PRODUCTS INTRODUCTION

[STRAINERS]

MSNT

엠에스앤티(주)

Strainer

Function

Strainers are installed on gas or liquid pipes to protect equipments from foreign matters such as rust, scale, weld slag and sand.

It is usually installed on pumps, flow meters, various control valves, steam traps, spray nozzles and turbines.

Structure

The structure is simple. It has a body, Element (perforated plate and wire mesh) which filters out foreign matter, and a cover or cap for pulling and pushing the screen.
The Element generally uses Perforated Type and Mesh Element, which is a fixed wire mesh and a perforated plate,
The hole size of Wire mesh is depend on foreign matter's size and protector, it is usually 10, 20, 30, 40, 60, 100, 200 mesh. The hole size of perforated plate is usually used 3mm, 4mm, 6mm, 8mm, 10mm.
Sizes 20~60 are generally used for liquids, air or gas applications generally utilize more than 80 or higher.
Be careful if you use more than 200 size of mesh because of a large pressure loss.
An accumulation of foreign matter in the element can cause a loss of pressure and low level of flow. Make sure there is enough effective area and filter area in the strainer. It depends on the fluid type and caliber but the filter area, which is area of Element when it is spread, has to 5 - 7 times bigger than plumbing cross-section area. The effective area, the way that fluid goes though, should be at least more than 2 - 3 times bigger than plumbing cross-section area.

A blow-down valve can be set up in the cap of the strainer in order to easily clean foreign matter off of the Element.
Take caution when setting the strainer up in front of a cooling-tower pump. Much foreign matter can collect causing fluids to run low and cavitations may form.

Strainer

Material of Strainer

Carbon Steel ASTM : A105, A216WCB , A53, A234, A106 , A516
KS : SCPH2, SPPS, SPHT, SB42, S25C
Stainless Steel : A182, A351, A312, A403, A240
Alloy Steel and Special Steel : Monel, Hastelloy, Aluminium, Bronze, Copper Alloy, Chrome Steel, etc.

Internal Element of Strainer

Element is very important part as the heart of strainer. So, Corrosion Resistance, Filtration rate and Strength must be considered sufficiently and it must be a structure not to be bypassed the non-filtered fluid between element and body.
MSNT is manufacturing a high credible strainer that can't compare with other products as it has a long experience and accumulated know-how in field of engineering.

End Connection Style of Strainer

- Flange Type
- Socket Weld Type
- Screw Type (PT & NPT)
- Butt Weld Type

Application Code

- ASME
- JPI
- ISO
- KS & JIS
- API
- MSS

Type

Strainers are classified into Cone type, Y type, T type and Bucket type. It depends on the reason for installation, fluid type and trapped foreign matter type.

