Turbo Molecular Pumps

 Compound Molecular Pumps (CMP) are Turbo Molecular Pumps (TMP) with components, control, and related products. CMP was first developed by Osaka Vacuum in the world. And now, this type becomes the most popular type of TMP.

**Characteristics of Compound Molecular Pumps**

- Wide range pressure pumping
- High throughpmt
- Quick start up
- Durable design
- Quick start up: quick on and short and sudden pressure rise
- Long life

**Applications:**

- Manufacturing of semiconductor, FPD, electronic parts, and other components
- Research & development, etc.

**Model Designations**

- TG240FCAB
- TG800FBWB
- TG70FRNB-20
- TG50FVWB
- TG50FRAB
- TG400FBWB-20
- TG300FBWB
- TG1400FVWB
- TG70FRAB
- TG70FRNB-20
- TG50FVWB

**Series of Turbo Molecular Pumps**

**Compound Molecular Pumps** (1000 series)

- Standard & Corrosion Resistant Type: 1800 ~ 2000 L/min
- Standard Type: 1800 ~ 2500 L/min

**Magnetically Levitated Compound Molecular Pumps**

- Standard Type: 1800 ~ 2000 L/min
- Corrosion Resistant Type: 1800 ~ 2500 L/min

**Magnetically Levitated Compound Molecular Pumps with Integral Control**

- Standard Type: 1800 ~ 2000 L/min
- Corrosion Resistant Type: 1800 ~ 2500 L/min

**Maintenance free Serial communication**

- Any orientation
- Compact size
- Oil-free pumping
- Energy-saving

**Certification**

- Maintenance free Serial communication: ISO 9001, ISO 14001, CE certification

**Specifications**

- TG240FCAB
- TG800FBWB
- TG70FRNB-20
- TG50FVWB
- TG50FRAB
- TG400FBWB-20
- TG300FBWB
- TG1400FVWB
- TG70FRAB
- TG70FRNB-20
- TG50FVWB

**Compound Molecular Pumps**

- TG70F Pumping System
- TG1400 Pumping System
- TG800 Pumping System

**Diagram of Compound Molecular Pumps**

- TG70F Pumping System
Turbo Molecular Pumps

Compound Molecular Pumps

Osaka Vacuum, Ltd.

Turbo Molecular Pumps

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Characteristics of Compound Molecular Pumps

- Wide pressure range pumping
- High throughput
- Quick start up
- Durable design
- Quick shut down with gas vent
- Energy-saving
- Long life

Applications:

- Manufacturing of semiconductor, FPD, electronic parts, and other
- Research & development, etc.

Any orientation

Compact size

Oil-free pumping

Energy-saving

Certificated safety standard

For the corrosive gas applications, please see the TG or ST series with the corrosion resistant type.

Series of Turbo Molecular Pumps

Compound Molecular Pump (TMP series)

- Standard Type & Corrosive Resistant Type (300BA, 500BA)
- Integrated controller/power supply, very compact
- High compression ratio, low Base pressure
- Variable rotational speed control (1100-4500rpm)

Magnetically Levitated Compound Molecular Pumps with Integrated Controller (ST series)

- Standard Type & Corrosive Resistant Type (200BA, 300BA, 500BA)
- Compact size
- Wide pressure range applications, capable of pumping at high throughput
- High compression ratio, low Base pressure
- Variable rotational speed control (1100-4500rpm)

ST-Compact

TG70F Pumping System

- Model coupling free
- One of two kinds of backing pump (diaphragm pump) can be selected in order for exhausting abnormal vacuum
- Innovative design of Air bearing
- Most suitable for use as easy operating and portable pumping unit for R&D
Turbo Molecular Pumps

Compound Molecular Pumps

Osaka Vacuum, Ltd.

Characteristics of Compound Molecular Pumps

- Wide pressure range pumping
- High throughput
- Quick start up
- Durable design, quiet and sudden pressure rise
- Long life

Applications:
- Manufacturing of semiconductor, FPD, electronic parts, and other
- Research & development, etc.

Any orientation
Easy operation
Compact size
Oil-free pumping
Energy-saving

Maintenance free
Serial communications
Certified safety standard

Inlet flange bolt holes are symmetrical around the center

Natural air cooling

Recommended O/H cycle

N2

High compression ratio, low Base pressure.

