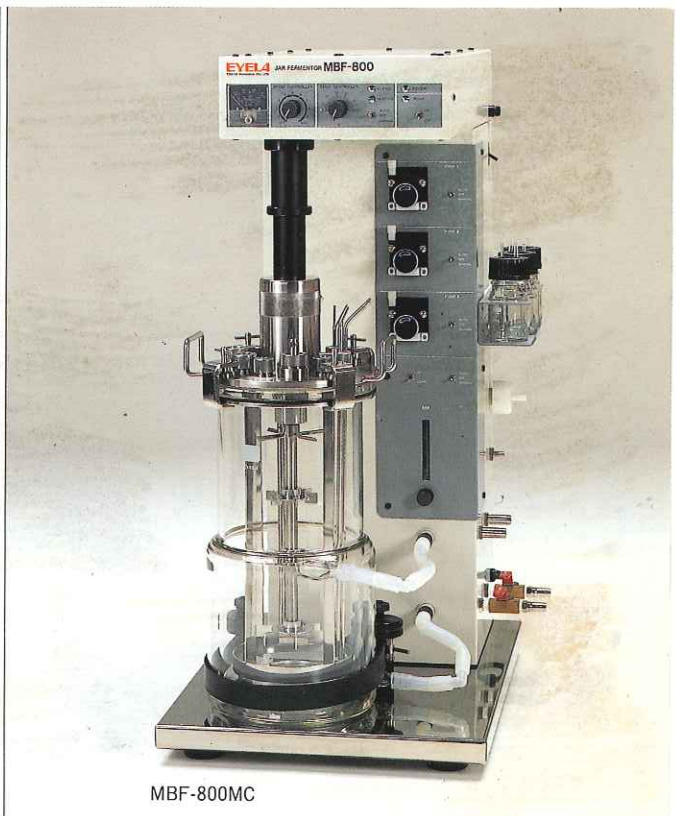


EYELA

Heavy Duty Benchtop Fermentor MBF-ME/MC Series



Bench top fermentors from 2.5 liters to 10 liters provide a free range of fermentors to select the size most appropriate for your need. The vessels are made of heavy duty borosilicate glass which provides full view of culture. Double walled water jacket realizes fine uniformity of medium temperature (except MBF-1000). Magnetically coupled drive for agitation eliminates a possible source for contamination. Compact design reduces space requirement.

For control/monitor, you can select the most suitable configuration to complete culture.

All models can be interfaced with microprocessor based automatic control system EPC or process controller as well as data logging to a host computer.

TOKYO RIKAKIKAI CO., LTD.

Tokyo, Japan

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Specifications:

Model:	MBF-300ME	MBF-250ME	MBF-500ME
Temp. control method:	Water circulation in Double walled water jacketed glass vessel (2.5 to 5 liters capacity)		
Driving method:	Magnet drive non-seal		
Aeration method:	Ring sparger		
Temp. control range:	Cooling water temp. +5~60°C (When using an external cooling water bath circulator)		
Rotation range:	80~1000rpm		80~800rpm
Temp. setting:	Variable dial setting		
Rotation setting/Indication:	Variable dial setting/Analog meter		
Aeration volume control:	-	-	-
Heater:		300W	
Agitation motor:	Output 60W		Output 40W
Agitation propeller:	Turbine propeller + Modified propeller		
Peristaltic pump:	-	-	-
Culture vessel size (mm):	ID143x195D	ID114x262D	ID143x332D
Capacity:	3L	2.5L	5L
Ambient temp. for operation:		5~35°C	
Overall dimensions (mm):	400Wx470Dx715H		400Wx470Dx865H
Net weight:	Approx.34kg		Approx.35kg
Power consumption:	5A, 500VA		4.4A, 440VA
Electricity:	AC100V, 115V or 220V, 50/60Hz, 1 phase		

Model:	MBF-800ME	MBF-800MC	MBF-1000ME	MBF-1000MC
Temp. control method:	Water circulation in Double walled water jacketed glass vessel (8 liters capacity)			
	Water circulation in pipe for Single glass vessel (10 liters capacity)			
Driving method:	Magnet drive non-seal			
Aeration method:	Ring sparger			
Temp. control range:	Cooling water temp. +5~60°C (When using an external cooling water bath circulator)			
Rotation range:		80~800rpm		
Temp. setting:	Variable dial setting			
Rotation setting/Indication:	Variable dial setting/Analog meter			
Aeration volume control:	-	Motor needle valve	-	Motor needle valve
Heater:		300W		
Agitation motor:		Output 100W		
Agitation propeller:		Turbine propeller + Modified propeller		
Peristaltic pump:	-	3 pcs	-	3 pcs
Culture vessel size (mm):		ID168x370D		ID168x382D
Capacity:	8L	8L	10L	10L
Ambient temp. for operation:		5~35°C		
Overall dimensions (mm):		500Wx560Dx850H		
Net weight:		Approx.40kg		
Power consumption:		5.5A, 550VA		
Electricity:	AC100V, 115V or 220V, 50/60Hz, 1 phase			

* Specifications are tested under room temp. 20°C, standard power supply, 50Hz, with no load.

