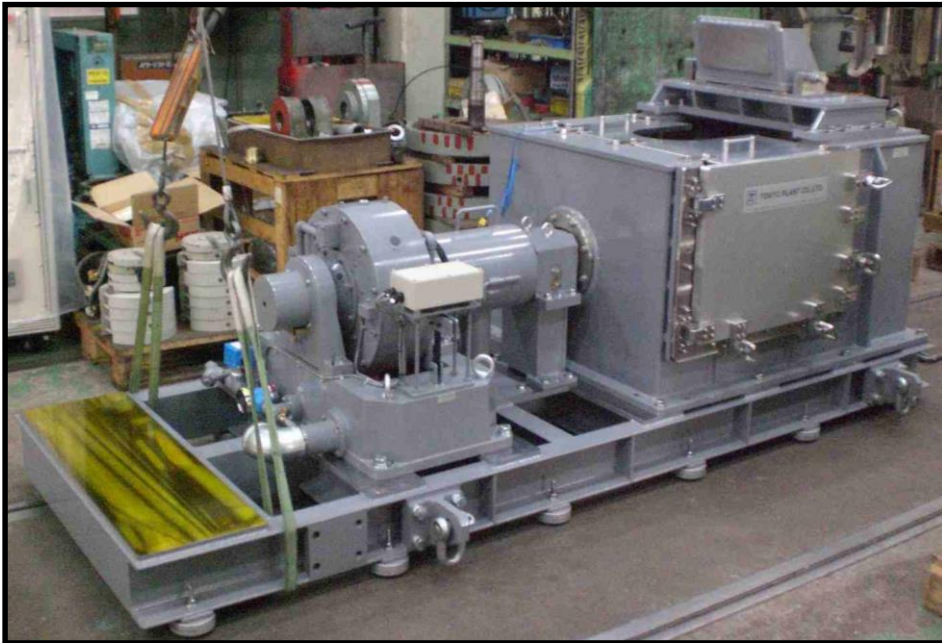


# Portable Outboard Engine Test Bed Product Catalog

## ■ General

Portable outboard engine testbed has been commercialized due to lots of customers request that they want to install simplified engine test benches It has been introduced to many customers from manufacturers research, development, and experiment groups to academic purposes.



## ■ Characteristics

<p><b>Benefits</b></p>	<ul style="list-style-type: none"> <li>• Very simplified test can be realized with a test piece and a dynamometer mounted on combined portable water tank and stand.</li> <li>• Transom board for mounting outboard engine is included.</li> <li>• T-slot bedplate is not needed due to portable structure. (Possible to install on T-slot bedplate.)</li> <li>• We have a wide range of test piece stand, shaft coupling and dynamometer.</li> <li>• Multiple test pieces can be test because dynamometers of different outputs can be mounted.</li> </ul>
<p><b>Easy operation</b></p>	<ul style="list-style-type: none"> <li>• Manual push buttons, automatic speed and torque control.</li> <li>• Speed and torque can be controlled by programmed operation from automation system.</li> <li>• Speed and torque employs digital indicator as standard.</li> <li>• Outputs analog voltages of speed and torque.</li> <li>• Connector is employed to prevent cable disconnection.</li> <li>• Alarm signal generates when overspeed and overtorque. Relay contact can be set.</li> </ul>

