Instruction Manual (B)

STP Series Turbomolecular Pumps
STP-603/1003 Series
Pump Specific Information

Model name	*Voltage*
STP-603/1003 series	*200 - 240 Va.c.* *100 -120 Va.c.*

STP pump consists of the three-volumed Instruction Manuals.

Instruction Manual (A):	STP pump generic Instruction Manual Supplied with STP pump
Instruction Manual (B): **(This Instruction Manual)**	**STP pump specific information** **Supplied with STP pump**
Instruction Manual (C):	STP control unit Instruction Manual Supplied with STP control unit

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The description of this product consists of the three-volumed Instruction Manuals. Read through each Instruction Manual before operation.
The separate volume contents of each description are as follows:

Instruction Manual (A)

STP pump generic Instruction Manual:

- Introduction
- Installation of the STP pump
- Installation of the STP control unit
- Operation
- Safety functions
- Maintenance and inspection
- Storage and disposal
- Service, Spares and accessories

Instruction Manual (B)

STP Pump specific information:

- Technical data
- How to Secure the STP pump
- Temperature Management System（TMS）

Instruction Manual (C)

STP control unit Instruction Manual:

- Introduction
- Technical data
- Installation
- Operation
- Serial communication protocol
- STP-Link (except for SCU-750)
- Maintenance
- Storage, transportation and disposal
- Service, spares, and accessories

Keep the manuals in an easily accessible location.

EC DECLARATION OF CONFORMITY

Manufacture: Edwards Japan Limited
1078-1, Yoshihashi, Yachiyo-shi, Chiba 276-8523, Japan

EU Representative: Edwards Limited
York Road, Burgess Hill, West Sussex RH15 9TT, UK

declare under our sole responsibility that the product

Product Name: Turbomolecular pump

Model Number: STP-603 / 1003 series

Accessories Covered: Lon Communication Unit

to which this declaration relates is in conformity with the following standards:

EN 1012-2: 1996

EN 61010-1: 1993 +A2: 1995

EN 61326: 1997/A1: 1998, Class A, EN 61000-6-2: 1999

and with the following provisions of EC directive

Machinery Directive (98/37/EC)

Low Voltage Directive (2006/95/EC)

EMC Directive (2004/108/EC)

MD and LVD test report is certified by

Certificate number: SC20208

Certification Body: ETL SEMKO SHANGHAI LIMITED

Manufacture:

Yachiyo 10th Aug. '07
Place and date

Masaharu Miki
Mr. Masaharu Miki
Director, Technology
Edwards Japan Limited

EU representative:

Crawley, 17th August 2007
Place and date

Stephen E. Ormrod
Dr. Stephen E Ormrod
Technical Director
Edwards Limited

VI-DOC-39-005

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1 TECHNICAL DATA

1.1 Applicable pump specifications

Model Name	Specification	Applicable Control unit
STP-603/1003 series	Ultra high-vacuum type	SCU-750/SCU-800

Naming convention:

- "C" following a pump model name indicates a corrosion resistant[*1] type (e.g. STP-603C).

[*1] Corrosion resistant: STP pump with anti-corrosive treatment.

1.1.1 STP pump specifications

The values shown below are typical. They are not guaranteed.