* Flow meter is not included in MBF-300ME.

* ME type is connectable to Process controlling/monitoring unit or Process Controller (EPC-1000) or Pump & Air flow control unit (BOX-A, B, C).

* MC type has a built-in Pump & Air flow control unit (equivalent to BOX-A) and connectable to EPC-1000.

Standard accessory tubing (mm): ID5xOD9.4 (2.5m) and ID8.7xOD13.1 (0.21m) for MBF-300ME, 250ME and 500ME ID5xOD9.4 (4m) and ID12xOD17 (6m) for MBF-800ME ID5xOD9.4 (4m), ID12xOD17 (6m) & ID2xOD4 (3m) for MBF-800MC ID5xOD9.4 (4m) & ID12xOD17 (6m) for MBF-1000ME ID5xOD9.4 (4m), ID12xOD17 (6m) & ID2xOD4 (3m) for MBF-1000MC

* When using an Autoclave for sterilizing the culture vessels, use the larger size than below.

MBF-300ME: ø250x350mmH, MBF-250ME: ø240x370mmH, MBF-500ME: ø250x480mmH, MBF-800ME, 800MC, 1000ME, 1000MC: ø300x550mmH)

Optional accessories:

Aeration Unit Model MAU-1/2, Peristaltic Pump Model MP-3N/3ND, Sampling tool, Process Controller, Autoclave and etc.

* Specification and appearance of the instruments are subject to change without notice.

Process controlling/monitoring unit Model FC-2000/FM-2000/FO-2000/MZ-2000

FC-2000 for controlling pH in culture vessel
FO-2000 for controlling ORP in culture vessel



FM-2000 for controlling PO₂ in culture vessel
MZ-2000 for controlling anti-foam or level in culture vessel



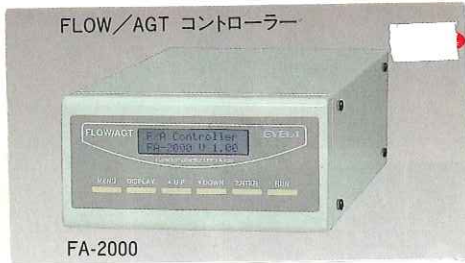
Specifications

	FC-2000	FM-2000	FO-2000	MZ-2000
Model	FC-2000	FM-2000	FO-2000	MZ-2000
Input (sensor)	pH electrode	DO electrode(Polaro)	ORP pt. electrode	AC resister
Resolution	0.01	0.1	1	-
Indication	Digital read-out	Digital read-out	Digital read-out	Digital read-out
Indicating range	0.00 ~ 14.00pH	0.0 ~ 20.0(ppm) or 0 ~ 100 (%)	-1000 ~ + 1000mV	-
Temp. compensation	Manual 0.0 ~ 100.0°C (or automatic)	Manual 0.0 ~ 50.0°C (or automatic)	-	-
Setting method	Membrane switch	-	-	-
Control method	On-Off (upper/ lower limit) or PID	On-Off (High/middle/low) or PID	On-Off (upper/ lower limit) or PID	-
Control output	Zero volt contact 2ch (SSR) AC264V 1.5A	Zero volt contact 3ch (SSR) AC264V 1.5A	Zero volt contact 2ch (SSR) AC264V 1.5A	Zero volt contact 1ch (SSR) AC264V 1.5A
Delay timer	-	-	-	0 ~ 999sec.
Interval timer	ON 0 ~ 999sec. OFF 0 ~ 999sec.	ON 0 ~ 999sec. OFF 0 ~ 999sec.	ON 0 ~ 999sec. OFF 0 ~ 999sec.	ON 0 ~ 9999sec. OFF 0 ~ 9999sec.
Alarm setting	Upper/lower	Upper/lower	Upper/lower	-
Alarm output	Zero volt contact 1ch AC250V 2A or DC30V 2A	Zero volt contact 1ch AC250V 2A or DC30V 2A	Zero volt contact 1ch AC250V 2A or DC30V 2A	-
Recording output	DC 0~10mV	DC 0~10mV	DC 0 ~ 10mV	-
Communication	RS-232C, RS485	RS-232C, RS485	RS-232C, RS485	RS-232C, RS485
Sensitivity adjustment	-	-	-	1 ~ 5000KΩ
Overall dimensions	144W x 370D x 72 (84)H			
Electricity	AC85 ~ 132V 50/60Hz. 0.5A, 50VA (AC100V)			
Standard accessories	pH4, pH7 standard solutions			

