Selection of Strainer

What is a Strainer ??

A strainer catches foreign substances inside of piping and prevents them to flow inside of the piping for steam, air, water, and oil systems for a factory or plant, as well as problems or damage to devices attributable to the ingress of foreign substances.

|	Y type strainer	Basket strainer	Duplex strainer	Temporary strainer
Applications	A compact type strainer with low fluid resistance and requiring less installation space.	A basket strainer is suitable for liquid, equipped with a larger filtration area than Y type strainer.	The screen can be washed without stopping the fluid because the fluid passage can be switched.	A piping flushing type strainer to be used prior to operation.

	SY-5	SU-20	SW-10	ST-1
Major Products				

Meshes

| What is the mesh size?	→	The mesh size is the number of meshes in 25.4 mm (1 inch). Example: In the right figure, the mesh size is five.

25.4 mm

5 mesh
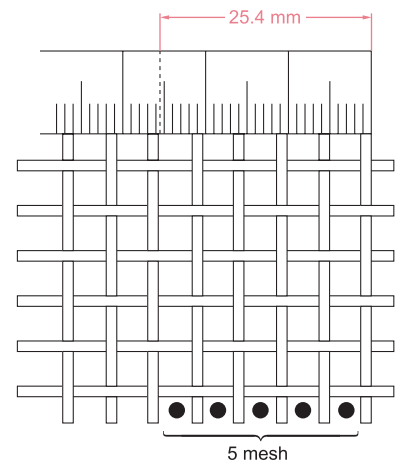
	Specification for Japanese government	Yoshitake standard
For water	40 mesh or more (80 mesh or more when installed before a solenoid valve)	40・60 mesh
For steam	80 mesh or more	80 mesh

●Table of standard mesh per model

Standard meshes	Model
40 mesh	SU-6・6SS
60 mesh	SY-40C, SY-24・24-N, SY-6-N, SY-9, SU-10・10S, SU-20・20S・20C・20H, SU-12, SU-50H・50S・50SS, SW-10・10S, SU-55F
80 mesh	SY-5, SY-40・40EN・40H, SY-6, SY-17, SY-8, SY-10-30, SY-10H・10HS, SY-20-10・20, SY-13・13SS, ST-1

Meshes

Comparison of Meshes and Particle Sizes
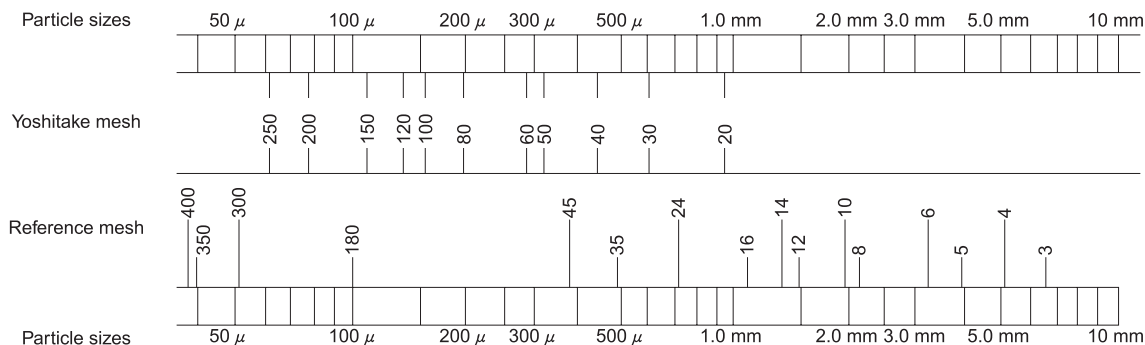
- Note that because of the structure, the capability to catch foreign substances equivalent to standard meshes may not be guaranteed. Please contact us when the passing of foreign substances is not permissible.

Porosity of Screen

● Porosity of perforation

Hole diameter (mm) ——— No. of hole (holes/cm²)	Porosity (%)
ϕ 1.2 ——— 23.8	26.98
ϕ 1.3 ——— 16.2	21.59
ϕ 1.5 ——— 11.2	19.96
ϕ 2.5 ——— 7.21	35.42
ϕ 6 ——— 1.42	40.30
ϕ 6 ——— 1.80	50.63
ϕ 8 ——— 0.954	47.96
ϕ 10 ——— 0.739	58.04

● Screen porosity table

(%)

Model	Meshes										
	20	30	40	50	60	80	100	120	150	200	250
SY-5·6·9·10·17·20·24·37·38 SY-40·40EN·40H, SU-10·10S·12 SU-20·20S·20H·50H·50S·50SS SW-10·10S	59.5	49.6	51.3	41.6	44.8	38.6	36.7	38.6	41.6	36.7	36.7
SY-8 (15A-100A)	59.5	49.6	51.3	41.6	44.8	38.6	36.7	—	—	—	—
SY-8 (125A-150A)	52.5	43.2									
SY-13·13SS, SU-6·6SS	53.6	49.6	46.9	41.6	44.7	38.6	36.7	38.6	41.6	36.7	36.7
ST-1	52.5	46.4	40.7	39.2	41.7	38.7	36.8	38.6	38	36.8	36.8

How to Calculate the Filtration Area and Filtration Area Ratio of a Strainer

Calculate the filtration area ratio of a strainer to the bore as shown below.

