

# Ovens

## General Applications

### Convection Ovens

- General chemical and biological laboratory works including heating, baking, drying, agricultural genetic, digestion of proteins and starches, drug metabolism, sterilization, conditioning, preheating, curing and aging studies, serum protein analysis.
- Industrial tests including drying of plant tissue, glassware, textile, paper, and rubber; asphalt, stability and QC/ batch testing, and epoxy and plastic curing, life and exposure studies, precise moisture determination, electronic burn-in, ordnance material testing, suspended solids evaluation, vulcanization studies.

### Vacuum Ovens

- Ideal for general drying, baking, vacuum embedding, curing, out-gassing solids and liquids, aging, plating, conditioning, desiccating, annealing, moisture testing, vacuum embedding, contamination-free storage of semiconductors and other sensitive electronic components, silicon wafer drying, volatile resins and polymers testing.
- Elevated temperature in reduced atmospheres or vacuum/ purge with nonflammable and inert atmospheres.



## Technical Benefits

### Safety functions

- 1) Self-protecting cut-off function and signal:
    - For over temperature, automated cut the power supply for heater and controller orderly before the unit shuts down.
    - 2 separated over-current fuses for user safety.
  - 2) Time setting function for automated run/ off:
    - Integrated time setting: Delayed ON/ OFF. (from 1 min to 99 hr 59 min)
    - Operating settable function: After a power interruption, select automated run or manual run.
  - 3) Door-open warning alarm (except for OV series):
    - Intermittent tone and optical signal alarm 5 min. after automated cut-off.
    - Heating element and fan automatically stop when door opening to minimize heat loss and protect operator.
- 2) Applicable control display considering MMI (Man Machine Interface) network system:
    - Very similar key arrangement throughout the whole temperature chambers, bath circulators and shakers series.
    - Operator-friendly controller with the splash-proof/ easy-to-clean keypads and clear LED displays.
    - A speed lock key prevents accidental resetting of parameters conveniently.

### Ideal construction

### Optimum control performance

- 1) Professional control electronics and program control:
  - Microprocessor PID temperature control with very simple calibration and auto-tuning features.
  - Frequently use 3 different temperatures memorable for convenient use.
  - Selectable measuring temperature in °C or °F
- 1) High quality 304 stainless steel inner chamber and dirt-repellent powder coating external surface. (except for OV series)
- 2) Perfectly sealed door gasket minimizes heat loss and fully insulated chambers keep exterior at a safe temperature.
- 3) Adjustable stainless steel and electro polished wire shelves for better air-flowing and easy cleaning.

# Selection Guide

## Convection Ovens

Description		Operating Temp. Range (°C/°F)	Chamber Volume (L / cu ft)	Temperature Fluctuation at 100°C[±°C/°F]	Temperature Variation at 100°C[±°C/°F]	Page
Forced [Mechanical]	OF-02G	Amb. +10 to 250 / Amb. +18 to 482	60 / 2,1	0,5 / 0,9	1,0 / 1,8	11
	OF-12G		102 / 3,6	0,6 / 1,08	1,3 / 2,3	
	OF-22G		151 / 5,3	0,8 / 1,44	1,7 / 3,1	
Economy Forced [Mechanical]	OF-01E	Amb. +10 to 220 / Amb. +18 to 428	52 / 1,8	0,4 / 0,72	3,3 / 5,94	12
	OF-11E		100 / 3,5		3,3 / 5,94	
	OF-21E		150 / 5,3		2,3 / 4,14	
Natural (Gravity)	ON-02G	Amb. +15 to 250 / Amb. +27 to 482	52 / 1,8	0,3 / 0,54	5,9 / 10,62	13
	ON-12G		91 / 3,2		7,5 / 13,5	
	ON-22G		135 / 4,8		6,9 / 12,42	
Economy Natural (Gravity)	ON-01E	Amb. +15 to 220 / Amb. +27 to 428	52 / 1,8	0,3 / 0,54	6,5 / 11,7	14
	ON-11E		100 / 3,5	0,4 / 0,72	4,1 / 7,38	
	ON-21E		150 / 5,3	0,5 / 0,9	7,3 / 13,14	