Recommended backing vacuum pump

Series of Turbo Molecular Pumps

ST-Compact

TG70F Pumping System

Model coupling free.

High compression ratio, low Base pressure.

Model coupling free.

ST-Compact

TG70F Pumping System

Model coupling free.

High compression ratio, low Base pressure.

Model coupling free.

Turbo Molecular Pumps

Compound Molecular Pumps

Osaka Vacuum, Ltd.
Introduction of the TMP pumping system

ST Series

ST-Compact

The TMP pumping system is a set of three elements, in which a turbo molecular pump with pumping speed of 10 to 30 L/s is installed.

The turbo molecular pump has a pumping speed of 50 to 350 L/s. The pump can be moved while it is operating.

The inlet flange bolt holes are symmetrical around the center line. The inlet flange bolt holes are symmetrical around the center line. The inlet flange bolt holes are symmetrical around the center line.

Recommended backing vacuum pump: TG2410F, TG1100F

Inlet pressure

The permissible ambient temperature is 10°C for air cooling type and 10°C for cooling water.

Cooling water Inlet/Outlet

Depends on the power supply model.

Controller

The inlet flange bolt holes are symmetrical around the center line. The inlet flange bolt holes are symmetrical around the center line. The inlet flange bolt holes are symmetrical around the center line.

Connection

Certificated safety standard: NRTL / SEMI-S2 / CE

Ambient temperature for use

Max. throughput

Max. backing pressure

Max. throughput

Sf : Volume flow rate

Vent port

Depends on the power supply model.

For air cooling type and 10°C for cooling water is 10°C for the cooling water which assures of the ultimate pressure is 30Torr.

Depends on the power supply model.

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Depends on the power supply model.
Introduction of the TMP pumping system

ST Series

- ST-Compact
- Compound Molecular Pumps

The TMP pumping system is a number of pieces of equipment necessary for high vacuum and it is compactly arranged. It can pump up to high vacuum with a high pumping speed. It can be used with high-vacuum equipment for a wide range of applications, such as semiconductor and industrial equipment. The vacuum chamber can be easily cooled with an air-cooling type without a water-cooling system. When the ambient temperature is high, it can be easily cooled with an air-cooling type. The vacuum chamber can be easily cooled with an air-cooling type.

<table>
<thead>
<tr>
<th>ST Series</th>
<th>Compound Molecular Pumps</th>
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<tbody>
<tr>
<td>TG240F</td>
<td></td>
</tr>
<tr>
<td>TG220F</td>
<td></td>
</tr>
<tr>
<td>TG2400F</td>
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<td>TG1400F</td>
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<td>TG450F</td>
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<td>TG800F</td>
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<tr>
<td>TG50F</td>
<td></td>
</tr>
<tr>
<td>TG1100F</td>
<td></td>
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</table>

- Quick shut down with gas vent
- Durable structure for air inrush
- Any orientation
- Space saving is achieved with its desktop size!

Ambient temperature for use

- The permissible ambient temperature range to assure of the ultimate pressure is 10°C to 23°C. The permissible ambient temperature range to assure of the ultimate pressure is 10°C to 23°C.

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Introduction of the TMP pumping system

ST Series

- ST-Compact

The TMP pumping system is a compact type among the ST Series. Further space saving is achieved with its desktop case.

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<tr>
<th>Specifications</th>
<th>Details</th>
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<tbody>
<tr>
<td>Type</td>
<td>ST-Compact</td>
</tr>
<tr>
<td>Source</td>
<td>TG800F</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>100-230V, 50/60Hz</td>
</tr>
<tr>
<td>Power</td>
<td>1.4kW</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-10°C to 40°C</td>
</tr>
<tr>
<td>Certification</td>
<td>NRTL / SEMI-S2 / CE</td>
</tr>
</tbody>
</table>

Recommended backing vacuum pump

- Ultra high gas throughput

Sf : Volume flow rate

- Backing vacuum pump speed: 2,000L/min

Max. throughput

- 10-5 10-4 10-3 10-2 10-1 [L/s]

Max. compression ratio

- 100 101 102 [Pa]

Energy-saving

- Water cooling type

Any orientation

- Baking heater, Automatic slow leak valve, Purge gas inlet connector, Precision needle valve, Flanges and Fittings

Certificated safety standard

- NRTL / SEMI-S2 / CE

Table of Specifications

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Introduction of the TMP pumping system

ST Series

ST-Compact

The TMP pumping system where a number of pieces of equipment is necessary for high vacuum are compactly arranged. It can pump up to high vacuum with a single unit. Furthermore, it can be used in a variety of environments, such as vacuum, air, and water cooling.

