



GULDE FOR GAS-PURGING
 TO BE APPLIED TO MOLECULAR PUMPS

Applicable to : TH162/163
 TH522
 TH1502/1503
 TG200/203/2X3
 TG550/553/551B
 TG1000/1003/1005
 TG1810/1813/1815
 TG360M/363M
 TG600M/603M
 TG2200M/2203M
 TG1300/1303

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1. Function of Gas-Purging Mechanism and its Basic Construction

In evacuating corrosive gases or gases containing much dust by a molecular pump, if such gases intrude in the motor housing where there are incorporated a driving device consisting of a motor and bearings, etc., there may be created the cause of mishap to the bearings, etc. The gas-purging mechanism has the construction not to admit external gases to be pumped out by sealing the housing excepting the narrow interspace between the housing and the rotor, through which clean gas flows out. Our original spiral sealing applied to the interspace above-mentioned heightens the sealing effect more successfully. The sectional view of the mechanism is as shown in Fig.1 (The accompanying dwg."R4-06099).

2. Piping Arrangement

An example of piping arrangement from the purging gas source to the molecular pump is shown in the flow diagram in Fig.2. Each of the devices required for the piping is available on request (Optional).

2.1 Purging gas inlet

The sectional view of the purging gas inlet of the molecular pump is shown in Fig.3

2.2 Safety valve

The valve is for protecting the pressure inside the molecular pump from being heightened. Its set pressure is 0.7 kg/cm²G.

2.3 Purging-gas vacuum valve

This valve is the manually- or solenoid-operated vacuum valve.



2. Piping Arrangement - Continued

2.4 Flow-regulating valve

Two kinds of flow controlling devices are available on request, i.e. a flow-regulating valve provided with a flowmeter (whose primary-side pressure is 0.5kg/cm²G) practicable for visual validation of flowrate, and a flow controller (whose primary-side pressure is 0.4 ~ 0.8 kg/cm²G) practicable for retaining the set flowrate constantly, irrespective of the fluctuation of the primary-side pressure.

2.5 Pressure-reducing valve

The pressure of gases supplied from the purging gas source is reduced to the set primary pressure of the flow-regulating valve by this pressure-reducing valve.

2.6 Leak Valve

This valve is for the displacement of the gases to be evacuated out of the molecular pump after its shut-down with purging gas.

3. Kinds of Purging Gas

Generally such gases as dried air, N₂ or Ar are suitable for the purpose.



4. Flowrate of Purging Gas

Standard flowrate of purging gas for each model of molecular pump is shown as below:

MODEL OF MOLECULAR PUMP	FLOWRATE OF PURGING GAS (S C C M)
T H 162/163	2
T H 5 2 2	5
T H 1502/1503	1 0
T G 200/203/2X3	5
T G 550/553/551B	2 0
TG1000/1003/1005	2 0
TG1810/1813/1815	2 0
T G 360M/363M	5
T G 600M/603M	2 0
T G 2200M/2203M	2 0
T G 1300/1303	2 0

5. Start-up/Shut-down Procedure for Gas-Purging Type Molecular Pump

In pumping-out the harmful gases with the gas-purging type molecular pump, it is necessary to operate the pump not to admit those gases into its motor housing.

The standard steps of procedure are as shown below:

5.1 Start-Up

- 1) Close the leak valve, open the purge gas vacuum valve.
- 2) Open the purging-gas main valve to introduce purging gas into the pump.
- 3) Open the forevacuum valve.
- 4) Start up the backing pump to evacuate the molecular pump.
- 5) Open the main valve.
- 6) Turn-on the molecular pump power supply.



5.2 Shut-Down

- 1) Close the main valve.
- 2) Turn-off the power supply, open the leak valve.
- 3) In several minutes, close the forevacuum valve.
- 4) Shut down the backing pump, close the leak valve.
- 5) In several minutes, close the purging gas vacuum valve, and the vacuum of several Torr will be self-held within the pump.
- 6) Close the purging gas main valve.