## Vacuum Ovens

Description		Operating Temp. Range (°C/°F)	Chamber Volume (L / cu ft)	Temperature Fluctuation at 100°C[±°C/°F]	Temperature Variation at 100°C[±°C/°F]	Page
Vacuum	OV-11	Amb. +5 to 250 /	28 / 1,0	0,1 / 0,18	3,7 / 6,66	16
	OV-12	Amb. +9 to 482	65 / 2,3	0,3 / 0,54		

## Accessories & Options

Description	Page
for Convection Ovens	15
for Vacuum Ovens	17

## Forced Convection Ovens



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Further information on Temperature Chamber products is readily available on our website.



〈OF-22G with optional viewing window〉

## Intensive drying performance with a powerful air-flow

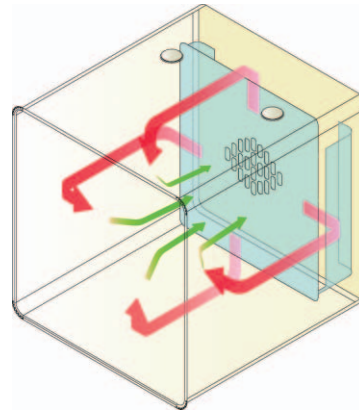
OF-G series has a quiet and powerful air-flow for high air exchange rates and short rise times that guarantee intensive drying performance, especially for material with high moisture content.

### Operating features

- +10°C above room temperature to 250°C
- Microprocess PID control/ Auto-tuning/ Calibration
- Digital timer: 1 min ~ 99 hr 59 min, delayed ON/ OFF
- Over-temperature limiter/ Door opening alarm
- 3 different temperature values memorable without auto-tuning
- Digital LED display (1°C resolution) with touch-sensitive keypads
- RS-232 interface available

### Constructional features

- Forced-air convection with a noiseless sirocco fan which ensures good mixing and strong dispersion
- Optimized sample monitoring with threefold tempered safety glass window (optional)
- Adjustable fan speed with analog dial to prevent powder sample blowing (optional)
- Dual-wall door opens to 180° and features double rack door handle
- Rounded inner chamber corners for easy cleaning and better air-flowing
- Corrosion-resistant incoloy sheath heating and stainless steel interior
- Adjustable 2 top ventilation slides to control inner air, vapor circulation (dia 38mm/ 1.5")



Convection pattern of OF-G series

**Included Accessories** • 2 wire shelves

**Optional Accessories** • Tempered viewing window  
• Fan speed adjuster  
• Perforated shelves

see page 15

## Specifications & Ordering Informations



Model		OF-02G	OF-12G	OF-22G
Chamber volume (L/cu ft)		60 / 2,1	102 / 3,6	151 / 5,3
Temperature	Range [°C/°F]	Amb. +10 to 250 / Amb. +18 to 482		
	Fluctuation <sup>1)</sup> [±°C/°F] at 100 °C	0,5 / 0,9	0,6 / 1,08	0,8 / 1,44
	Variation <sup>1)</sup> [±°C/°F] at 100 °C	1,0 / 1,8	1,3 / 2,3	1,7 / 3,1
Dimension	Interior dimensions (W×D×H) (mm / inch)	400×360×420 / 15,7×14,2×16,5	480×410×520 / 18,9×16,1×20,5	550×460×600 / 22,0×18,0×23,6
	Exterior dimensions (W×D×H) (mm / inch)	577×642×760 / 22,7×25,3×30,0	657×692×870 / 25,9×27,2×34,3	727×742×974 / 28,7×29,2×38,3
	Net weight (Kg / lbs)	53 / 117	63 / 139	72,5 / 160
Electrical Requirements (230V)		50 / 60Hz, 4,3A	50 / 60Hz, 6,0A	50 / 60Hz, 7,4A
Cat. No.		AAH12155K	AAH12165K	AAH12175K
Electrical Requirements (120V)		50 / 60Hz, 6,8A	50 / 60Hz, 8,4A	50 / 60Hz, 10,1A
Cat. No.		AAH12155U	AAH12166U	AAH12176U

1) Technical data (according to DIN 12880)

### Full features performance for general purpose lab ovens

OF-E series features a fast drying with vertical air-flow.

