Our partner

EBARA CORPORATION

Precision machinery company

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TEL 81-466-83-8111 https://www.ebara.co.jp/en/

Precision machinery company Overseas office

USA:
Ebara Technologies Inc
H Q: Sacramento(CA)
F S C: Sacramento(CA)
Hillsboro(OR)
S S: San Jose(CA)
Albany (NY)
Newburyport
Boise(ID)

EUROPE:
Ebara Precision Machinery Europe GmbH
H Q: Sauerlach, Germany
F S C: Livingston, UK
Dresden, Germany
S S: Graz, Austria

KOREA:
Ebara Precision Machinery Korea Inc
H Q: Pyeongtaek
F S C: Pyeongtaek
S S: Seongnam
Hwasung
Cheonan
Icheon
Cheongju

CHINA:
Shanghai Ebara Precision Machinery Co.,LTD
H Q: Shanghai
F S C: Shanghai
S S: Wuxi
Dalian
Beijing
Wuhan

SINGAPORE:
Ebara Engineering Singapore Pte.Ltd
H Q: Tuas Link
F S C: Tuas Link

TAIWAN:
Ebara Precision Machinery Taiwan Inc
H Q: Taipei
F S C: Hukou
S S: Linkou
Hsinchu
Taichung
Tainan

Precision machinery company Japan office

●HQ
Fujisawa(Kanagawa Pre.)

●Factory
Fujisawa(Compornent product, Overhaul)
Chubu(Overhaul)
Suzuka(Overhaul)
Kumamoto(CMP,Plating,Bevel,Overhaul)

●Sales and support office
Kitakami,Tohoku,Yamagata,
Fujisawa,Chubu,Osaka,
Hiroshima,Oita,Nagasaki,Kumamoto

Fujisawa(Compornent product, Overhaul)

- The product(s) described herein fall under “the goods listed in row 16 of the appended table 1 of the Export Trade Control Order of Japan”, so in cases of export of such product(s), you need to confirm “use” and “purchaser and/or end-user” and, as case may be, obtain the approval of the Minister of Economy, Trade and Industry. (Please confirm hese conditions on your own.) Furthermore, some of the product(s) fall under now 1-15 of the appended table 1 (listed items). In case of export of these listed items, you are required to obtain the export license from the Minister of Economy, Trade and industry. For more information, please contact our sales office located near you.
- All specifications are subject to change without notice.
- “Model ○○○” in this catalogue is our model code.

FSC www.fsc.org MIX Paper from responsible sources FSC® C002310

80-037-E03
2022.09

EBARA

Ahead Beyond

Light weight Air-cooled Dry vacuum pump Model EV-PA / Model EV-SA

Portable and lightweight air-cooled dry vacuum pump Model EV-PA / Model EV-SA

●“Model ○○○” in this catalogue is our model code.

Looking ahead, going beyond expectations

Ahead > Beyond

Precision Machinery Company

Company Profile

EBARA Corporation, headquarter Tokyo, Japan, is a company listed on the 1st section of Tokyo Stock Exchange that designs and manufactures various machines and devices for industries and infrastructure.

EBARA Corporation consists of three business divisions; Fluid Machinery and Systems Company provides Pumps, Compressors, and Chillers.
Environmental Plants Company offers comprehensive solutions for waste treatment facilities, including construction and operation services.
Precision Machinery Company serves the semiconductor industry with components products and semiconductor manufacturing equipment.

