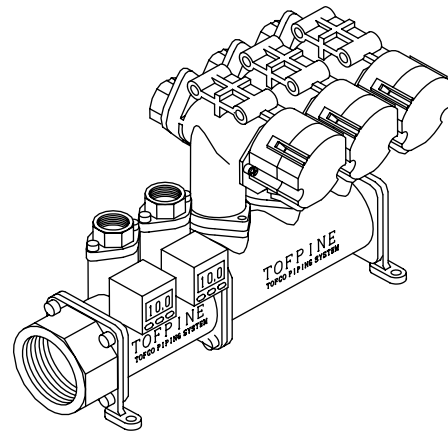


Instruction Manual for TPS25 / 32 Series

Before using the TOFPINE, TFCO PIPING SYSTEM, please read this instruction manual thoroughly and always keep this manual at hand for your quick reference when necessary.



TOFLO CORPORATION

Specifications

Items		Contents		
Max operating pressure	0.5 MPa(G)	Withstand pressure: 0.75MPa(G)		
Max operating fluid temperature	F • V	A	G • V • W • N • T	
	Max 100	Max 80	Max 50	
	Ambient temperature			
0 - 55 (Non condensing)				
Built-in flowmeter	Flow accuracy	FS ± 5% (Water)		
	Pulse output	NPN Open collector 26.4VDC 15mA at max. 0 - around 140 Hz		
	Power supply	5 - 24VDC ± 10%		
	Cord length	2 m (Standardized) AWG24		
Material for the wetted part		SCS13, SUS304, FPM PPS-GF30 PTFE, Alumina, POM-CF30(For flowsensor part)		

See instruction manual attached separately, if using the flow indicator EM30/EX30, etc..

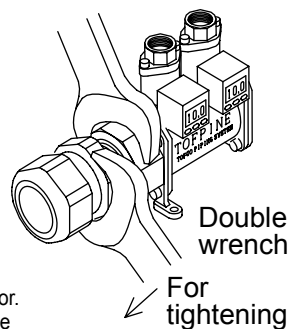
Caution

Recommended tightening torque

Pipe size	Recommended tightening torque
1/4	6 - 8 N • m
3/8	13 - 15 N • m
1/2	16 - 18 N • m
3/4	19 - 40 N • m
1	41 - 70 N • m
1 1/4	43 - 75 N • m

- When tightening, be sure to make up pipe with a double wrench.
- Use a tool after having screwed by hands so that it may not cause damage to the screw thread.
- Do not retighten while applying pressure to the pipe interior.
- To wind a sealant tape, wind a sealant tape from within the position not less than 2mm to the reversed side facing against the direction of screwing. Apply a liquid sealant to the inner position not less than 2 from the end of the thread. (Failure to do this may result in jumping out of the end of the pipe thread and becoming chip, and causing clog with dirt and failure.)

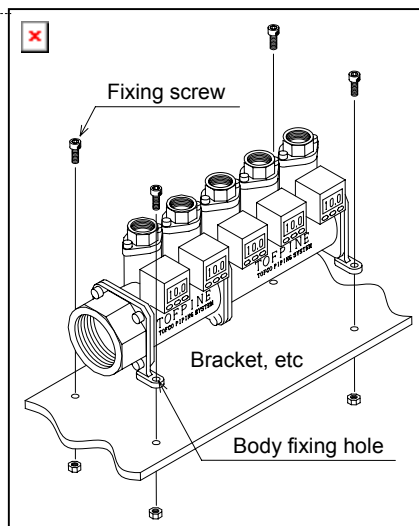
For fixing



Double wrench
For tightening

Caution

How to install



- Insert the fixing screws to the body fixing hole, and also inset washer and nut as well if necessary.

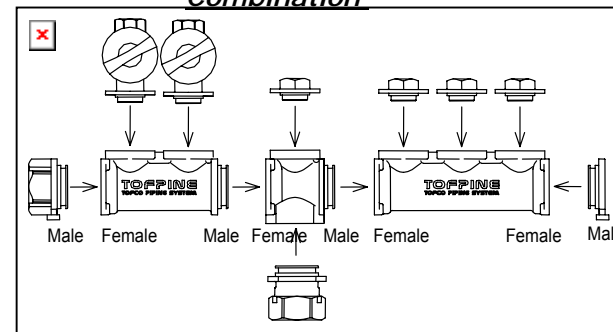
Standard	Set screw sizes	Fixed holes
TPS25	M 4	4.8 ± 0.25
TPS32	M 5	6.0 ± 0.25

- For the body fixing hole, it is necessary to fix the screws by the fixing method which has been taken into consideration the error, since the error of the hole pitch becomes larger, as the TOFPINE manifold number to combine increases.