#### Operating features

- +10°C above room temperature to 220°C
- Microprocess PID control/ Auto-tuning/ Calibration
- Digital timer: 1 min to 99 hr 59 min, delayed ON/ OFF
- Over-temperature limiter/ Door opening alarm
- 3 different temperature values memorable without auto-tuning
- Digital LED display (1°C resolution) with touch-sensitive keypads

#### Constructional features

- Forced-air convection with a fan for better variation and high drying performance
- Space saved larger capacities in a small footprint with convenient door handle
- Corrosion-resistant incoloy sheath heater and stainless steel chamber
- Adjustable 2 top ventilation slides to control inner air, vapor circulation (dia 38mm/1.5")



OF-11E

**Included Accessories** • 2 wire shelves

**Optional Accessories** • Perforated shelves [see page 15](#)

### Specifications & Ordering Informations



Model		OF-01E	OF-11E	OF-21E
Chamber volume (L/cu ft)		52 / 1,8	100 / 3,5	150 / 5,3
Temperature	Range (°C/°F)	Amb, +10 to 220 / Amb, +18 to 428		
	Fluctuation <sup>1)</sup> (±°C/°F) at 100 °C	0,4/0,72		
	Variation <sup>1)</sup> (±°C/°F) at 100 °C	3,3 / 5,94	3,3 / 5,94	2,3 / 4,14
Dimension	Interior dimensions (W×D×H) (mm / inch)	375×370×370 14,8×14,6×14,6	455×430×510 18×17×20	585×460×555 23×18,1×21,9
	Exterior dimensions (W×D×H) (mm / inch)	530×535×737 20,9×21,1×29	610×595×877 24×23,4×34,5	740×625×922 29,1×24,6×36,3
	Net weight (Kg / lbs)	36 / 79,4	47 / 103,6	59 / 130
Electrical Requirements (230V)		50 / 60Hz, 4,3A	50 / 60Hz, 6,0A	50 / 60Hz, 7,4A
Cat. No.		AAH14012K	AAH14022K	AAH14032K
Electrical Requirements (120V)		50 / 60Hz, 6,8A	50 / 60Hz, 8,4A	50 / 60Hz, 10,1A
Cat. No.		AAH14016U	AAH14026U	AAH14036U

<sup>1)</sup> Technical data (according to DIN 12880)



## Ideal for high temperature storage with user-friendly design

ON-G series is used for all sterilization and drying tasks that do not require high drying rates or special time requirements, ideal for drying applications requiring a gentle airflow.

### Operating features

- +15°C above room temperature to 250°C
- Microprocess PID control/ Auto-tuning/ Calibration
- Digital timer: 1 min to 99 hr 59 min, delayed ON/ OFF
- Over-temperature limiter/ Door opening alarm
- 3 different temperature values memorable without auto-tuning
- Digital LED display (1°C resolution) with touch-sensitive keypads

### Constructional features

- Gravity-flow convection with vertical airflow for uniform sample heating
- Optimized sample monitoring with threefold, tempered safety glass window (optional)
- Dual-wall door opens to 180° and features double rack door handle
- Rounded inner chamber corners for easy cleaning and better air-flowing
- Corrosion-resistant incoloy sheath heater and stainless steel interior
- Adjustable 2 top ventilation slides to control inner air, vapor circulation (dia 38mm/1.5")