Item			603 series	1003 series
Flange size	Inlet port flange		ICF203/VG150/ ISO160/ISO160F	ICF253/VG200/ISO200/ ISO200F/ISO250/ISO250F
	Outlet port flange		KF40	KF40
Pumping speed	N_2	L/s	650	1000
	H_2	L/s	550	800
Compression ratio	N_2		$>10^8$	
	H_2		10^5	
Ultimate pressure	Non-corrosion resistant type	Pa (Torr)	10^{-8} (10^{-10}) order: ICF flange 10^{-7} (10^{-9}) order: VG/ISO flange	
	Corrosion resistant type	Pa (Torr)	10^{-7} (10^{-9}) order: ICF flange 6.5×10^{-6} (5×10^{-8}) or less: VG/ISO flange	
Maximum working pressure*1		Pa (Torr)	1.3×10^{-2} (1×10^{-4}): Natural air-cooling	
Allowable backing pressure*1		Pa (Torr)	13 (0.1): Natural air-cooling	
Flow rate of purge gas <N_2>		Pa·m^3/s (SCCM)	1.7×10^{-2} (10): Corrosion resistant type only	
Rated speed		rpm	35,000	
Backup rotational speed*2		rpm	Approximately 8,500	
Starting time		min	6	
Stopping time		min	6	
Noise		dB	<50 (at 35,000 rpm)	
Temperature Management System (TMS)			N/A	
Baking temperature		°C	<120	
Lubricating oil			Not necessary	
Installation position			Free	
Cooling method			Natural air cooling (Water cooling, Air cooling: At baking and gas pumping)	
Recommended backing-pump		L/min	>1,300	
Mass*3		kg	31	
Ambient temperature range		°C	0 to 40	
Storage temperature range		°C	-25 to 55	
Applicable Control unit			SCU-750/SCU-800	

*1 The pressure is applicable under conditions that N_2 or other similar gas is vacuumed and the backing-pump (pumping speed: 1,300 L/min) is used. When the gas is exhausted intermittently, the gas more than the maximum gas flow-rate can be exhausted. Consult Edwards about conditions.

*2 A backup rotational speed is the lowest rotational speed to which the magnetic bearing can be backed up at a power failure.

*3 Mass is a value of state that the only standard accessory was installed (except the optional accessory).

1.1.2 Condition for the water-cooling unit

The water-cooling unit is an optional accessory.

Item		Specification
Port type		Rc 1/4 (Female) *1
Flow rate	L/min	2
Water temperature	°C	5 to 25
Water pressure	MPa (kgf/cm^2)	0.3 (3)

*1 Standard type

1.2 External appearance of the STP pump

See the next page.

