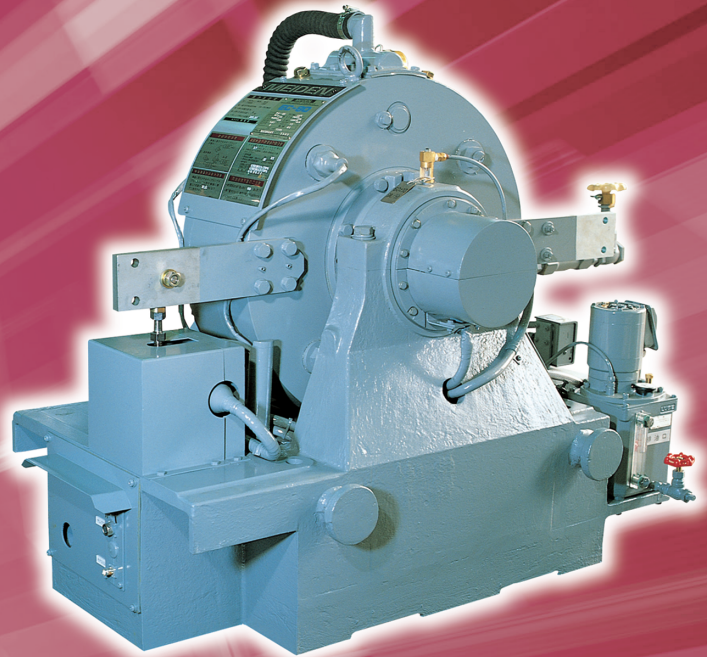


# EDDIC Dynamometer

Direct Cooling Disk Type

*A Remarkable Improvement of Clogging  
in Cooling Water Paths*



# Direct Cooling Disk Type EDDIC Dynamometer

This product is a high-performance easy-to-operate standard dynamometer, featuring easy maintenance.



## Features

### ● High performance

- High measuring accuracy  
(Example) Torque readout accuracy:  $\pm 0.5\%$  F.S (F.S:full-scale)
- High control accuracy and stability  
(Example) Constant-speed control:  
Setting accuracy:  $\pm 0.5\%$  N m (N m: maximum revolving speed)  
Stability:  $\pm 0.1\%$  N m

### ● Easy use and maintenance

- Wide torque range: Constant torque is assured within the range of 1/3 to 1/4 base speed
- Multiple applications:
  - (1) The control system comes in a maximum of 3 types  
Speed control-Torque control-Current control
  - (2) Operation uses setters on the panel. In addition, it is also possible to perform road control and programmed operation by external commands
- Provision of telemetry outputs: For speed and torque  
Analog: 0~10V/FS(5mA)
- Control panel type: Either desk-top type or self-standing type according to choice
- Low possibility of water retardation: The dynamic type is of the direct-cooling system, which offers a wider cooling water channel, and thus is unlikely to cause water retardation
- A smooth disk type rotor is used to reduce the moment of inertia

### ● Compactness and low inertia

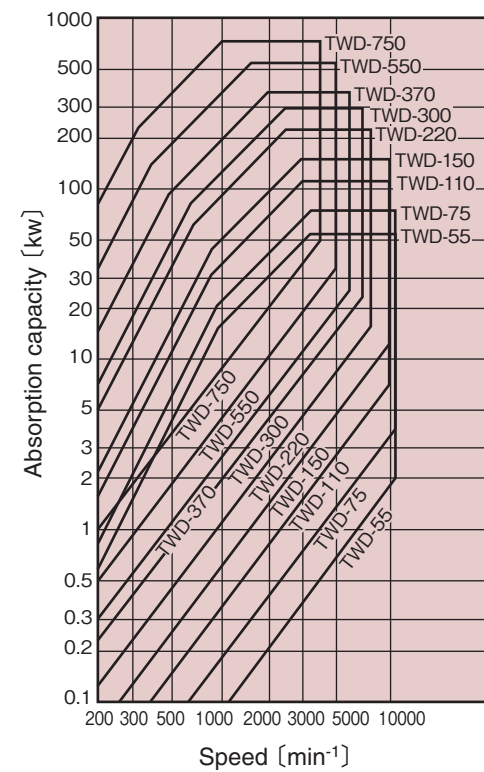
## Standard Values of the Cooling Water Quality for Eddic Dynamometers

Items		Standard value
P H	at 32°C	6.0~8.0
Specific conductance	at 32°C ( $\mu S/cm$ )	500 Max.
Chlorine ions	$Cl^-$ (ppm)	30 Max.
Total hardness	$CaCO_3$ (ppm)	100 Max.
Sulfuric ions	$SO_4^{--}$ (ppm)	200 Max.
M- alkalinity	$CaCO_3$ (ppm)	15~60
Ammonium ions	$NH_4^+$ (ppm)	Not sensed
Total iron	Fe (ppm)	0.5 Max.
Silica	$SiO_2$ (ppm)	30 Max.