熱と誠

Founding Spirit of "Netsu to Makoto"
(Passion and Dedication)

Company Name	EBARA CORPORATION
Common Name	EBARA
Head Office	11-1, Haneda Asahi-cho, Ota-ku, Tokyo 144-8510, Japan
Phone	81-3-3743-6111 (Switchboard)
Date of Foundation	Nov. 1912
Date of Establishment	May. 1920
Paid-in Capital	¥ 79.1 billion (as of December 31, 2019)
Number of Employees	17,080 (Consolidated as of December 31, 2019) 4,016 (EBARA CORPORATION year ended December, 2019)
Net sale	¥ 522.4 billion (Consolidated year ended December, 2019)
EBARA Group	Comprised of EBARA Corporation and 96 Group Companies
Main Products &Service	**Fluid Machinery & Systems Company** Pumps, compressors, turbines, refrigeration and heating equipment, blowers, fans **Environmental Engineering Company** Municipal waste incineration plants, industrial waste incineration plants, water treatment plants **Precision Machinery Company** Dry vacuum pumps, CMP equipment, plating equipment, exhaust-gas treatment equipment

The Precision Machinery Company Introduction

The Precision Machinery Company is a leading supplier of CMP systems and Dry Vacuum Pumps to the semiconductor industry, in addition to those major products, various products and world-wide service network to support today's cutting edge technology processes.

CMP System: It polishes the surface of a silicon wafer with slurry and enables nanometer level control. This technology is indispensable in the latest critical semiconductor manufacturing devices.

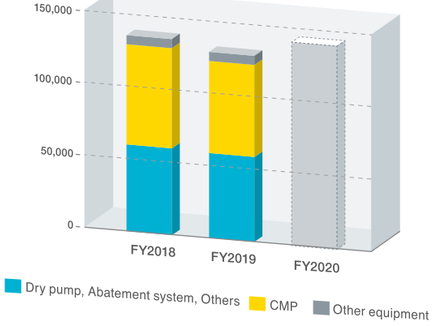
Dry vacuum pump: Is used to create a vacuum environment for some of the semiconductor manufacturing processes, such as etching and deposition. It has excellent potential of reducing operational cost with lower energy consumption and high durability in harsh applications.

Gas Abatement System: It treats harmful gases from the semiconductor manufacturing process and minimizes the environmental impact on factories.
Integrated pump and gas abatement systems contribute to save sub-fab space and provide user-friendly maintenance.

Ozonized Water Generator: Optimized design to minimize particle generation enables the wafer-cleaning without harsh chemicals.

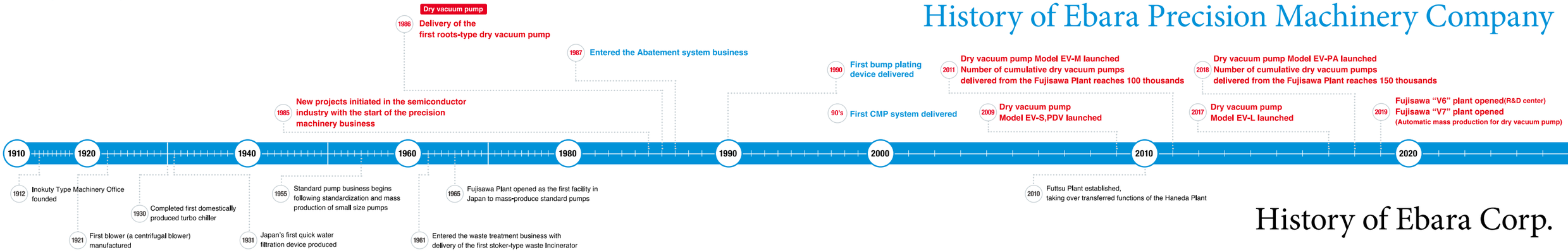
In recent years, demand for oil-free dry vacuum pumps has been increasing in non-semiconductor industries. EBARA's maintenance-free and compact dry pumps have been well received in such industries.
To meet the increasing demand for dry vacuum pumps, we will aggressively explore new markets that will benefit by excellent energy performance, high reliability, and small foot-print, all of which were derived by the semiconductor industry.

Precision Machinery Company Results by Segment



History

History of Ebara Precision Machinery Company



History of Ebara Corp.