Caution

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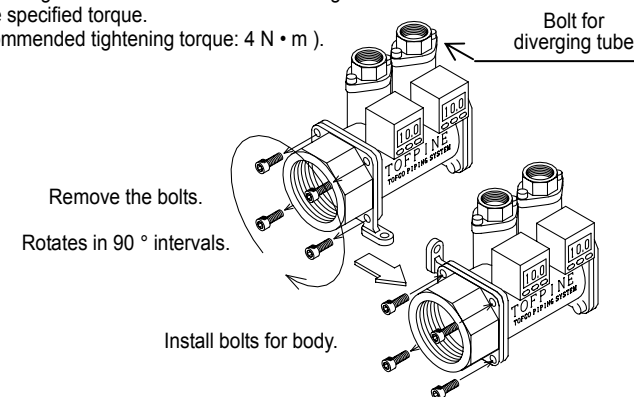
Combination



For combination sequence, it follows in a male to female sequence. (For both mains and diverging pipe.) Combine in the female to female sequence (HF or RF type) only for the last right manifold.

Changing the

- For the installation attitude, remove the right and left connecting adapters (A) and hexagon socket head bolts located in four places, and the installation attitude can be changed by turning the attitude in every 90°.
- The hexagon socket head bolts should be tightened at the specified torque. (Recommended tightening torque: 4 N • m).



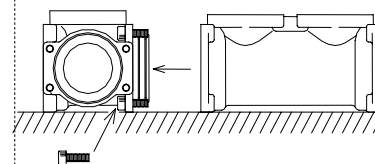
Remove the bolts.
Rotates in 90° intervals.

Install bolts for body.

Caution

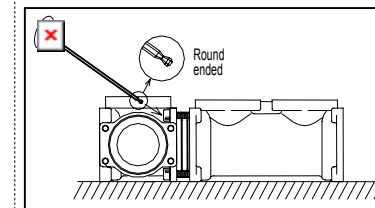
Assembling the 1-TOFPINE (For specific case)

- For 1-TOFPINE assembling on TPS25, a dedicated tool is needed (Allen wrench with an end of less than 7mm). (Recommended tool: ASAHI DV0300)
- To build up, proceed as follows.

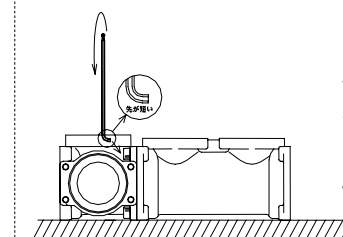


For two places at the right side where the screws are to be tightened when facing the 1-TOFPINE manifold, first tighten those parts with screws because of being hard to tighten.

Put the TOFPINE manifold on a flat place, pass the hexagonal socket head bolt of M4 x 12 through the thread hole of the 1-TOFPINE manifold side first, then bring the manifold to be connected closer to it.



The dedicated tool as shown below should be prepared. Push the round-ended side of it into the bolt and while tightening the screws located at four places slowly and one by one, immediately after putting O-ring.



The last additional tightening should be made by a short-ended part of the tool. (Recommended tightening torque: 4 N • M)

A dedicated tool

Recommended tool: ASAHI DV0300

To begin with

TOFPINE, TOFCO piping system, TPS25/32 Series is a centralized piping system, in which by virtue of TOFPINE's unique piping structure and variation we are allowed to make up a free combination. A space-saving piping system which has had difficulty doing in the conventional piping system for general purpose has not been realized until TOFPINE has been come onto the market.

This instruction manual contains information about general description, specifications, installation and how to connect. Before using the TOFPINE, you should read this manual thoroughly and fully understand the contents.

Safety precaution

Warning	Failure to adhere this warning described here in this manual may result in suffering personal injury (An electric shock and burns).
Caution	Failure to adhere this caution described here in this manual may result in failure of the product.

Warning

- Use the TOFPINE under the specified operating pressure and temperature.
- Do not touch directly to the device under which it is operating, if flowing the fluids whose temperature is high or low.
- Take measures for the water hammer so as not to exceed the withstand pressure, such as using water-hammer alleviating valve and elastic body piping material, etc..