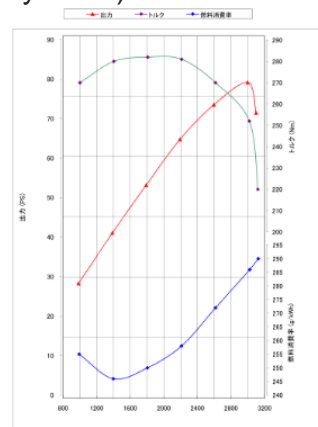
## ■ Applications

### ○ Targets

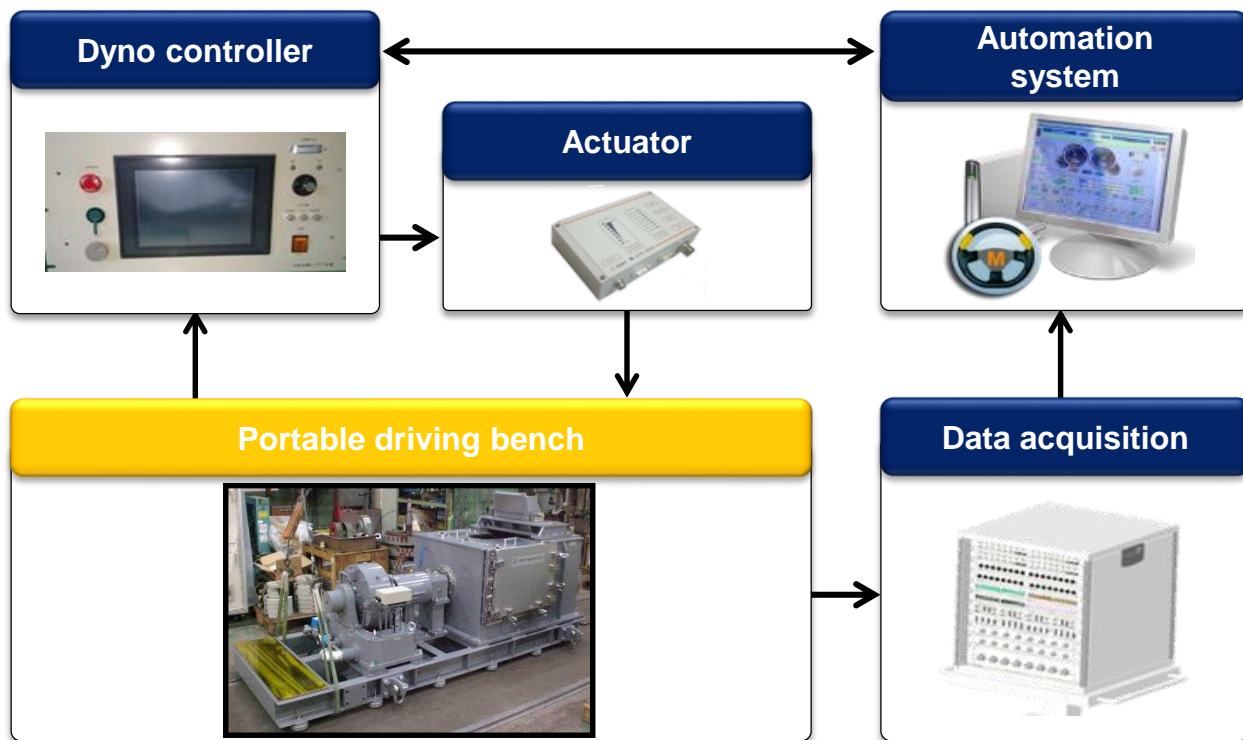
- Outboard engine

### ○ Tests

- Durability performance test
- Partial load performance test
- Full-open performance test
- Component evaluation test
- other performance tests (steady state)...