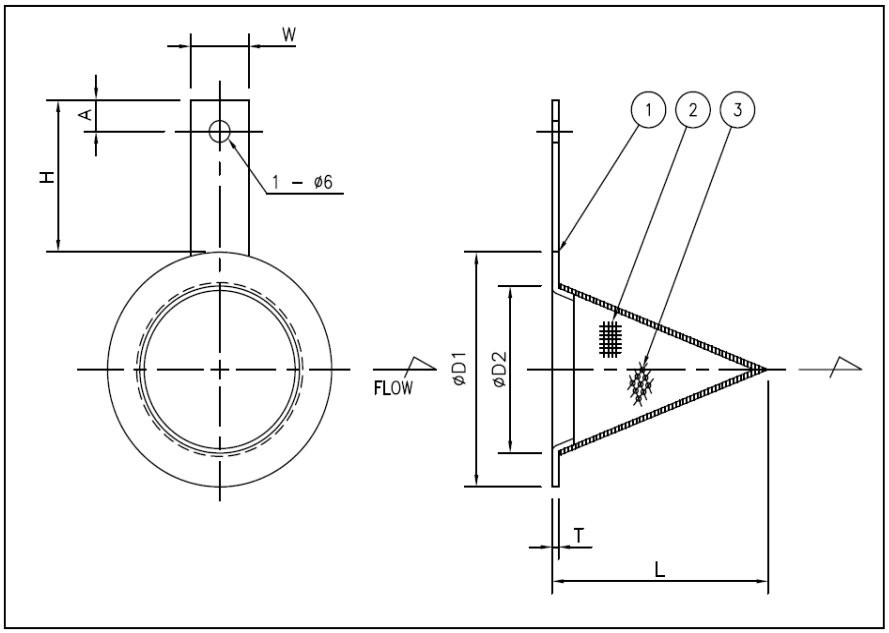
Type	Body Matr'l	Connection	150#	300#	600#	900#	1500#	2500#
Bucket	Weld CS / SS	Flange / Butt Weld	■	■	■	■	■	■
	Cast CS	Flange	■	■	■			
	Cast SS	Flange	■	■	■	■	■	■
Y-Type	Weld CS	Flange	■	■	■	■	■	■
		Butt Weld	■	■	■	■	■	■
	Weld SS	Flange	■	■	■	■	■	■
		Butt Weld	■	■	■	■	■	■
	Forged CS	Thread	■	■	■	■	■	
		Flange	■	■	■	■	■	
	Forged SS	Thread	■	■	■	■	■	
		Flange	■	■	■	■	■	
	Cast CS	Flange	■	■	■	■	■	
	Cast SS	Flange	■	■	■	■	■	
T-Type	Weld CS	Flange	■	■	■	■	■	■
		Butt Weld	■	■	■	■	■	■
	Weld SS	Flange	■	■	■	■	■	■
		Butt Weld	■	■	■	■	■	■
C-Type	Weld SS	Flange	■	■	■	■	■	■

Strainer

1) Cone Type

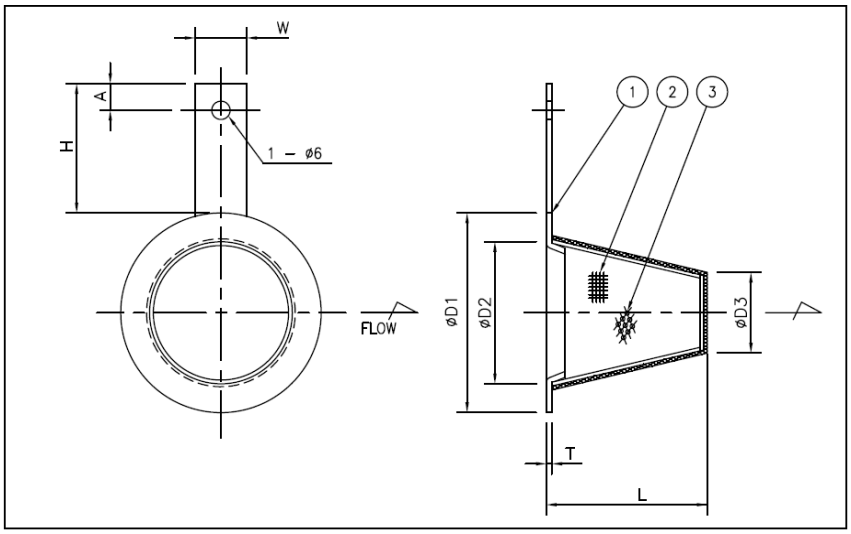
It is a makeshift strainer. Even if a new factory has cleaned well, it is difficult to determine when and where foreign matter comes out. For that case, additionally install this butterfly net shape cone type strainer. It does not have a body and is put it between flanges to set up. Inspect and remove it 6 to 12 month after installation.