EYELA

AIR FLOW CONTROL UNIT, FA-2000, FF-2000, FF-3000

Efficient gas mixing & connecting with DO Controller or Proteus 2000



Flow/agitation controller

Model	FA-2000
Input : Flow --	DC 0 ~ 5V (FF-2000)
	Agitation -- T.G. pulse
Setting	: Flow -- ml/min. upper/lower limit Agitation -- rpm upper/lower limit
Indication	: LCD with back light
Control output	: Mass flow 1 ch, agitation 1 ch
Applied control unit	: Flow -- FF-2000 Agitation -- MBF-ME•PE MDF-1000•2000
Recorder output	: DC 0 ~ 10mV 2ch
Alarm setting	: Upper/lower limit (Flow and agitation)
alarm output	: Zero volt contact 2ch, AC250V, 2A or DC30V, 2A
Communication	: RS-232C, RS-485
Overall dimensions	: 144W x 370D x 72(84)H (mm)
Net weight	: 3.5kg



Mass flow control unit

Model	FF-2000
Input	: Control input from FA-2000
Indication	: LED
Gas	: Air (O ₂ or CO ₂ is available as option)
Type	: 100, 500 ccm 1, 2, 5, 10 Lm
AC outlet (100V)	: 3 pcs.
Overall dimensions	: 144W x 390D x 72(84)H (mm)
Net weight	: 4.5kg



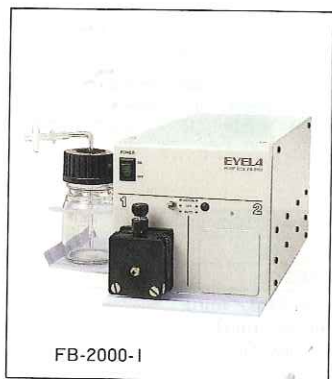
Motorized needle valve unit

Model	FF-3000
Input	: Control input from ^{FM-2000} FA-2000
Gas	: Air (O ₂ or CO ₂ is available as option)
Type	: 100ml/min. 500ml/min. 1L/min. 2L/min. 5L/min. or 10L/min.
AC outlet (100V)	: 3 pcs.
Overall dimensions	: 144W x 380D x 72(84)H (mm)
Net weight	: 3kg

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Pump box is used for dosing alkaline , acid, anti-foam reagents in fermentor system by receiving control signals from process control units as pH controller FC-2000, antifoam/level controller MZ-2000.



Pump box Model FB-2000-1

Input	Input for control (FC-2000, FO-2000, MZ-2000)
Pump	1 set
Overall dimensions	144W x 410D x 14(156)H, 222W (with bottle rack)
Electricity	0.04A, 4VA
Weight	4kg

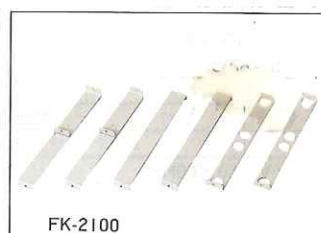


Pump box Model FB-2000-2

Input	Input for control (FC-2000, FO-2000, MZ-2000)
Pump	1 set
Overall dimensions	144W x 410D x 14(156)H, 222W (with bottle rack)
Electricity	0.07A, 7VA
Weight	4.5kg

System rack FK-2000/2100 (Option)

Model	FK-2000	FK-2100
	Two rows	One row



Recorder box REC-5/7 (Option)



EYELA

AERATION UNIT Model MAU-1/2

*Powerful and compact compressor comes with the cabinet.
Specific air flow valve uniformly control air output rate.*



Combination :

MAU-1C with upto 500ml capacity fermentor

MAU-1D with upto 2.5L capacity fermentor

MAU-2C with upto 5L capacity fermentor

MAU-2D with upto 10L capacity fermentor

Specifications

Model	MAU-1C	MAU-1D	MAU-2C	MAU-2D
Air flow control range	: 50~500Nml/min.	200~2,500Nml/min.	0.5~5NL/min.	1~10NL/min.
Air compressor	: Max. 3.5NL/min.		Max. 10NL/min.	
Max. pressure	: 1.0kgf/cm ²		1.5kgf/cm ²	
Air filter	: Millipore filter FG-50			
Delivery tube	: Silicone tube (option)			
Cabinet dimensions	: 136Wx306Dx236H (mm)		166Wx356Dx301H (mm)	
Weight	: 6.45kg		7.5kg	
Power consumption	: 25VA		60VA	
Electricity	: 100VAC, 115VAC or 220/240VAC, 50/60Hz, 1 phase			

Replacement Parts : Air filter, Delivery tube

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