The TMP pumping system is equipped with a Turbo Controller. This controller is used to control the operation of the TMP pumping system and to monitor its performance.

Figures in parentheses show the pumping speed of pumps with a screen.

The inlet flange bolt holes are symmetrical around the center.

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Figures in parentheses show the pumping speed of pumps with a screen.

The inlet flange bolt holes are symmetrical around the center.
# Introduction of the TMP pumping system

## ST Series

- Line-up of basic units (three models) in which turbo molecular pump with pumping speed of 30L to 500L/s is combined.
- Most compact type among the ST Series. Further space saving is achieved with its desktop type.

## Applicable pump models

- ISO-B250
- PEFM

## Performance curve

- Max. compression ratio: 5.5-7.5
- Inlet pressure: 10 Torr
- Sf: Volume flow rate of backing pump

## Specifications

<table>
<thead>
<tr>
<th>Temperature range to assure of the ultimate pressure</th>
<th>10-3 10-2 10-1 100 101 102 [Pa]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature range</td>
<td>8 to 38°C.</td>
</tr>
<tr>
<td>Space for cable</td>
<td>15-18 [cm]</td>
</tr>
<tr>
<td>Connector</td>
<td>ISO-G1/4</td>
</tr>
<tr>
<td>Purge Port</td>
<td>4-M8 DP12 PCD140</td>
</tr>
<tr>
<td>Purge gas</td>
<td>CF200</td>
</tr>
<tr>
<td>Inlet pressure</td>
<td>5.5-7.5 L/min, 4×10-4 L/s</td>
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<td>10-4 10-3 10-2 10-1 [Torr]</td>
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<tr>
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<td>100 sccm 100 102 [sccm]</td>
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## Energy saving

- Quick start up
- Low noise
- Low power consumption
- Fan cable

## Compact size

- High gas throughput
- Fan cable

## Any orientation

- Turbine-type vacuum pump
- Air cooling fan
- Baking heater
- Automatic slow leak valve
- Purge gas inlet connector
- Precision needle valve
- Flanges and Fittings

## Certification

- Certificated safety standard NRTL / SEMI-S2 / CE
### Introduction of the TMP pumping system

**ST Series**
- Line-up of basic units (three stably) in which a turbo molecular pump with pumping speed of 10 to 300 L/s is combined.
- Ideal compact type among the ST Series. Further space saving is achieved with its desktop type.

#### ST Series

**TG240F** Turbo Molecular Pumps

- **Inlet ISO-G1/4**
- **Vent port**
- **Baking heater, Automatic slow leak valve, Purge gas inlet connector, Precision needle valve, Flanges and Fittings**
- **High gas throughput**
- **Energy saving**
- **Durable structure for air inrush**
- **Quick shut down with gas vent**
- **Any orientation**
- **Ambient temperature for use**
- **Shutdown time**
- **Max. compression ratio**
- **Max. backing vacuum pump**
- **Volume flow rate**
- **Base pressure**
- **Throughput**
- **Performance curve**

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. throughput</th>
<th>Max. compression ratio</th>
<th>Max. backing vacuum pump</th>
<th>Volume flow rate</th>
<th>Base pressure</th>
<th>Throughput</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG240F</td>
<td>100 [L/s]</td>
<td>100-230(±10%)</td>
<td>200-230(±10%)</td>
<td>32 L/s</td>
<td>260</td>
<td>2.7 torr</td>
</tr>
</tbody>
</table>

*OMFU* Depending on the gas to be evacuated, some may damage the pump. Please contact us for details on corresponding gases.