6. Simplified System

6.1 Forevacuum Valve

When the backing pump has a built-in backstream preventing valve, the forevacuum valve can be omitted, and the steps 5-1-(3) and 5-2-(4) are dispensed with.

6.2 Safety Valve

When the pressure on the secondary-side regulated by the pressure-reducing valve is under $0.7 \text{ kg/cm}^2\text{G}$, the safety valve can be omitted.

7. In Case of Power Failure during Unattended Operation

Keep up supplying purging gas.

It is advisable to let the main valve to automatically close.

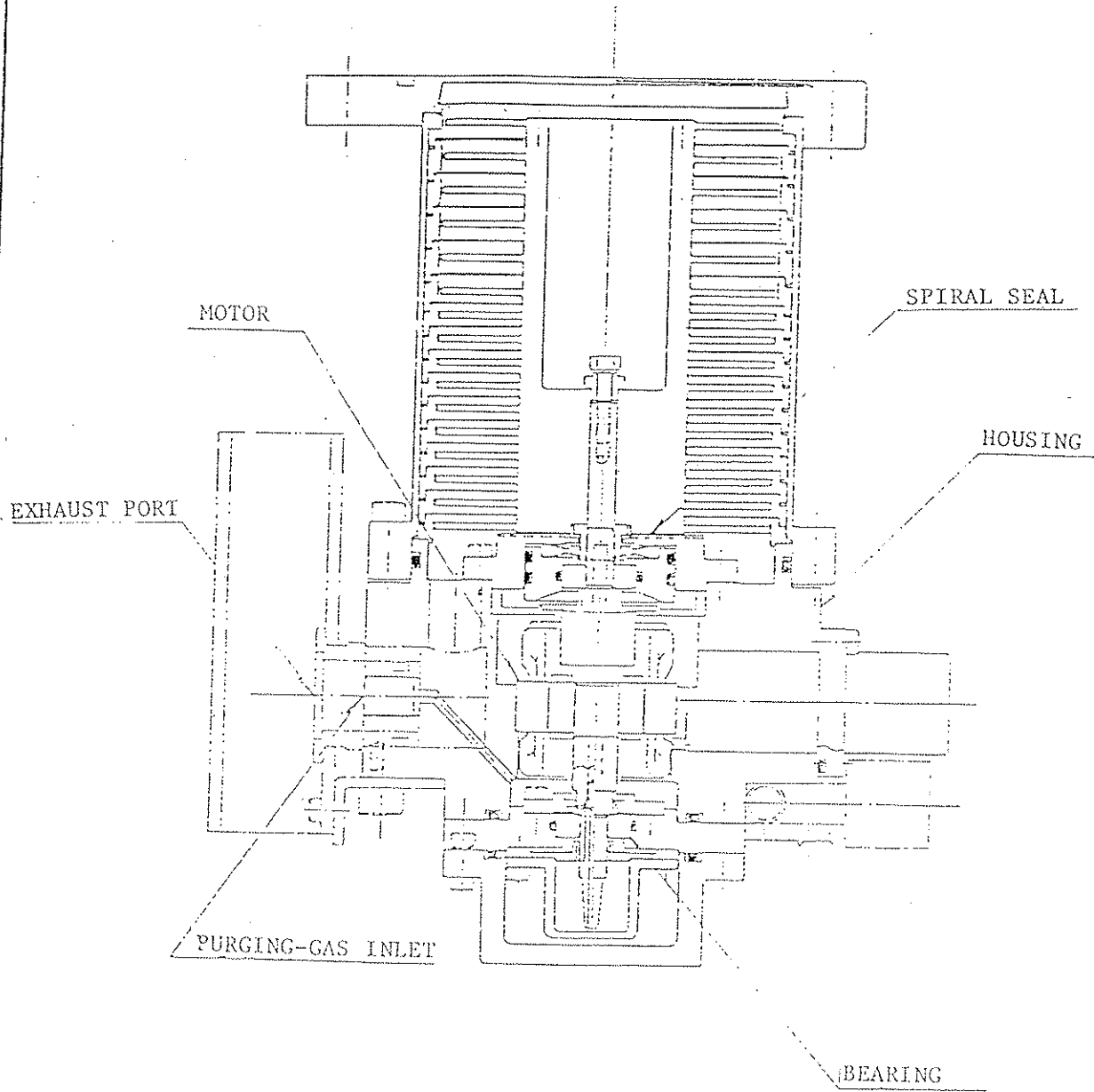
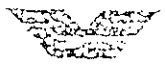