Model EV-PA series

Incredible light weight dry vacuum pump

Overview:
Model EV-PA can be used for all analytical equipment and general clean vacuum applications.
Some models have small booster pump within a limited space can reach to 0.5Pa with a non-contact screw design.※1

Applications for Model EV-PA

- **Semiconductor back end process** (Molding, Bonding, Laminate etc.)
- **Inspection** (CD-SEM,FE-SEM, XPS, XRD, He leak detector)
- **R&D** (Mass spectrometer, Cryogenics)
- **Battery** (Filling, Drying, Degassing, Pad, Laminate)
- **Food and medicine** (Drying, Mixing, Degassing, Freeze drying)
- **Synchrotron radiation ring, Particle accelerator, University, Research office**

9kg

Feature of Model EV-PA50

- **Compact and ultra light weight**
- **Replaces scroll and diaphragm(membrane) pump**

Light weight | Oil free | Maintenance free

Feature of Model EV-PA series

Gas ballast valve
- **Standard option for all Model EV-PA**
- **Suitable exhaust for water vapor and light gasses**

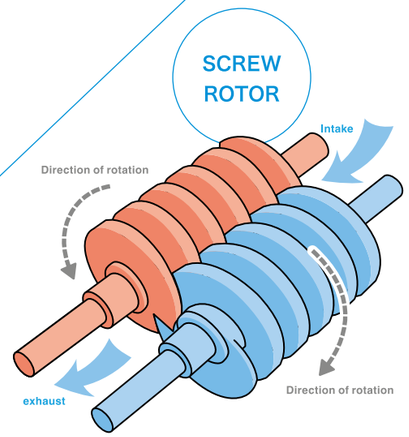
Control interface
- **Remote monitoring & control**

16kg ※2 ※3

Power supply
- **Universal voltage setting**
- **IEC connector (Single phase 100-230V ±10%(50/60Hz))**

Gear less drive
- **100% oil free (Only one technology)**

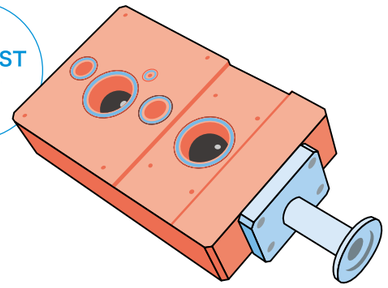
Dual pump drive (Booster and main pump)
- **Reaches up to 0.5Pa (5×10^{-3} mbar)**



EBARA's TECHNOLOGY

- **Applied SEMI market pump technology**
- **No contact parts inside of the pump**
- **Simple gas exhaust**

EXHAUST UNIT



BACK

- **Compact exhaust line**
- **Noise reduction**

LIGHT WEIGHT

※1 Only Model EV-PA250,500 ※2 Model EV-PA250=16Kg, Model EV-PA500=21Kg ※3 The photo shows Model EV-PA500

Model EV-A10 / Model EV-SA series

High durability and energy saving

Overview:
This multi-stage roots dry vacuum pump provides high durability and energy-saving performance.
These pumps are used in analytical equipment and back-end semiconductor processes which require high vacuum speed Other manufacturing process, like LiB where condensable gas is exhausted.※1
Model EV-A10 can handle a large amount of water vapor by selecting side exhaust type (option).

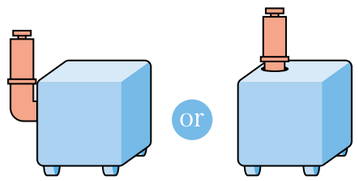
Applications for Model EV-A10,EV-SA

- **Semiconductor front end process** (Sputtering, L/L T/F chamber evacuation)
- **Semiconductor back end process** (Molding, Bonding, Laminate etc.)
- **Inspection** (CD-SEM, XRD, He leak detector)
- **R&D** (Mass spectrometer, Cryogenics)
- **Battery** (Filling, Drying, Degassing, Pad, Laminate)
- **Food and medicine** (Drying, Mixing, Degassing, Freeze drying)
- **Synchrotron radiation ring, Particle accelerator, University, Research office**