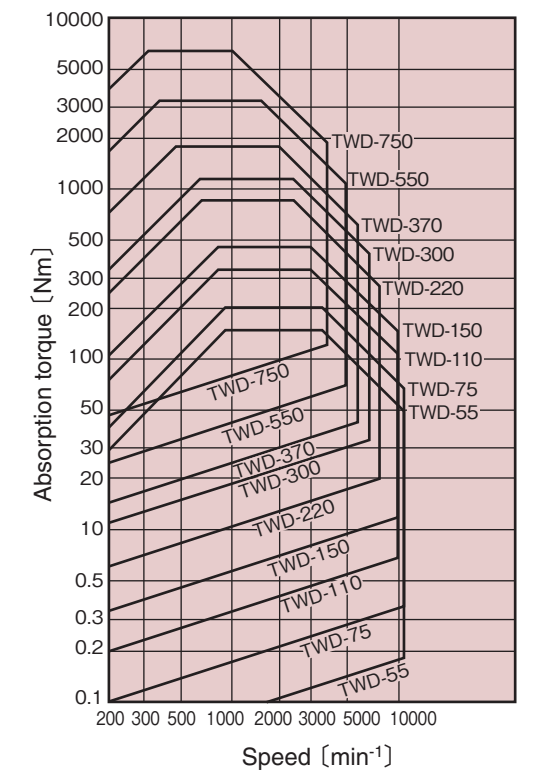
These values are applicable to any cases: a steady flow of cooling water, at the start of operation (shortly after stoppage), or cooling water in a pool (or a tank).

## Absorption Characteristics

(1) TWD Power absorption curve



(2) TWD Torque absorption curve



## Construction

This Eddic Dynamometer comes in a configuration where an inductor is positioned on the stator side and a smooth disk type rotor is adopted.

In order to improve the effect of cooling, the inductor surface is finished to have a smooth shape to reduce the agitation resistance of the cooling water.

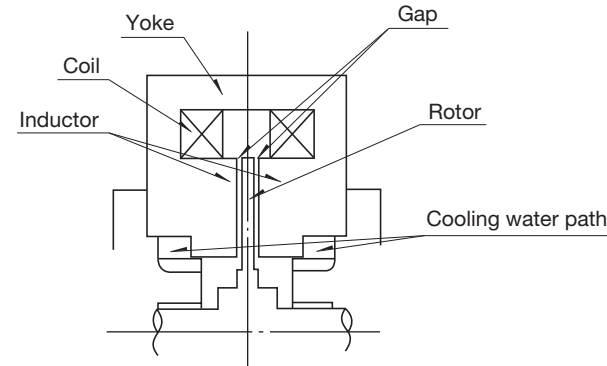


Fig.1 Cross-Sectional View (Axial Direction)

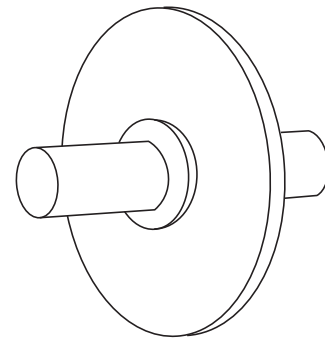


Fig.2 Rotor

## Accuracy

### (1) Measuring accuracy

Items	Torque measuring accuracy	Speed measuring accuracy
Accuracy		
Overall readout accuracy	±0.5%F.S	±1min <sup>-1</sup>

### (2) Control accuracy

Control method	Constant speed control system	Constant current control system	Constant torque control system
Items			
Control range	1~100%Nm	0.05~100%Im	0.5~100%F.S
Setting accuracy	±0.5%Nm Max.	±1%Im Max.	±0.5%F.S Max.
Stability	±0.1%Nm Max.	±0.2%Im Max.	±0.2%F.S Max.
Setting time	0.2~3sec	0.1~2sec	0.2~3sec