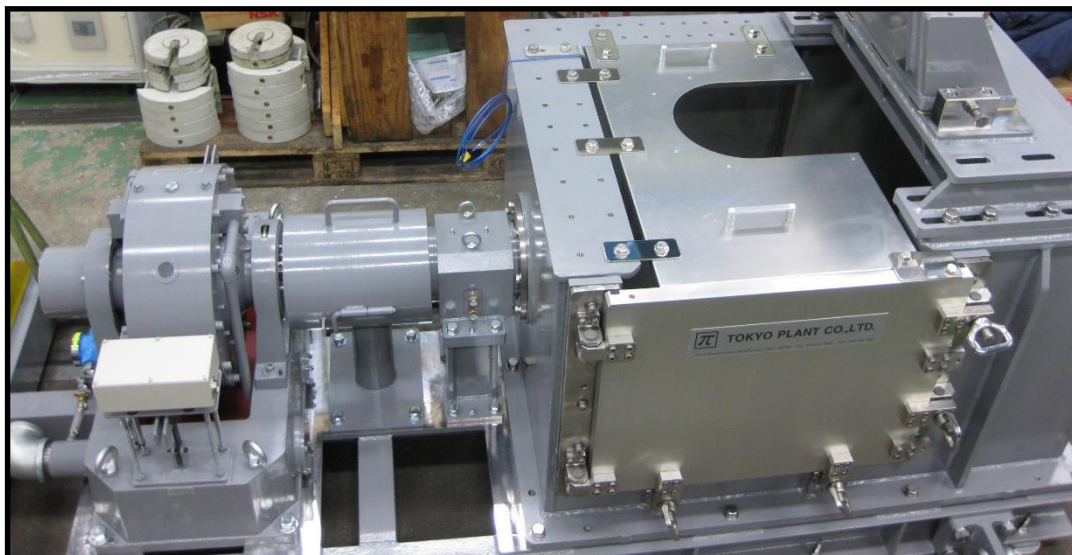


## ■ System Configuration



We can offer the most suitable testbed engineering to customers. Please contact us for further details about automation system, data acquisition sensors, testbed layout and shaft couplings. We can offer the suitable proposal for your budget and request.

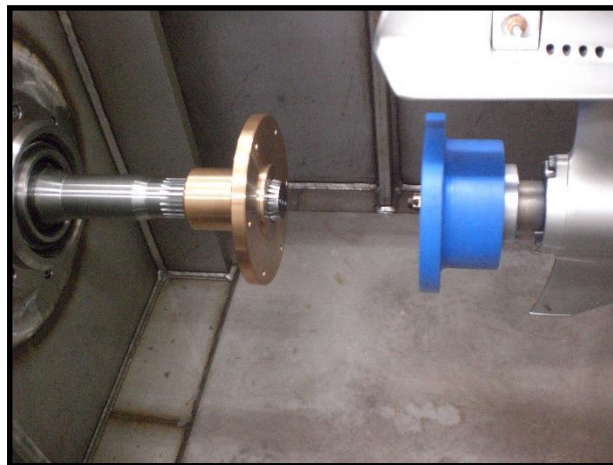
## ■ Product specification



Component	Content
Dynamometer	Select from eddy current dynamometer ranges.
Control system	Select from manual or automatic control.
Test piece mount	Determined according to customer's request.
Abnormal stop items	Determined according to customer's request.
Torque measurement accuracy	According to the specification of dynamometer and torquemeter.
Speed measurement accuracy	According to the specification of dynamometer and speed detector.
Volume of water tank	According to the specification of dynamometer and outboard engine.
Outside dimension	According to dynamometer, outboard engine and the volume of water tank.
Transom board	According to the specification of outboard engine.
Outboard engine mounting method:	According to the specification of outboard engine.
Shaft coupling	According to outboard engine and test content.
Power requirement	Dynamometer: 3-phase, AC200V
Operating environment	Indoor (in the customer's test cell)
Utilities	Connection jig, shaft coupling, starter battery, electromagnetic valve and etc.
Control system	Automation, data acquisition sensors, throttle controller system
Standard Accessories	Flow meter for dynamometer cooling water, temp sensors for cooling water inlet and outlet