ON-22G with optional viewing window

**Included Accessories** • 2 wire shelves

**Optional Accessories** • Tempered viewing window [see page 15](#)  
• Perforated shelves

## Specifications & Ordering Informations



Model		ON-02G	ON-12G	ON-22G
Chamber volume (L/cu ft)		52 / 1,8	91 / 3,2	135 / 4,8
Temperature	Range (°C/°F)	Amb, +15 to 250 / Amb, +27 to 482		
	Fluctuation <sup>1)</sup> (±°C/°F) at 100 °C	0,3 / 0,54		
	Variation <sup>1)</sup> (±°C/°F) at 100 °C	5,9 / 10,62	7,5 / 13,5	6,9 / 12,42
Dimension	Interior dimensions (W×D×H) (mm / inch)	400×360×365 / 15,7×14,2×14,4	480×410×465 / 18,9×16,1×18,3	610×460×485 / 24×18×19
	Exterior dimensions (W×D×H) (mm / inch)	577×542×760 / 22,7×21,3×30	657×592×870 / 25,9×23,3×34,3	785×642×897 / 30,9×25,3×35,3
	Net weight (Kg / lbs)	49 / 108	59 / 130	68 / 150
Electrical Requirements (230V)		50 / 60Hz, 4,3A	50 / 60Hz, 6,0A	50 / 60Hz, 7,4A
Cat. No.		AAH11135K	AAH11145K	AAH11155K
Electrical Requirements (120V)		50 / 60Hz, 6,7A	50 / 60Hz, 8,3A	50 / 60Hz, 10,0A
Cat. No.		AAH1136U	AAH1146U	AAH1156U

1) Technical data (according to DIN 12880)

### Full features performance for general purpose lab ovens

ON-E series is a economical warm storage up to 220°C

#### ► Operating features

- +15°C above room temperature to 220°C
- Microprocess PID control/ Auto-tuning/ Calibration
- Digital timer: 1 min to 99 hr 59 min, delayed ON/ OFF
- Over-temperature limiter/ Door opening alarm
- 3 different temperature values memorable without auto-tuning
- Digital LED display (1°C resolution) with touch-sensitive keypads

#### ► Constructional features

- Gravity-flow convection, ideal in areas where a spill may occur
- Space saved larger capacities in a small footprint with convenient door handle
- Corrosion-resistant incoloy sheath heater and stainless steel chamber
- Adjustable 2 top ventilation slides to control inner air, vapor circulation (dia 38mm/1.5")



**Included Accessories** • 2 wire shelves

**Optional Accessories** • Perforated shelves

see page 15

### Specifications & Ordering Informations



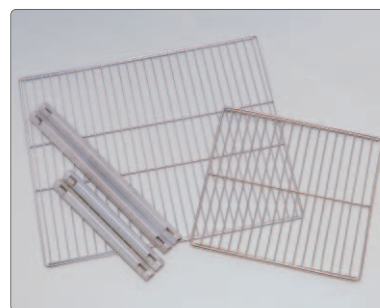
Model		ON-01E	ON-11E	ON-21E
Chamber volume (L / cu ft)		52 / 1,8	100 / 3,5	150 / 5,3
Temperature	Range [°C/°F]	Amb, +15 to 220 / Amb, +27 to 428		
	Fluctuation <sup>1)</sup> [±°C/°F] at 100 °C	0,3 / 0,54	0,4 / 0,72	0,5 / 0,9
	Variation <sup>1)</sup> [±°C/°F] at 100 °C	6,5 / 11,7	4,1 / 7,38	7,3 / 13,14
Dimension	Interior dimensions (W×D×H) (mm / inch)	375×370×370 / 14,8×14,6×14,6	455×430×510 / 18×17×20	585×460×555 / 23×18,1×21,9
	Exterior dimensions (W×D×H) (mm / inch)	530×535×737 / 20,9×21,1×29	610×595×877 / 24×23,4×34,5	740×625×922 / 29,1×24,6×36,3
	Net weight (Kg / lbs)	34 / 75	46 / 101,4	59 / 130
Electrical Requirements (230V)		50 / 60Hz, 4,3A	50 / 60Hz, 6,0A	50 / 60Hz, 7,4A
Cat. No.		AAH15015K	AAH15025K	AAH15035K
Electrical Requirements (120V)		50 / 60Hz, 6,7A	50 / 60Hz, 8,3A	50 / 60Hz, 10,0A
Cat. No.		AAH15016U	AAH15026U	AAH15036U