Condensable gases Water vapor | Energy saving | Maintenance free

Feature of Model EV-A10

- **2 types of exhaust location can be selected**
  Top exhaust : Small footprint
  Side exhaust : Water vapor evacuate
  ***Select only before purchase.**



※1 Model EV-A10 ※2 Please select single phase or 3 phase when ordering

Feature of Model EV-SA series

Gas ballast valve
- **Standard option for all Model EV-SA**
- **Suitable water vapor and light gasses**

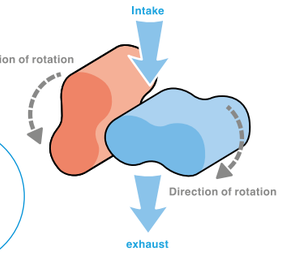
Control interface
- **Remote monitoring & control**
  ***RS485 can be select**

Power supply
- **IEC connector**
  (Single phase 100-240V ±10%(50/60Hz))※2

Larger wheel
- **Moving safely and smoothly**

EBARA's TECHNOLOGY

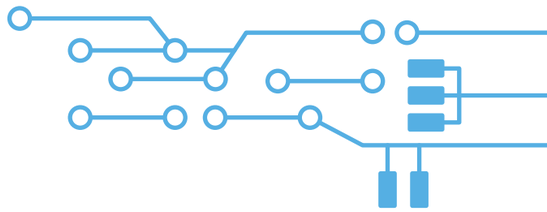
ROOTS ROTOR



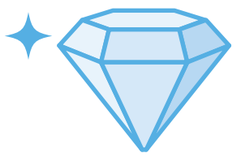
- **Applied SEMI market pump technology**
- **Energy saving**
- **No contact parts inside of the pump**