Ca

Piping

- Blow pipe interior which is to be connected (Flushing) away foreign matter such as grinding chip, oil content, dust, etc., or make it clean fully so that they may not enter into the pipe.
- When piping, making up pipe should be conducted with a double wrench so that it may not exert any additional forces on the main body. (Failure to do this may result in damage to the TOFPINE. Tightening should be done with reference to the recommended tightening torque.)
- Do not use the TOFPINE in wrong direction of flow.

When using the type of TPS25/32-HC.

- Do not blow air directly to the product by using an air gun.
- In the case when doing air purge, blow air slowly and as low pressure as possible. (Failure to do this may sometimes result in damage to the internal flowsensor.)
- For power supply voltage and output, operate them within the specified ranges. (Failure to do this may result in damage, electric shock, or fire.)
- Turn on the power, after having done wiring connection. Do not insert or remove the wires while powering up.
- Do not make a mistake in wire color and terminal number, when wiring. (Failure to do this may result in damage, or fire.)

Water source

- We recommend to install a strainer more than 100mesh to the supply side in the vicinity of this product, if using the type of internal flowsensor (HC).
- Do not flow the fluid in which air bubbles are contained at all times.
- Do not flow fluids containing air bubbles at all times and do not use the TOFPINE in the environment where pulsation will occur at all times.

Caution

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Notes on assembling and

- Make sure that O-ring is free from flaw and dust, install it to the male side so that it may not damage, and feed it with water or grease and gently insert it. (Grease application is recommended, if it is not a oil-free specification. It makes it easy to install and remove).
- Replace the O-ring with a new one so that it may not use a once removed O-ring.
- For the assembling and disassembling described here, the product will function properly in so far as the work has been done correctly, so that we could not assume any responsibility for any failure and water leakage resulting from the defective caused by the worker.
- Assembling and disassembling should be self-responsibility to be assumed, so that TOFPINE should be used after having checked to see if there is no leakage and no wrong assembling in the TOFPINE.

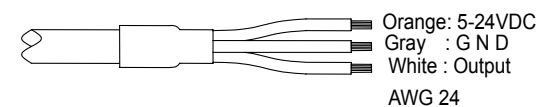
Std.	O-ring size		
	For main pipe connection use	For diverging pipe connection use	
TPS25	G30	P20	
TPS32	G35	P24	

Std.	Thread size		
	For main pipe connection use	For diverging pipe connection use	
TPS25	M4 x 12	M4 x 8	
TPS32	M4 x 12		

Recommended tightening torque: 4 N • m

Caution

Wiring diagram of TPS25/32-HC type



- Wiring should not be conducted while powering up.
- Make sure that wiring has been correctly conducted.
- Do not use in excess of the range specified.
- See instruction manual attached separately, if using an indicator with any output other than pulse output.

Caution

Storage location

Avoid storing under the following environment.

- In places where a salty breeze and corrosive gases will much occur.
- In a place where it is subjected to direct sun light.
- Storing for a long period in any places other than temperature between 5 and 35 and humidity between 45% and 85%.

Installation location

- Install in a location where it is not splashed with water.
- Install in locations where it is not subjected to sea breeze and direct sunlight.
- Install in locations where humidity is between 45% and 85% and where condensation of humidity will not occur.
- Install in a location where corrosive gas will not occur.
- Install in a location where mechanical vibrations are minimal.

Warning

Handling precaution

- In no event should the TPS25/32 Series TOFPINE be used in excess of the max operating temperature and pressure resistance.
- In no event should the fluid that may corrode the wetted materials be used.
- Operate in the environment where is free from freezing.
- In no event should any parts be used for any other applications purpose. (It shall not be covered by warranty.)
- Do not mix foreign materials with fluid, such as sealant tape, processed burr etc..)

Warranty

- Warranty period shall be in principle for one year after shipment.
- For assembling and disassembling, if having done appropriately, the product will function properly. Please be advised that we shall not assume any responsibility for the failure and water leakage caused by work's defect.
- Warranty scope shall be limited to repairing or replacing the product you purchased as a maximum. For the damage to the product arising directly or indirectly from having being operating, we shall not assume any responsibility for them.

TOFLO CORPORATION

TOFCO

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