*JOMFU* The ambient temperature range to assure of the ultimate pressure is 10-2-2.5° for air cooling type and 10-2-2.5° for water cooling.

*+Fan Cable* 3 meter

**TG50F** Turbo Molecular Pumps

- **Inlet ISO-G1/4**
- **Vent port**
- **Baking heater, Automatic slow leak valve, Purge gas inlet connector, Precision needle valve, Flanges and Fittings**
- **High gas throughput**
- **Energy saving**
- **Durable structure for air inrush**
- **Quick shut down with gas vent**
- **Any orientation**
- **Ambient temperature for use**
- **Shutdown time**
- **Max. compression ratio**
- **Max. backing vacuum pump**
- **Volume flow rate**
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<th>Model</th>
<th>Max. throughput</th>
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<td>TG50F</td>
<td>100 [L/s]</td>
<td>100-230(±10%)</td>
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*+Fan Cable* 3 meter
Turbo Molecular Pumps

Compound Molecular Pumps

Applications:
- Manufacturing of semiconductor, FPD, electronic parts, and other
- Research & development, etc.

Specifications
- Any orientation
- Easy operation
- Ultra high vacuum type
- Water cooling

Molecular Pumps

For corrosive gas applications, please use the TG or TG-M series with the corrosive resistant type.

In the case of TG70F-20, it is separated out its controller.

※This dimensional drawings correspond to TG70F (built-in controller type).

Turbo Molecular Pumps

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Characteristics of Compound Molecular Pumps
- Wide pressure range pumping
- High throughput
- Quick start up
- Durable design, quiet at maximum and sudden pressure rise
- Long life

Applications:
- Manufacturing of semiconductor, FPD, electronic parts, and other
- Research & development, etc.

Any orientation
- Easy operation
- Off-free pumping
- Energy-saving

Maintenance free
- Simple maintenance operations
- Certified safety standard
- ISO 9001

Series of Turbo Molecular Pumps

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- Long life

Applications:
- Manufacturing of semiconductor, FPD, electronic parts, and other
- Research & development, etc.

Any orientation
- Easy operation
- Compact size
- Off-free pumping
- Energy-saving

Maintenance free
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- ISO 9001
Compound Molecular Pumps

Osaka Vacuum, Ltd.

Turbo Molecular Pumps

Compound Molecular Pumps (CMP) are Turbo Molecular Pumps (TMP) with a compound structure, such as radial and axial streams. CMP was first developed by Osaka Vacuum in the world. Now, this type has become the most popular type of TMP.

Characteristics of Compound Molecular Pumps

- Wide pressure range pumping
- High throughput
- Quick start up
- Durable design
- Stable on rough and sudden pressure rise
- Long life

Applications:
- Manufacturing of semiconductor, FPD, electronic parts, and other
c- Precision & measurement devices
c- Research and development, etc.

<table>
<thead>
<tr>
<th>Any orientation</th>
<th>Easy operation</th>
<th>Compact size</th>
<th>Oil-free pumping</th>
<th>Maintenance free</th>
</tr>
</thead>
</table>

Certified safety standard: ISO22000, SEMI-S2, CE

Magnetically Levitated Compound Molecular Pumps

- Standard Type & Corrosive Resistant Type
- Vibration-free with UPRC and Diaphragm Pump
- Rotational speed control
- Thermal insulation structure is available

Series of Turbo Molecular Pumps

<table>
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<tr>
<th>Compound Molecular Pumps (TMP)</th>
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<td>Standard Type &amp; Corrosive Resistant Type in 100-500L/s</td>
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<td>TG70F</td>
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Pumping System

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Compound Molecular Pumps

Osaka Vacuum, Ltd.

Turbo Molecular Pumps

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Characteristics of Compound Molecular Pumps

- Wide range pressure pumping
- High throughput
- Quick start up
- Durable design
- Quiet in smooth and steady pressure rise

Applications:

- Manufacturing of semiconductor, FPD, electronic parts, and other
- Research & Development, etc.

Any orientation
Compact size
OIL-free pumping
Energy-saving

Maintenance free
Sealed connections
IS02288-1 serial interface
Certified safety standard
WITL, SEMI-S2 CE

In the case of TG70F-20, it is separated out its controller.

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