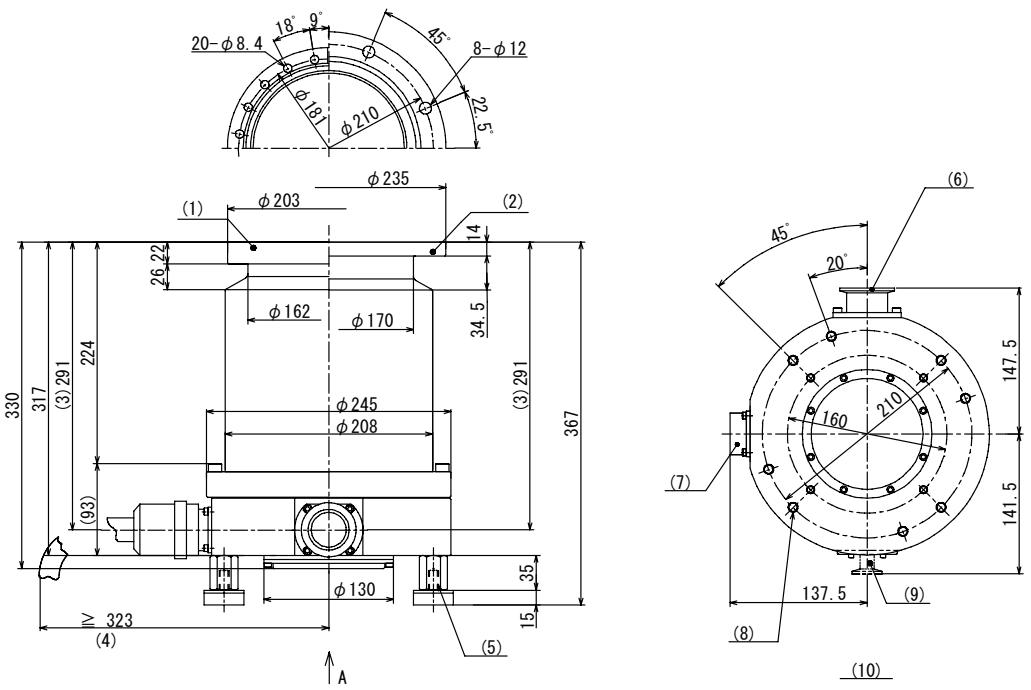


Figure 1 - STP-603 series: ICF203/VG150

No.	Item	Description
1	Inlet port flange	ICF[*1]203
2	Inlet port flange	VG[*2]150
3	Height of the purge port	(only for corrosion resistant type)
4	Bending dimension of the STP connection cable	
5	Screw hole of legs	M10[*2] depth 20
6	Outlet port flange	KF[*2]40
7	STP connector	
8	Screw hole for legs	8-M10[*2] depth 24
9	Purge port	KF[*2]10 (only for corrosion resistant type)
10	Viewed from arrow A	

[*1] JVIS

[*2] JIS

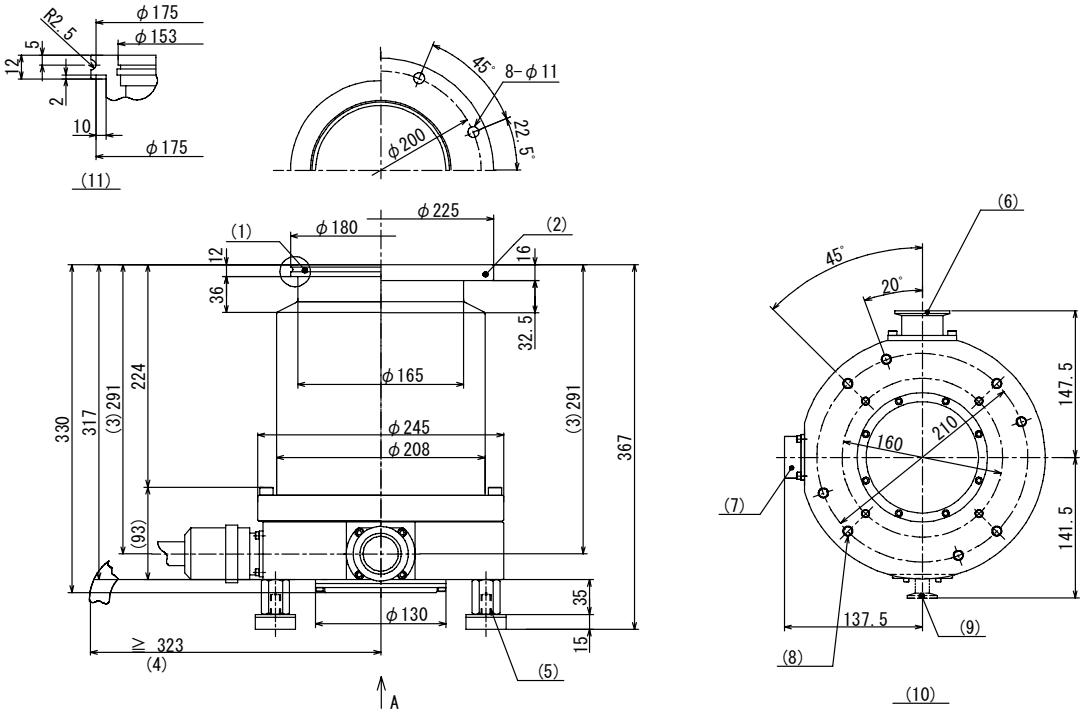


Figure 2 - STP-603 series: ISO160/ISO160F

No.	Item	Description
1	Inlet port flange	ISO*2160
2	Inlet port flange	ISO*2160F
3	Height of the purge port	(only for corrosion resistant type)
4	Bending dimension of the STP connection cable	
5	Screw hole of legs	M10*1 depth 20
6	Outlet port flange	KF*140
7	STP connector	
8	Screw hole for legs	8-M10*1 depth 24
9	Purge port	KF*110 (only for corrosion resistant type)
10	Viewed from arrow A	
11	Magnified view of the inlet port flange	ISO160