SEMI CONDUCTOR

- **Applied SEMI market pump technology**
- **Pumping speed control**



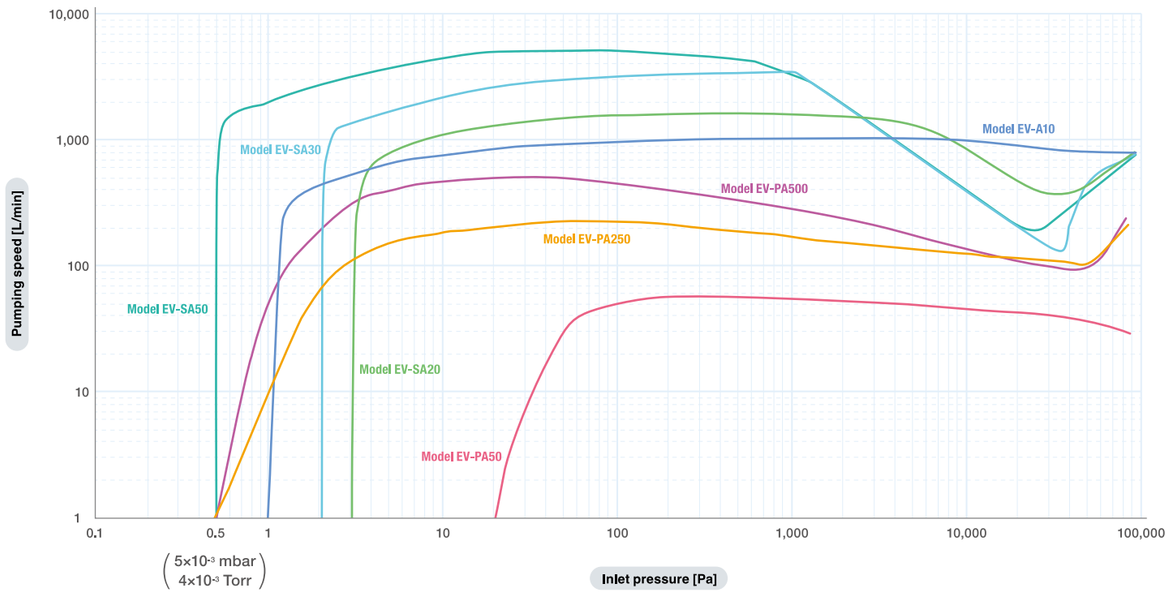
HIGH DURABILITY



Technical data

Type			Screw pump			Multi-stage roots pump			
Model			EV-PA50	EV-PA250	EV-PA500	EV-A10	EV-SA20	EV-SA30	EV-SA50
Vacuum data									
Pumping speed (Gas ballast OFF)		L/min	50	230	500	1,000	1,670	3,300	5,000
Ultimate pressure	Gas ballast OFF	Pa	20	0.5	0.5	1	3	2	0.5
	Gas ballast ON	Pa	200	2	2	2	5	3	1
Maximum continuous inlet pressure		Pa	Atmospheric pressure						
Motor data									
Voltage input		V	DC24V (Option Single phase 100V-200V)	Single phase 100-230V ±10%(50/60Hz)		Single phase 200-240V 3 phase 200-240V ±10%(50/60Hz)	Single phase 200-240V 3 phase 200-240V ±10%(50/60Hz)		
Power rating / CP rating		–	0.25kVA / -	0.45kVA / 10A	0.66kVA / 10A	Single phase 3.0kVA / 16A 3 phase 3.0kVA / 15A			
Power at ultimate pressure		W	230	240	270	1,100	450		500
Power connector		–	D/MS3102A18-1P (DDK)	EN60320-1/C14		Single phase IEC 60320-C20 3 phase C016 20C003 100 12(APH)			
Physical data									
Inlet flange		–	NW16	NW25	NW40	NW40	NW40	NW40	NW50
Exhaust flange		–	ISO Rc 1" (Female : Pump side)	NW25	NW25	NW40	NW40	NW40	NW40
Dimensions (W×L×H)		mm	175 x 249 x 192	189 x 482 x 253	189 x 482 x 272	317 x 544 x 367	324 x 584 x 367	356 x 713 x 367	317 x 650 x 568
Weight		Kg	9	16	21	75	65	90	150
Safety standard			CE/UL/CSA/SEMI S2			CE/NRTL			

Vacuum pumping speed curve



Gas abatement systems

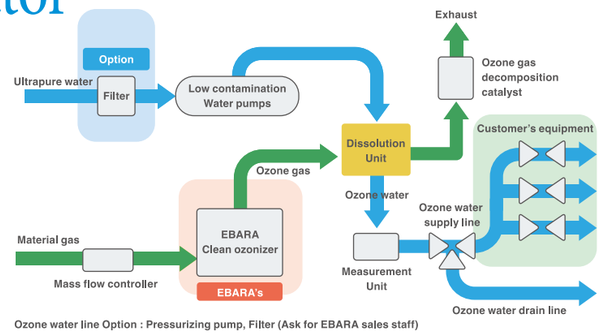
More information
Go to EBARA web site for details

Type	Technology	Feature
Dry	Abate gas by physical adsorption, chemical reaction, ion exchange, etc. using various treatment agents.	• Treatment of gases such as arsenic that can not be discharged into the atmosphere or water treatment system.
Burn/Wet	Abate the gas by an oxidation reaction from the flame generated by fuel gas and oxygen.	• It can process almost all gas including PFCs except arsenic. • A large flow rate treatment is also possible.
Catalytic	Abate PFCs gas in relatively low reaction temperature with assistance of a heated catalyst.	• PFCs can be treated (suitable for medium flow rate). • Applicable mainly for the etching process with medium flow rate.
Fluoride gas capture	Decompose PFCs gas by heated catalyst, and capture fluorine by a reaction resin.	• Applicable for PFCs gas treatment with no water supply line available.

