and time for the requested service.

Technical questions

If you have any questions regarding the product's structure or operating principles, please let us know. We will connect you with our technical specialists.

Products Handling

If you have any questions regarding product operation or usage, please let us know. We will connect you with the product specialist.

Other inquiries

If you have any requests, comments, or questions, please let us know. We will connect you with the appropriate product specialist.

Any information you provide during inquiries or discussions will be handled with strict confidentiality. We take full responsibility for ensuring that all such information is securely managed within our company.



Contact Information

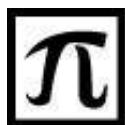
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