Nm : Maximum revolving speed Im : Maximum exciting current F.S : Full scale

## Ratings

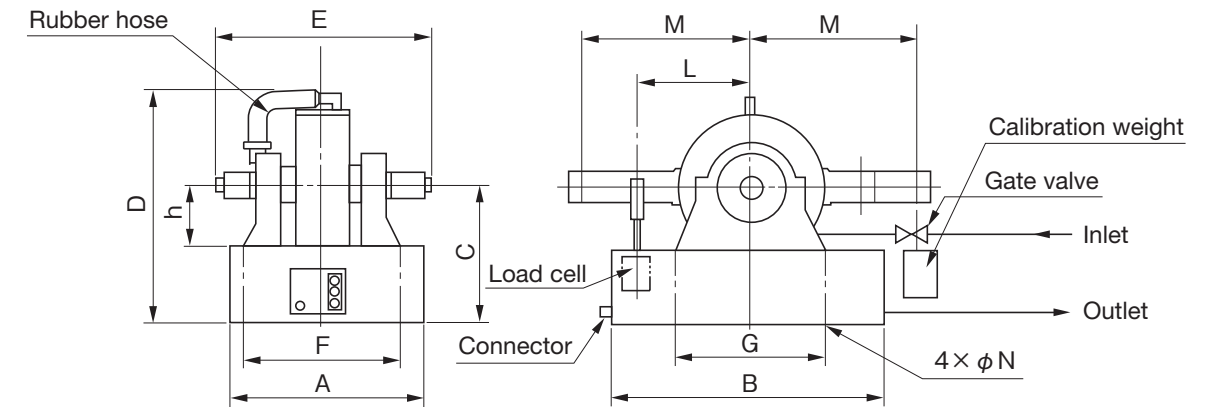
Type	Absorption capacity (kW)	Speed (min <sup>-1</sup> )	Absorption torque (Nm)	Constant torque range (min <sup>-1</sup> )	*1) Moment of inertia J (kg · m <sup>2</sup> )	Water pressure required (kpa)	Cooling water flow rate (ℓ/min) Water temperature 32°C
TWD- 55	55	3550~11,000	147.9	1000~3550	0.0173	70	25
TWD- 75	75	3550~11,000	201.7	1000~3550	0.023	70	35
TWD-110	110	3150~10,000	333.5	900~3150	0.053	70	50
TWD-150	150	3150~10,000	454.7	900~3150	0.083	70	70
TWD-220	220	2500~ 8000	840.3	700~2500	0.21	70	100
TWD-300	300	2500~ 7000	1146	700~2500	0.348	70	130
TWD-370	370	2000~ 6000	1767	500~2000	0.94	70	170
TWD-550	550	1600~ 5000	3283	400~1600	1.648	70	240
TWD-750	750	1100~ 4000	6511	350~1100	7.0	70	330

Note:1. Moment of inertia J is a value for the EDDIC dynamometer single body. (It dose not include the values of coupling, etc.)

Note:2. The drain side of the dynamometer is open to the atmospheric pressure. Therefore, it is necessary to control the backpressure not to affect the drainage channel.

## Dimensions

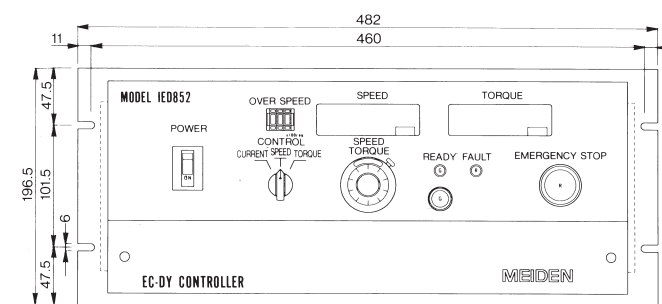
### (1) Dynamometer



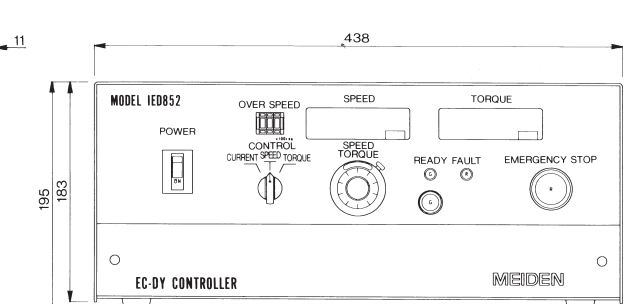
Type	Dimensions (mm)											Gate valve diameter (A)	Outlet pipe diameter (A)	Approx. mass (kg)
	A	B	C	D	E	F	G	L	M	N	h			
TWD- 55	460	920	400	700	460	350	520	400	800	24	200	25	40	420
TWD- 75	460	920	400	700	460	350	520	400	800	24	200	25	40	420
TWD-110	530	920	500	850	570	400	520	400	800	24	250	25	50	600
TWD-150	530	920	500	850	570	400	520	400	800	24	250	25	50	660
TWD-220	650	1100	500	930	700	470	700	480	1000	28	250	40	80	1100
TWD-300	650	1100	500	950	700	470	700	480	1000	28	250	40	80	1400
TWD-370	800	1300	600	1120	860	590	800	560	1000	28	300	50	80	2200
TWD-550	950	1600	650	1240	1000	700	1000	600	1500	28	350	65	100	3600
TWD-750	1100	1900	800	1550	1200	840	1200	750	1500	35	450	80	100	6000

### (2) Control unit

#### (a) Panel mounting type IED-852P



#### (b) Desk top type IED-852C



Unit: mm





## MEIDENSHA CORPORATION

ThinkPark Tower, 2-1-1, Osaki, Shinagawa-ku, Tokyo, 141-6029 Japan

[www.meidensha.com](http://www.meidensha.com)

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