FIG. 1

NO.	DESCRIPTION	MATERIAL	QTY	DWG. NO.	REMARKS	
④					TITLE TH162	
③						
②						
①						
REV. NO.	DATE	DESCRIPTION	DRN	CHKD	APPD	SECTIONAL VIEW
CHECKED	APPROVED	DATE	SCALE			 OSAKA VACUUM, LTD. DWG. NO. RA-06099 REV. NO.
5/1/77 DRAWN	DESIGNED <i>M. Harker</i>	84.7.28 JOB NO.	NO. OF SET			

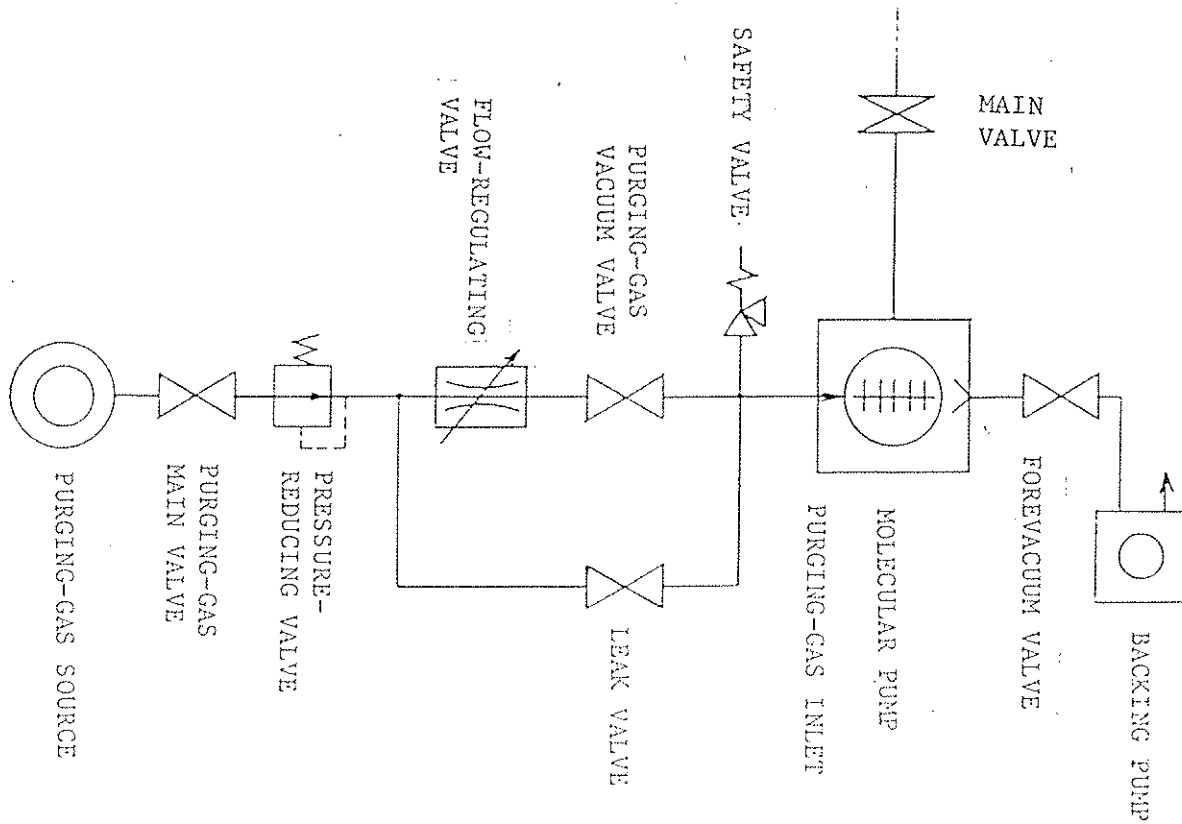



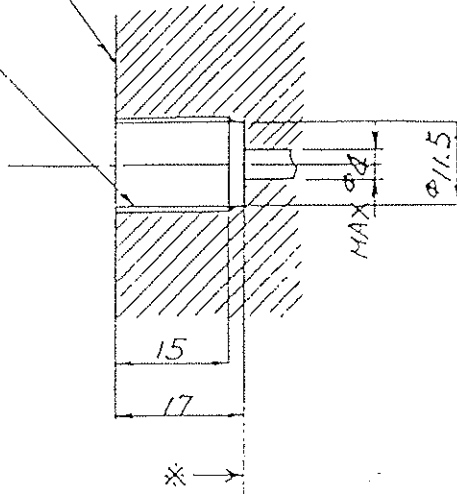
FIG. 2

NO.	DESCRIPTION	MATERIAL	Q'TY	DWG. NO.	REMARKS
4					TITLE FLOW CHART OF PURGING-GAS PIPING
3					
2					
1					
REV. NO.	DATE	DESCRIPTION	DRN	CH'D	APP'D
CHECKED	APPROVED	DATE	SCALE	 OSAKA VACUUM, LTD.	
DRAWN	DESIGNED	JOB NO	NO. OF SET		
		1984-10-15		4-	

AP	AP NO.
CAM	

HOUSING or
PURGING-GAS INLET JUNCTION

PF 1/4" SCREW



* This face is machine-finished suitable for O-ring seal.

FIG. 3

NO.	DESCRIPTION	MATERIAL	Q'TY	DWG. NO.	REMARKS
④					TITLE PURGING-GAS INLET SECTIONAL VIEW
③					
②					
①					
REV. NO.	DATE	DESCRIPTION	DRN	CH'D	APP'D
CHECKED	APPROVED	DATE	SCALE	OSAKA VACUUM, LTD.	
<i>S. Kaneda</i>		84.3.20	1:1	DWG NO 4-	
DRAWN	DESIGNED	JOB NO	NO OF SET	REV NO <input type="checkbox"/>	
	<i>m. Asahi</i>				

AP	AP NO
CAM	

GENERAL TERMS OF WARRANTY

Osaka Vacuum, Ltd. hereby guarantees that all product(s) delivered hereunder are in accordance with the specifications, terms and conditions of the contract and are free from all defects in design, materials, and workmanship. The period of warranty is one (1) year from the date of delivery. Should any part or parts of said product(s) prove defective during this period, we agree to repair or replace at our option such defective part(s) as we deem necessary to reduce losses to a minimum.

The warranty stated above is, however, applicable only if the product is properly used, in accordance with the instruction manual or other instructions furnished by us, and is not applicable to any problems,

- 1) Resulting from misuse, improper operation or negligence in maintenance;
- 2) In products repaired or modified by unauthorized persons;
- 3) Due to fire, flood, earthquake, lightning and/or other natural forces beyond the control.

Our liability shall be limited to alterations, repairs and/or replacement of defective part(s) and shall not include any damage or loss resulting from said defects. Our indemnity, whether based on warranty or otherwise, shall in no case exceed the price of the contracted product(s). Minor deviations from specifications, which do not affect performance of the product(s) covered hereby, shall not be deemed to constitute defects of materials, workmanship and/or failure to comply with the specifications referred to herein.

The foregoing warranty does not apply to rubber goods, bulbs and/or other consumable items. This warranty applies only to products stipulated in the specifications, terms and items of the contract. Nothing herein contained shall extend or be construed to extend the original warranty period of one year.