*1 JIS

*2 ISO

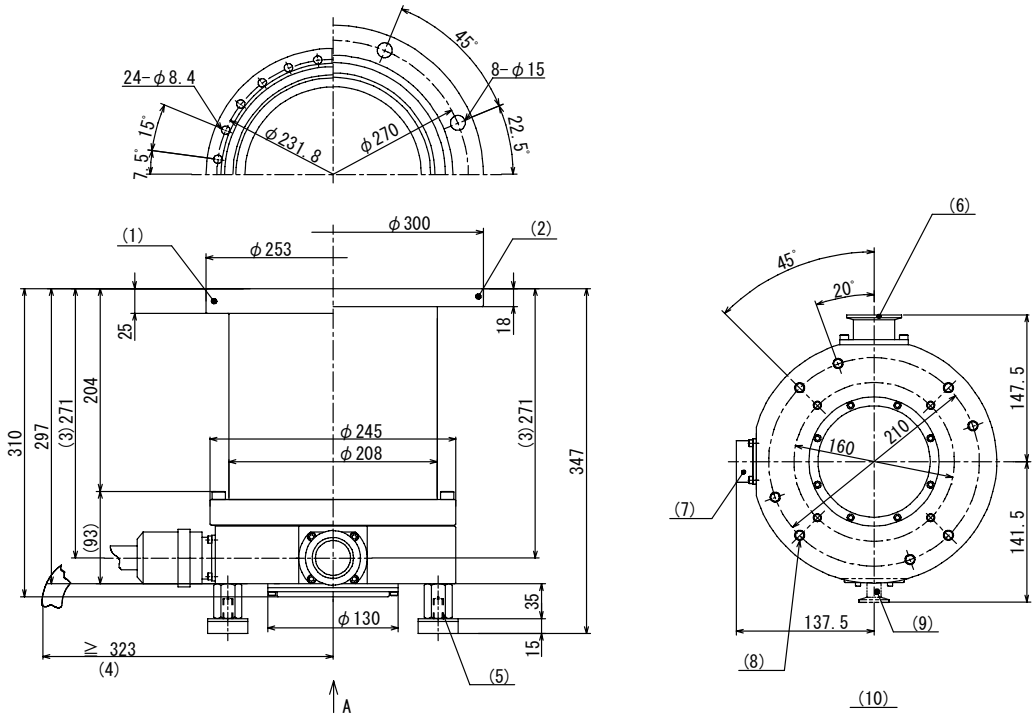


Figure 3 - STP-1003 series: ICF253/VG200

No.	Item	Description
1	Inlet port flange	ICF[*1]253
2	Inlet port flange	VG[*2]200
3	Height of the purge port	(only for corrosion resistant type)
4	Bending dimension of the STP connection cable	
5	Screw hole of legs	M10[*2] depth 20
6	Outlet port flange	KF[*2]40
7	STP connector	
8	Screw hole for legs	8-M10[*2] depth 24
9	Purge port	KF[*1]10 (only for corrosion resistant type)
10	Viewed from arrow A	