Filtration area of Y type strainer = Surface area of screen ($\pi \cdot ds \cdot \ell s$) x porosity of perforated sheet x porosity of mesh screen

Filtration area of basket type and duplex type strainers =

$$\text{Surface area of screen } (\pi \cdot ds \cdot \ell s + \frac{\pi \cdot ds^2}{4}) \text{ x porosity of perforated sheet x porosity of mesh screen}$$

$$\text{Filtration area ratio to bore} = \frac{\text{Filtration area of strainer}}{\text{Inside cross sectional area of piping}\left(\frac{\pi \cdot D^2}{4}\right)} \qquad \text{(D: Bore)}$$

<Calculation example>

Calculate the filtration area of an 80A SY-8 strainer with a 40 mesh screen

(ds = ϕ 88, ℓs = 130, perforated sheet ϕ 2.5-7.21 holes/cm²).

Filtration area of strainer = (π x 88 x 130) x 0.3542 x 0.513 $\fallingdotseq$ 6530 (mm²)

Inside cross sectional area of piping = $\frac{\pi \times 80.7^2}{4} \fallingdotseq 5114$ (mm²) (Assuming that the bore is ϕ 80.7)

Consequently,

Filtration area ratio to bore = $\frac{6530}{5114} \fallingdotseq 1.27$ (times)

Strainer

Features of Y Type Strainer

Use this strainer for applications such as:

Mainly for removing dirt and dust from steam or air piping and for protecting control valves.

The Y type strainer can be widely used for removing dirt and dust from pipelines. Lightweight and compact, the Y type strainer comes in a wide variety of structures, shapes, and mesh types.

Selectable materials

Available with various materials, including ductile cast iron, carbon steel, bronze, and stainless steel as materials for the body.
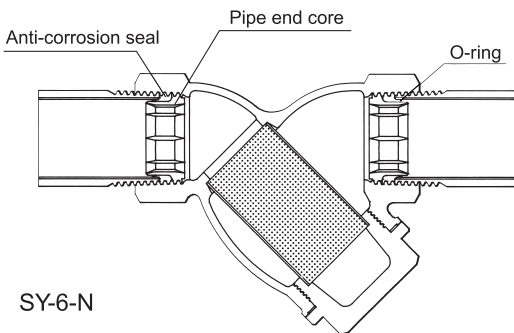
Lightweight and compact

Lightweight, compact, and designed for easy piping.
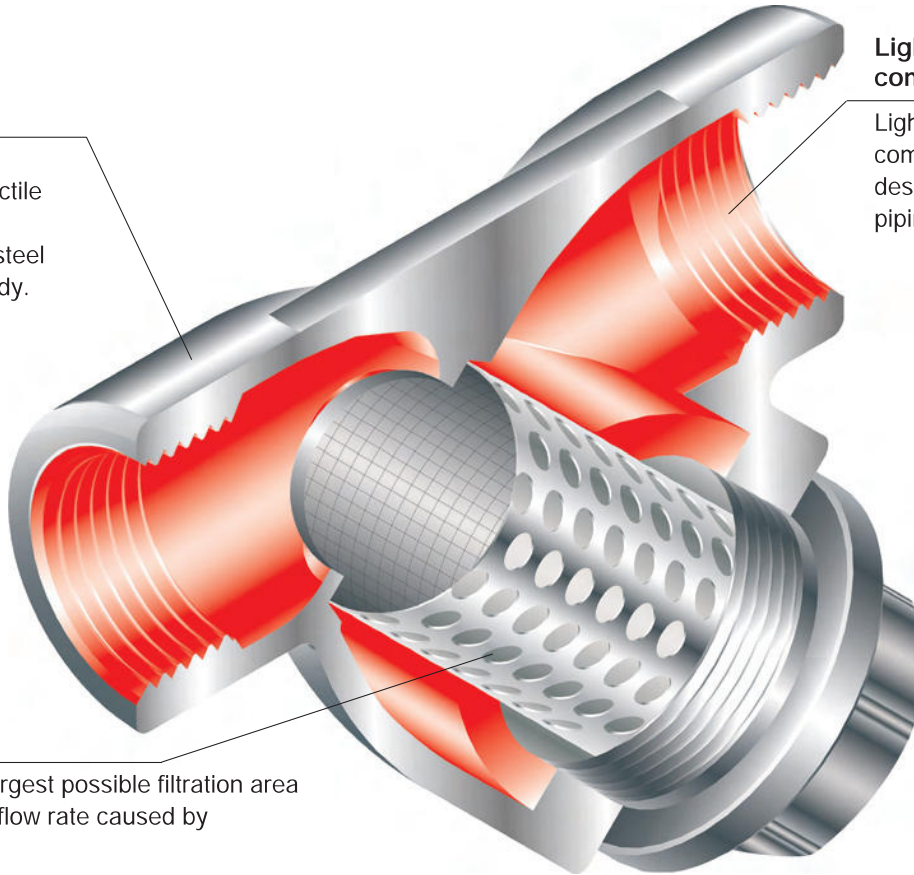
Large filtration area

Marine type with the largest possible filtration area in view of decrease in flow rate caused by clogging.