1) Technical data (according to DIN 12880)

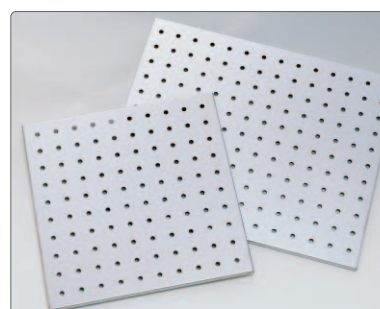
## Wire Shelves

Stainless steel and electro polished shelf system is removed easily without using tools for easy cleaning.

Product group	Models	Description			Cat. No.
		Included	Maximum	W×L (mm/inch)	
Ovens	OF-02G	2	8	366×316 / 14.4×12.4	EDA8136
	OF-12G	2	12	446×366 / 17.6×14.4	EDA8135
	OF-22G	2	14	516×416 / 20.3×16.4	EDA8134
	ON-02G	2	8	366×316 / 14.4×12.4	EDA8136
	ON-12G	2	12	446×366 / 17.6×14.4	EDA8135
	ON-22G	2	12	576×419 / 22.7×16.5	EDA8137
	OF/ ON-01E	2	10	366×316 / 14.4×12.4	EDA8136
	OF/ ON-11E	2	14	446×366 / 17.6×14.4	EDA8135
Incubators	OF/ ON-21E	2	15	576×419 / 22.7×16.5	EDA8137
	IB-05G	2	8	366×316 / 14.4×12.4	EDA8136
	IB-15G	2	12	446×366 / 17.6×14.4	EDA8135
	IB-25G	2	12	576×419 / 22.7×16.5	EDA8137
	IB-01E	2	11	366×316 / 14.4×12.4	EDA8136
	IB-11E	2	14	466×490 / 17.6×19.3	EDA8220
	IB-21E	2	15	566×466 / 22.3×17.6	EDA8219
	IL-11/ 11A	2	12	566×466 / 22.3×17.6	EDA8219
	IL-21/ 21A	3	26	466×490 / 17.6×19.3	EDA8220
	ILP-02	1	6	195×310 / 7.7×12.2	EDA8223
	ILP-12	2	11	305×299 / 12.0×11.8	EDA8221



Wire Shelves



Perforated Shelves

## Perforated Shelves

Stainless steel shelf system is removed easily without using tools for easy cleaning.

Product group	Models	Description		Cat. No.
		Maximum	W×L (mm/inch)	
Ovens	OF-02G	8	366×316 / 14.4×12.4	AAA12531
	OF-12G	12	446×366 / 17.6×14.4	AAA12532
	OF-22G	14	516×416 / 20.3×16.4	AAA12533
	ON-02G	8	366×316 / 14.4×12.4	AAA12531
	ON-12G	12	446×366 / 17.6×14.4	AAA12532
	ON-22G	12	576×419 / 22.7×16.5	AAA12535
	OF/ ON-01E	10	365×310 / 14.4×12.4	AAA14501
	OF/ ON-11E	14	445×360 / 17.6×14.4	AAA14502
Incubators	OF/ ON-21E	15	575×410 / 22.7×16.5	AAA14503
	IB-05G	8	366×316 / 14.4×12.4	AAA12531
	IB-15G	12	446×366 / 17.6×14.4	AAA12532
	IB-25G	12	576×419 / 22.7×16.5	AAA12535
	IB-01E	11	366×316 / 14.4×12.4	AAA12531
	IB-11E	14	466×490 / 17.6×19.3	AAA22522
	IB-21E	15	566×466 / 22.3×17.6	AAA22521
	IL-11/ 11A	12	566×466 / 22.3×17.6	AAA22521
	IL-21/ 21A	26	466×490 / 17.6×19.3	AAA22522
	ILP-02	6	195×310 / 7.7×12.2	AAA24501
	ILP-12	11	305×299 / 12.0×11.8	AAA24502