[*1] JVIS

[*2] JIS

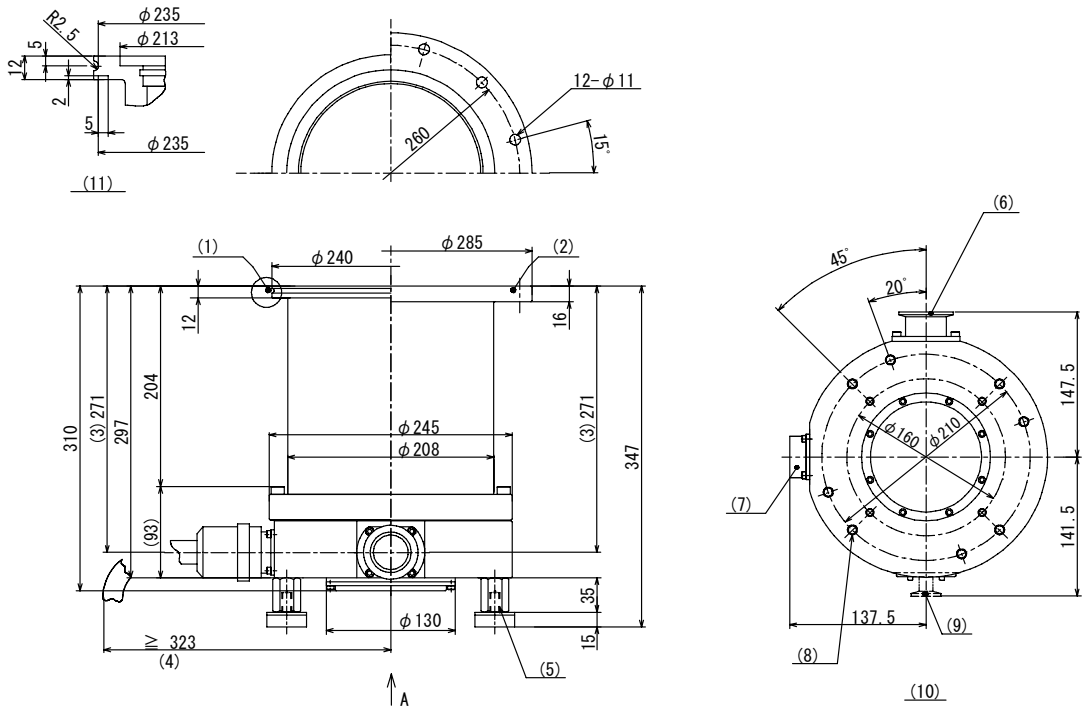


Figure 4 - STP-1003 series: ISO200/ISO200F

No.	Item	Description
1	Inlet port flange	ISO*2200
2	Inlet port flange	ISO*2200F
3	Height of the purge port	(only for corrosion resistant type)
4	Bending dimension of the STP connection cable	
5	Screw hole of legs	M10*1 depth 20
6	Outlet port flange	KF*140
7	STP connector	
8	Screw hole for legs	8-M10*1 depth 24
9	Purge port	KF*110 (only for corrosion resistant type)
10	Viewed from arrow A	
11	Magnified view of the inlet port flange	ISO200