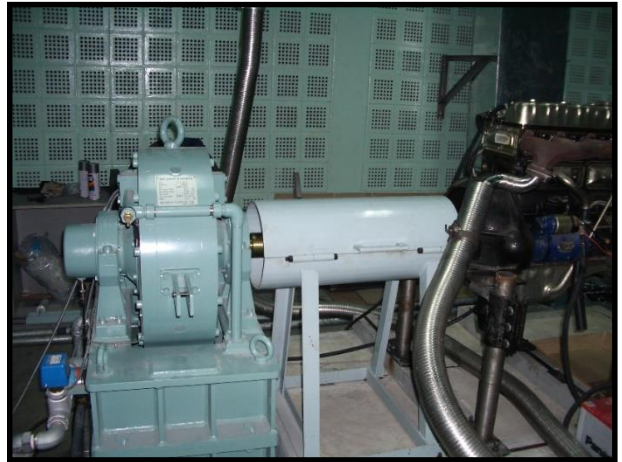
Samples: Water tank



Samples: Connection jig

## ■ Related Products

Our eddy current dynamometers are excellent in high accuracy and durability and adopted to many customers in domestic and internationally.



We have the widest range from 2.2kW to 750kW. Please see the eddy current dynamometer catalog for more details.

### ○ Dyno controller

This controller is dedicated for eddy-current dynamometer. It is a control measurement system that conduct measurement and feedback control of test piece by using eddy-current dynamometer. It is equipped with measurement function for speed and torque, control function for speed and torque of test piece by manual or automatic, and alarm function that detects and processes system malfunction.

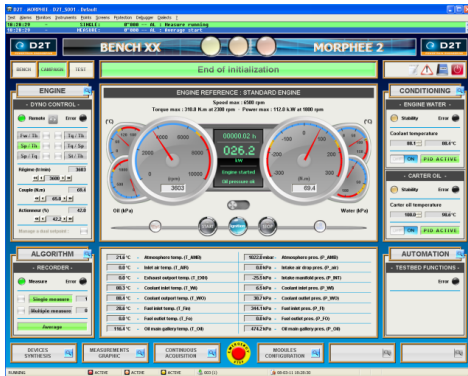


### ○ Features

- Equipped with torque, speed and alarm displays.
- Steady control by digital PID.
- Installed on the table or in the rack.
- Supports external control from external upper system.
- Easy operation by rotary encoder.

## ■ Related Products

### ○ Automation System MORPHEE



MORPHEE Main screen (reference)

MORPHEE is implemented with basic functions of test bench data acquisition, programmed operation and test sequence setting, as well as integrating automation and ECU calibration, and real-time model execution in test bench. And it improves reliability of test in test bench and contributes to bench test, actual vehicle test and decreasing man-hour of calibration process. MORPHEE is developed and sold by FEV.

### ○ Data acquisition system (MIO module)



High robustness and high expandable I/O modules are expected in engine and drivetrain bench tests. Our data acquisition system can combine modules and I/O signal types (temp., pressure, analog, digital and contact) according to customers' needs.

### ○ Shaft coupling and damper



Connected with test piece and dynamometer to reduce torsional vibration. We also select the most suitable shaft couplings.

## ■ Flow of Inquiry

Please do not hesitate to contact our sales by phone, email or web.

### ○ FAQ

#### Planning

Please tell us your planning about launching test cell or test bed and updating facilities.

#### Request for Quotation

Please tell us about application of dyno, test contents, engine specification, measurement items, test patterns and etc.

#### Request for Services

Please tell us product model and manufacturing number.

#### Technical Questions

Please tell us if you are concerned about our product structure and principle. Our sales will contact you.

#### Questions about Product

Please tell us if you are concerned about our product usage. Our sales will contact you.

#### Others

Please tell us if you have requests, opinions and concerns. Our sales will contact you.

We are responsible for handling customer information and inquiry contents as confidential.

#### 【Contact】

Sales Group, Tokyo Plant Co., Ltd.

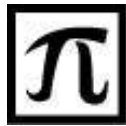
515-5 Miyazawa-cho, Akishima-city, Tokyo 196-0024

TEL: +81-(0)42-546-6500 FAX: +81-(0)42-546-6600

URL: [www.tokyo-plant.co.jp](http://www.tokyo-plant.co.jp)

E-mail: [sales@tokyo-plant.co.jp](mailto:sales@tokyo-plant.co.jp)





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