Stackable Chamber

## Stacking Kits

Stackable 2 steps up to maximize space efficiency with exclusive stacking kits. (Only for IB-G, IB-E series)

Product group	Models	Description	Cat. No.
Incubators	IB-05G	Stacking kits for stackable chambers	AAA21521
	IB-15G	Stacking kits for stackable chambers	AAA21522
	IB-25G	Stacking kits for stackable chambers	AAA21523
	IB-01E	Stacking kits for stackable chambers	AAA26501
	IB-11E	Stacking kits for stackable chambers	AAA26502
	IB-21E	Stacking kits for stackable chambers	AAA26503

## Tempered Viewing Windows

Optimized sample monitoring with threefold, tempered safety glass window. (Only for OF-G, ON-G series)

Product group	Models	Description	Cat. No.
		Thickness, W×L (mm/inch)	
Ovens	OF/ ON-02G	5, 150×280 / 0.2, 5.9×11.0	AAA12611
	OF/ ON-12G, 22G	5, 150×380 / 0.2, 5.9×15.0	AAA12612



Tempered Viewing Windows

## Fan-Speed Adjuster

Adjustable inner air circulation speed, which protects spreading out powder sample. (Only for OF-G series)

Product group	Models	Description	Cat. No.
Ovens	OF/02G, 12G, 22G	Analog dial control	AAA12701



Fan Speed Adjuster

\* In addition to providing standard accessories, we will manufacture customized accessories to meet your specific requirements. Contact us for details.



## Optimal vacuum oven with wide temperature range for various test applications

OV series is ideal for separating a solvent from a solution without high temperature drying on a phase of the substance containing humidity or other solvents. Also, for drying solvent with high boiling point because vacuum condition makes boiling points be low to dry solvent easily.

### Operating features

- +5°C above room temperature to 250°C
- Vacuum range: 0 to 0.1MPa, analog gauge
- Microprocess PID control/ Auto-tuning/ Calibration
- Digital timer: 1 min to 99 hr 59 min, delayed ON/ OFF
- Over-temperature limiter/ Door opening alarm
- 3 different temperature values memorable without auto-tuning
- Digital LED display (1°C resolution) with touch-sensitive keypads
- RS-232 interface available

### Constructional features

- Separately equipped vacuum and vent ports the narrow vent line to control vacuum rate and inert atmospheres slowly/ the wider vacuum line to produce a vacuum quickly
- Tight seal at a vacuum level by equipped door gasket and a push-button latch
- Block type heaters heat the chamber evenly and good transmission by anodized aluminum plate shelf
- Heat-tempered full view window permits continuous monitoring
- Excellent space efficiency and user-friendly all-in-one type operating panel
- Available very persistent Viton (Fluorine rubber) door gasket upon request (optional)



OV-11

#### Included Accessories

- Plate shelves, 3.0mm (0.12"): 2 for OV-11/ 3 for OV-12

#### Optional Accessories

See page 17

- Safety cover
- Viton gasket
- Vacuum pumps and Oil mist trap
- Cold trap baths and U-type glass trap

## Specifications & Ordering Informations



Model		OV-11	OV-12
Chamber Volume (L/cu ft)		28 / 1.0	65 / 2.3
Vacuum range		0~0.1MPa, Analog	
Nozzle size (mm/inch)		Vacuum $\varnothing$ 10 / 0.4, Vent $\varnothing$ 10/0.4	
Temperature	Range (°C/°F)	Amb. +5 to 250 / Amb. +9 to 482	
	Fluctuation <sup>1)</sup> (°C/°F) at 100 °C	0.1 / 0.18	0.3 / 0.54
	Variation <sup>1)</sup> (°C/°F) at 100 °C	3.7 / 6.66	
Dimension	Interior dimensions (W×D×H) (mm / inch)	302×305×302 / 11.9×12×11.9	402×405×402 / 15.8×15.9×15.8
	Exterior dimensions (W×D×H) (mm / inch)	680×453×495 / 26.8×17.8×19.5	780×557×595 / 15.8×15.9×15.8
	Net weight (Kg / lbs)	63 / 139	103 / 227
Electrical Requirements (120V)		50 / 60Hz, 5.3A	50 / 60Hz, 6.1A
Cat. No.		AAH13115K	AAH13125K
Electrical Requirements (230V)		50 / 60Hz, 10A	50 / 60Hz, 11.7A
Cat. No.		AAH13116U	AAH13126U