*1 JIS

*2 ISO

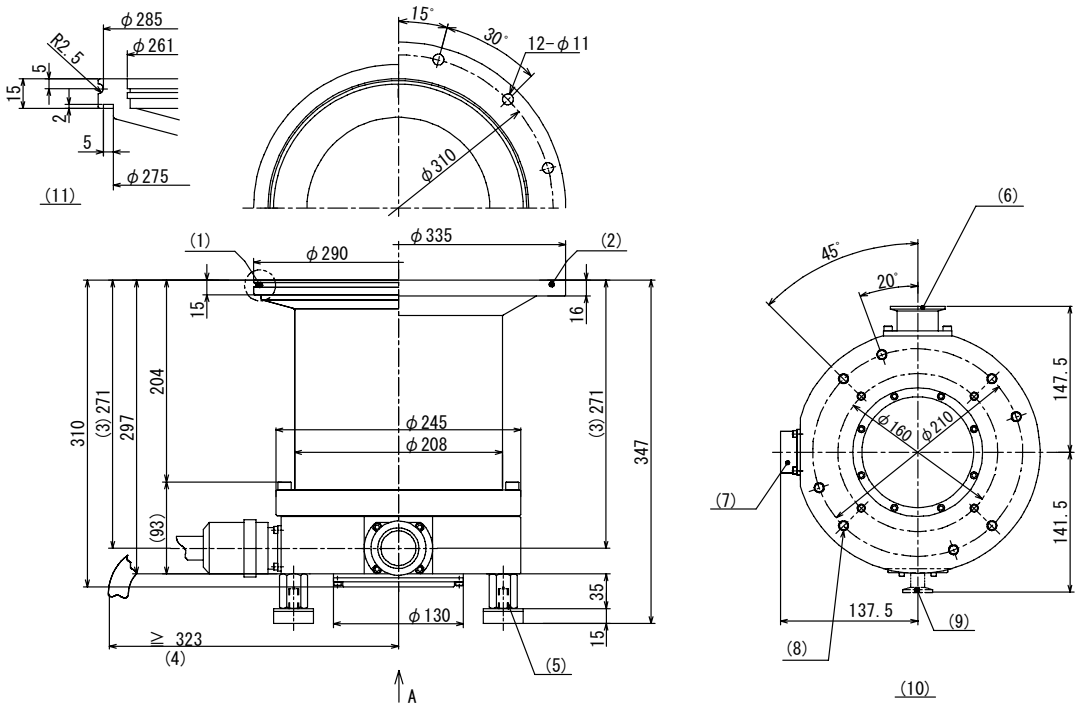


Figure 5 - STP-1003 series: ISO250/ISO250F

No.	Item	Description
1	Inlet port flange	ISO[*2]250
2	Inlet port flange	ISO[*2]250F
3	Position of the purge port	(only for corrosion resistant type)
4	Bending dimension of the STP connection cable	
5	Screw hole of legs	M10[*1] depth 20
6	Outlet port flange	KF[*1]40
7	STP connector	
8	Screw hole for legs	8-M10[*1] depth 20
9	Purge port	KF[*1]10 (only for corrosion resistant type)
10	Viewed from arrow A	

[*1] JIS

[*2] ISO

1.3 Label affixing positions

Refer to the Instruction Manual (A) for the details of the labels 1 to 7.

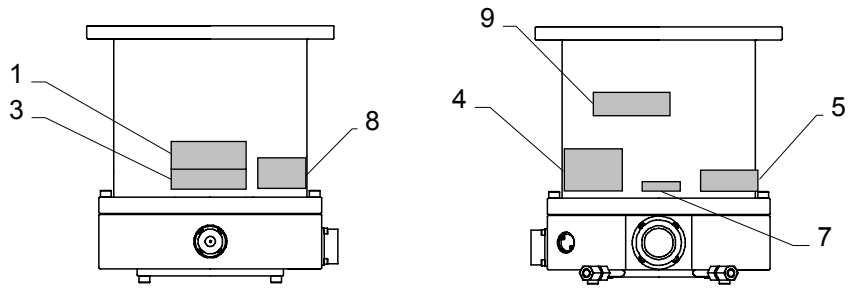


Figure 6 - Label affixing positions for the STP pump

1	STP pump installation warning label
3	Heavy product caution label
4	Connector caution label
5	STP pump/control unit caution label
7	Rotational direction instruction label
8	Name plate
9	Company logo

1.4 Accessories

Item	Q'ty	Remarks
Inlet port cover	1	
Outlet port cover	1	
STP connector cover	1	
Blank flange for purge port	1	KF10 (only for corrosion resistant type)
Clamping ring for purge port	1	KF10 (only for corrosion resistant type)
O-ring washer for purge port	1	KF10 (only for corrosion resistant type)
Leg	8	4 legs are attached to the STP pump
Rubber foot for leg	4	
Instruction Manual (B)	1	This manual

2 HOW TO SECURE THE STP PUMP

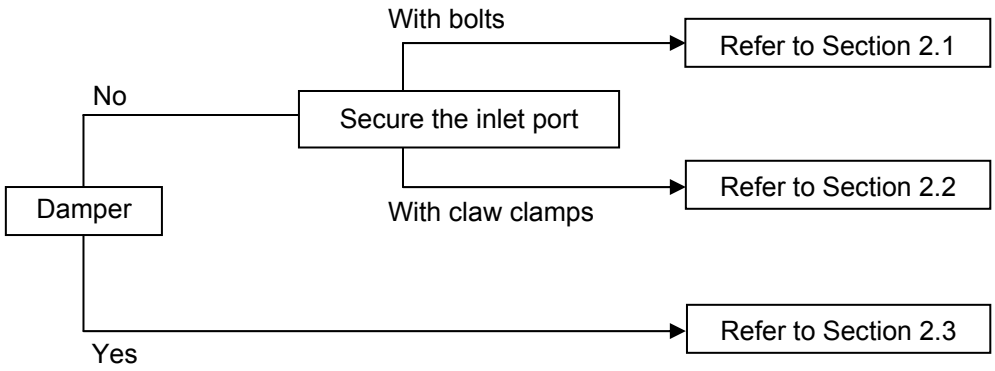
WARNING

The STP pump is provided with a high-speed rotor. Any internal abnormality/error may result in a jump in rotational torque leading to personal injury or peripheral equipment damage.