We have various line-up for abatement systems which can treat PFCs (greenhouse gas) with high efficiency, hydrogen that is highly flammable, and other toxic gases such as arsenic.
It is easy to relocate and can be used for both R&D and HVM facilities.
Additionally, it is a point-of-use type that can be located near the use point, that will help to eliminate a long distance pipe toward the house-scrubber, resulting in initial cost savings.

Ozonized water generator

The model OZW continuously supplies clean ozonized water to meet the requirements of next generation cleaning process by a new dissolving method, clean pressurizing pump and clean ozone gas generator.



Ozone water line Option : Pressurizing pump, Filter (Ask for EBARA sales staff)

Dry vacuum pump

(For semiconductor market)

Dry vacuum pump is widely used inclry processes at wafer fab, such as etching and deposition.

CMP systems

CMP equipment is clean room compatible Chemical Mechanical Polishing Systems.
Ebara released the World first "Dry-in/Dry-out" CMP systems with proven high reliability and process performance.
Various options are available to meet every customer's needs.

Q & A

Any experience to replacing oil rotary pumps?

Customer

- The floor gets dirty with oil spilt during operation or oil replacement. Also I am in trouble by frequent oil replacement due to the oil degradation by reaction with water vapor.
- Are there any vacuum pumps that are oil contamination free and low maintenance frequency?

The Model EV-PA is a gear-less type design that does not use lubricating oil, so it does not require oil replacement and can be used even for a long time without maintenance.
It is oil free and can also be used in office areas.
All models come standard with gas ballast valves, which enables condensable gases exhaust out.
In addition, side exhaust option can be selected for Model EV-A10 for higher water vapor usage.

Applications

Vacuum oven, Vacuum freeze dry, Sputtering, Helium leak detector, Plasma cleaner, Vacuum pad, Laminator, Vacuum degassing, Accelerator, Synchrotron

EBARA

Any experience to replacing Scroll pumps?

Customer

- We are having trouble with dust generated from tip seal, and frequent maintenance on tip seal replacement.
- I can't concentrate on my work in the laboratory due to the loud noise.
- Exhausting water vapor causes performance degradation. Also exhausting hydrogen and helium increase heat generation and will shorten the lifetime.
- Is there a vacuum pump that can exhaust light gas with low noise and low vibration?

Ebara dry vacuum pump has a non-contact structure inside that prevents material wears and minimizes vibration/noise.
Model EV-A10 and Model EV-SA have multistage roots structures, so light gases such as hydrogen and helium can be efficiently exhausted.
When exhausting a high volume of water vapor, you can use a gas ballast to minimize performance reduction.

Applications

Vacuum oven, Helium leak detector, SEM, Accelerator, Synchrotron Molding, Bonding, Mass spectrometer（GC-MS,LC-MS,ICP-MS）

EBARA

Can it be used in synchrotron radiation ring and particle accelerator research facility?

Researcher

Does it use gear oil like a multi-stage roots pump?
Any chance of back streaming of oil?

Model EV-PA has a gearless structure and does not use gear oil.
That will minimize a contamination of the vacuum chamber in the accidental failure.

EBARA

Researcher

Is it possible to try out the product before purchase?

Yes, off course.
Please ask your local EBARA office for detailed conditions.

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Can it be used in analytical equipment?

Equipment Maker

Oil rotary pumps and scroll pumps are affordable price, user friendly, and a maintenance can be done by myself, so I can't find any reason to replace them.

These are comments from customers who have replaced their oil rotary pumps and scroll pumps to dry vacuum pumps.
"The maintenance frequency has been much extended."
"The operating environment has been improved by less oil pollution, noise, and vibration."
Why don't you try our vacuum pump? We can provide an evaluation pump for you.

EBARA

Equipment Maker

We have proposed a dry vacuum pump to our customer and they were satisfied with it even though the initial cost was high.
Based on such customer voices, we are considering for adopting a vacuum pump into our equipment as a standard.

EBARA offers various vacuum solutions which can meet the specifications of your analytical equipment.
We also have turbo molecular pumps which can cover high vacuum areas.

EBARA