1) Technical data (according to DIN 12880)

## Safety Covers

Preventing door glass explosion for user safety with a netted steel frame and polycarbonate sheet covering.

Models	Description	Cat. No.
OV-11	Safety Cover	AAA13601
OV-12	Safety Cover	AAA13602

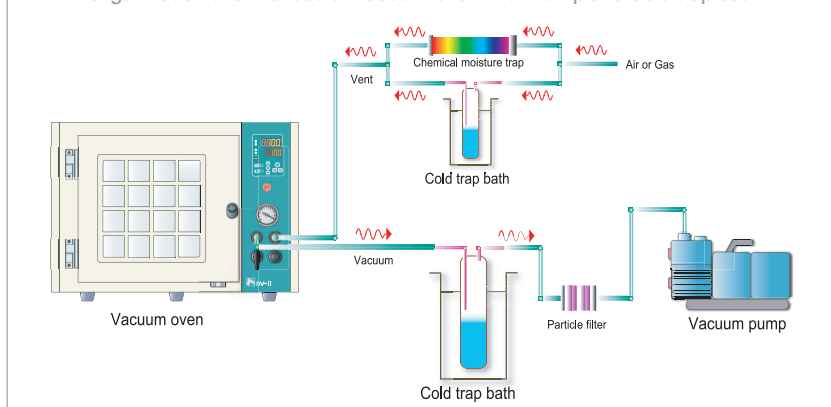
## Gaskets

Available very persistent viton (Fluorine rubber) door gasket upon request.

Models	Description	Cat. No.
OV-11	Silicone Gasket	FAA5146
	Viton (Fluorine rubber) Gasket	FAA5187
OV-12	Silicone Gasket	FAA5147
	Viton (Fluorine rubber) Gasket	FAA5188

## Related products for Vacuum Ovens

<Organization chart for use of Vacuum oven with Pump and Cold trap bath>



Safety Covers

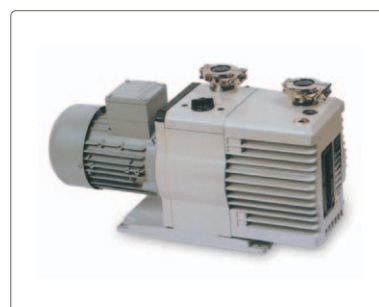


Viton Gaskets

## Vacuum Pumps

Direct connecting oil sealed and backward flow preventive equipped rotary vacuum pumps, which are essentially used with vacuum ovens to get high-degree vacuuming condition. Oil mist trap to prevent oil inflowing is optional. (refer to page. 89 for more specific information)

Models	Electrical Requirements	Cat. No.
TRP-6	230V, 50/60Hz	BEH73005K
	120V, 60Hz	BEH73006U
Related accessory	Oil Mist Trap	BEH73501



Vacuum Pumps

## Cold Trap Baths

Preventing vacuum pumps in a condition of vacuuming as a cold trap to exclude water (vapor). Included 2 U-type glass traps. (refer to page. 89 for more specific information)

Models	Electrical Requirements	Cat. No.
CTB-10	230V, 60Hz	AAH62011K
	230V, 50Hz	AAH62012K
Related accessory	U-type Glass Trap	AAA62501



Cold Trap Baths

\* In addition to providing standard accessories, we will manufacture customized accessories to meet your specific requirements. Contact us.