The STP pump is provided with a high-speed rotor. The worst-case failure may result in a jump in rotational torque leading to personal injury or peripheral equipment damage.

The method of securing the STP pump will depend on the installation requirements. Secure the STP pump to the vacuum equipment as follows:

Design and secure the mounting for the STP pump so that it can withstand the maximum rotational torque. Refer to Table 2 for torque in pump abnormality.



In some cases, the damper and the claw clamper securing cannot be used.

This will depend on the type of STP pump. Refer to Table 1 for torque tightening the bolts used.

Bolt size	Tightening torque (Nm)
M8	12
M10	24
M12	42

Table 1 - Tightening torque of bolt

When making the legs to secure the base, make them shorter than the ones attached to the STP pump. Use a material that has a tensile strength of 600N/mm^2 or more.

When securing the base, use stainless steel securing bolts with a tensile strength class of 70 or more.

Note: When using any securing method other than that specified in this manual, contact Edwards.

2.1 When securing the inlet port with bolts

Refer to Table 2 for maximum predicted torque in any pump abnormality and for the recommended type of securing bolt for inlet port flange.

Secure the inlet port flange with the correct size bolts as specified in the Inlet Port Flange Standard.

Secure the base with either the 8 screws for legs or the 8 attached legs. Ensure instructions with regard to legs and bolts for securing the base are adhered to page 11. Make sure that the recommended securing bolt is the correct one depending on the method of securing the base.

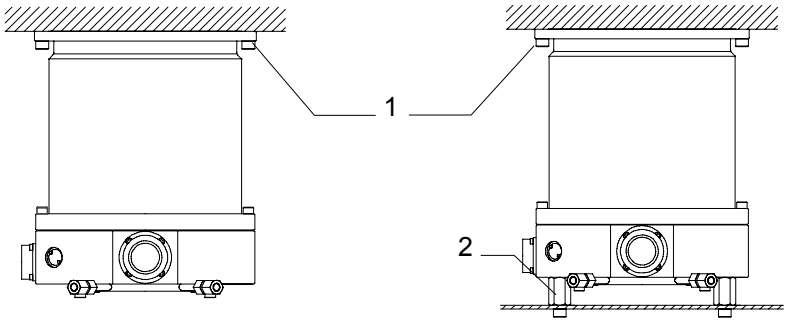
Pump mode		**STP-603 series**					
Flange type		VG150		ISO160F[*2]		ICF203	
Torque in pump abnormality [Nm]		1.5×10^4		1.5×10^4		1.5×10^4	
Base (8 positions) securing		No	Yes	No	Yes	No	Yes
Recommended securing bolt for flange	Shape	Standard	Standard	Standard	Standard	Standard	Standard
	Material[*1]	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
	Strength[*1]	70 or more	70 or more	70 or more	70 or more	70 or more	70 or more

Pump mode		**STP-1003 series**					
Type of flange		VG200		ISO200F/ISO250F[*2]		ICF253	
Torque in pump abnormality [Nm]		1.5×10^4		1.5×10^4		1.5×10^4	
Base (8 positions) securing		No	Yes	No	Yes	No	Yes
Recommended securing bolt for flange	Shape	Standard	Standard	Standard	Standard	Standard	Standard
	Material[*1]	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
	Strength[*1]	70 or more	70 or more	70 or more	70 or more	70 or more	70 or more

[*1] Refer to ISO898-1 (JISB 1051), ISO3506 (JISB 1054) and AMS6419 (Aerospace Material Specification).

[*2] Maximum predicted torque of ISO flange type pump is the same as that of ISO_F flange type pump.