Available with pipe end core.

Anti-corrosion seal
Pipe end core
O-ring

SY-6-N

Available with "easy plug" which makes the removal and cleaning of the internal screen easy (SY-9).

SY-9

Easy plug

| SY-5 | SY-40 | SY-8 |

Strainer

SY-5

Features

1. Versatile, compact, lightweight and economical.
2. High-flow-rate marine type with the largest possible filtration area in view of decrease in flow rate caused by clogging.

Specifications

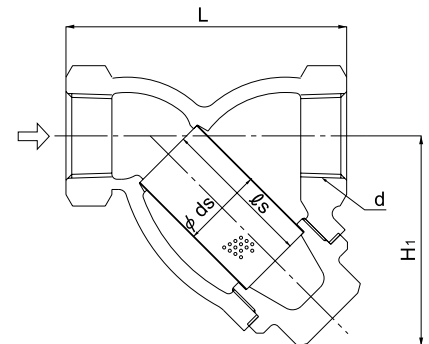| Application		Steam, Air, Cold and hot water, Other non-dangerous fluids
Maximum pressure		2.0 MPa
Maximum temperature		220°C
Material	Body	Ductile cast iron
	Screen	Stainless steel
Screen	Perforation	ϕ 2.5-7.21 holes/cm^2
	Mesh	Standard 80 mesh
Connection		JIS Rc screwed

・ Available with 20 to 100 mesh screen (perforation: ϕ 2.5-7.21 holes/cm^2) or only with perforation (ϕ 1.2-23.8 holes/cm^2) on request.
・ Available with 10A to 32A attached with a plug (material: S15C).
・ Available with a brass plug.
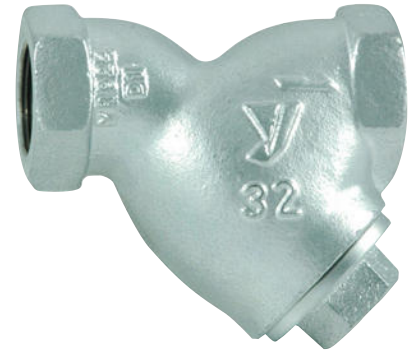
10A-32A
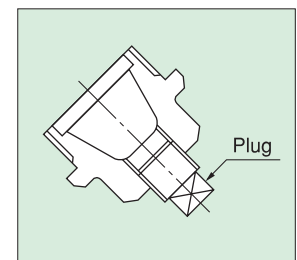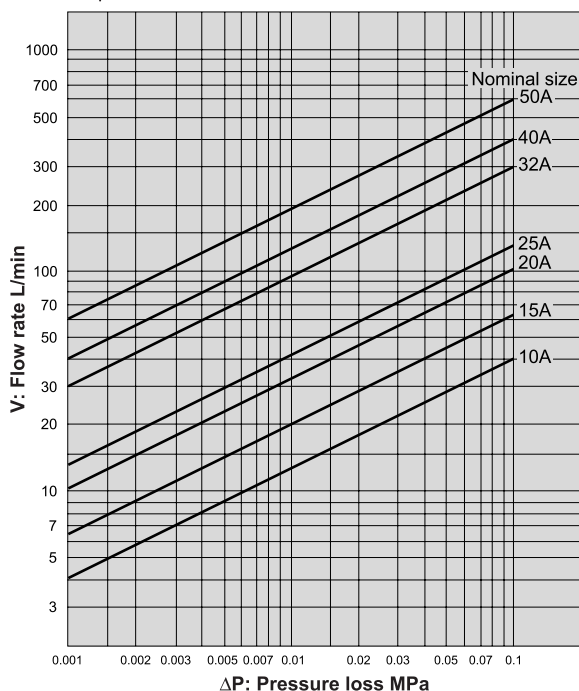
Dimensions (mm) and Weights (kg)

Nominal size	d	L	H$_1$	ds	ℓs	Plug	Weight
10A	Rc 3/8	65	50	18	32	(R 1/4)	0.4
15A	Rc 1/2	75	55	20	35	(R 1/4)	0.6
20A	Rc 3/4	90	70	25	50	(R 3/8)	0.9
25A	Rc 1	110	85	32	60	(R 3/8)	1.4
32A	Rc 1-1/4	135	95	40	70	(R 3/8)	2.2
40A	Rc 1-1/2	145	105	45	75	R 3/8	3.4
50A	Rc 2	170	120	56	90	R 3/8	4.5

10A-32A

Pressure Loss Chart (For Water)

● Screen: Perforation = ϕ 2.5-7.21 holes/cm^2, Mesh = 80 mesh

Nominal size
50A
40A
32A
25A
20A
15A
10A

V: Flow rate L/min

ΔP: Pressure loss MPa

40A-50A
Plug

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Strainer