Table 2 - Maximum torque predicted and recommended securing bolt for inlet port flange



(A) When the base is not secured (B) When the base is secured

1. Recommended fitting bolt for flange
2. Secure the base

Figure 7 - Example of securing the STP pump (when securing the inlet port with bolts)

2.2 When securing the inlet port flange with claw clamps

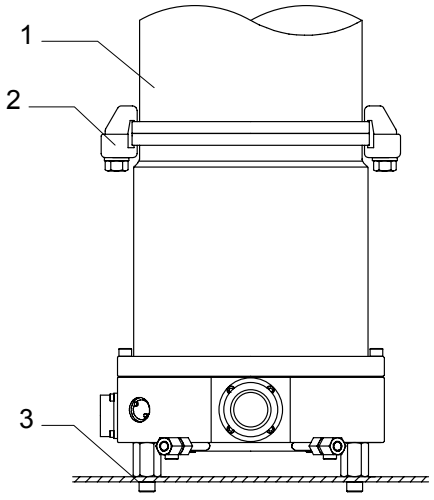
Refer to Table 2 for rotational torque.

When securing the inlet port flange with only the claw clamp, the vacuum equipment cannot withstand the maximum rotational torque generated by the worst-case failure. To make the vacuum equipment withstand abnormal torque, secure the base with either the 8 screws for legs or the 8 attached legs. Ensure instructions with regard to legs and bolts for securing the base are adhered to page 11.

For the claw clamp-type, use the required number of claw clamps as specified in Table 3. Position the claw clamps evenly on the circumference.

Flange size	Number of claw clamps
ISO 160 or less	4 or more
ISO 200 to 250	6 or more
ISO 320 or more	8 or more

Table 3 - Number of claw clamps for flange size



1. Vacuum equipment
2. Claw clamps
3. Secure the base

Figure 8 - Example of securing the STP pump
(when securing the inlet port flange with claw clamps)

2.3 When installing the damper in the inlet port flange

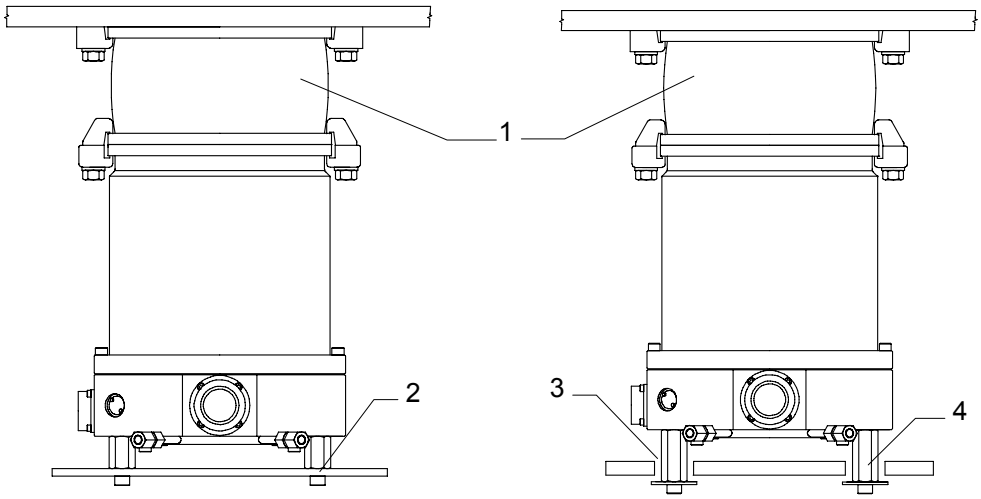
CAUTION
Use a damper only at the vertically upright position.

CAUTION
DO NOT remove the bolts and nuts attached to reinforce the damper.

Refer to Table 2 for rotational torque.

When using a damper, secure the base with either the 8 screws for legs or the 8 attached legs. Ensure instructions with regard to legs and bolts for securing the base are adhered to page 11.

When the base cannot be secured because of the equipment design, install the pump with a torque restraint like the one shown in Figure 9 (B).



(A) When securing the base (B) When installing not to rotate

1. Damper
2. Secure the base
3. Hole to prevent from rotating
4. Leg

Figure 9 - Example of securing the STP pump (when installing the damper in the inlet port flange)

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