Model No. MSNT-C001 - C1 : ½" and above (Rating : 150#, 300#, 600#, 900#, 1500#, 2500#)



NOM'L SIZE	øD1	øD2	L	T	H	W	A
1/2"	47	13	66	3	80	20	10
3/4"	56	18	92	3	80	20	10
1"	66	24	122	3	80	20	10
1-1/2"	85	36	116	3	80	20	10
2"	104	48	155	3	80	20	10
2-1/2"	123	60	193	3	80	20	10
3"	135	72	232	3	80	20	10
4"	173	95	306	3	80	20	10
5"	196	118	306	3	80	30	12
6"	221	142	368	3	80	30	12
8"	277	188	486	3	80	30	12
10"	338	235	608	3	80	30	12
12"	408	280	725	6	80	35	12
14"	449	325	842	6	80	35	12
16"	512	375	972	6	80	40	12
18"	547	425	1100	6	80	40	12
20"	604	470	1217	6	80	40	12
24"	715	570	1476	6	80	40	12

Model No. MSNT-C002 - C2 : ½" and above (Rating : 150#, 300#, 600#, 900#, 1500#, 2500#)



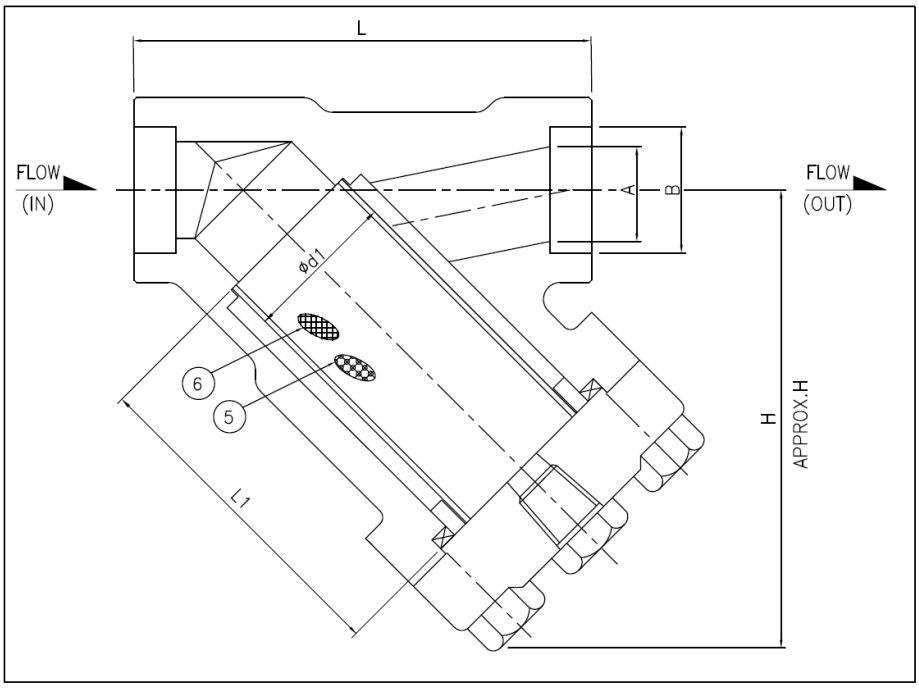
NOM'L SIZE	øD1	øD2	øD3	L	T	H	W	A
3/4"	56	18	9	60	3	80	20	10
1"	66	24	12	80	3	80	20	10
1-1/2"	85	36	18	100	3	80	20	10
2"	104	48	24	150	3	80	20	10
2-1/2"	123	60	30	170	3	80	20	10
3"	135	72	36	200	3	80	20	10
4"	173	95	48	250	3	80	20	10
5"	196	118	59	310	3	80	30	12
6"	221	142	71	380	3	80	30	12
8"	277	188	94	500	3	80	30	12
10"	338	235	118	550	3	80	30	12
12"	408	280	140	650	6	80	35	12
14"	449	325	163	770	6	80	35	12
16"	512	375	188	870	6	80	40	12
18"	547	425	213	980	6	80	40	12
20"	604	470	235	1100	6	80	40	12
24"	715	570	285	1300	6	80	40	12

Strainer

2) Y Type

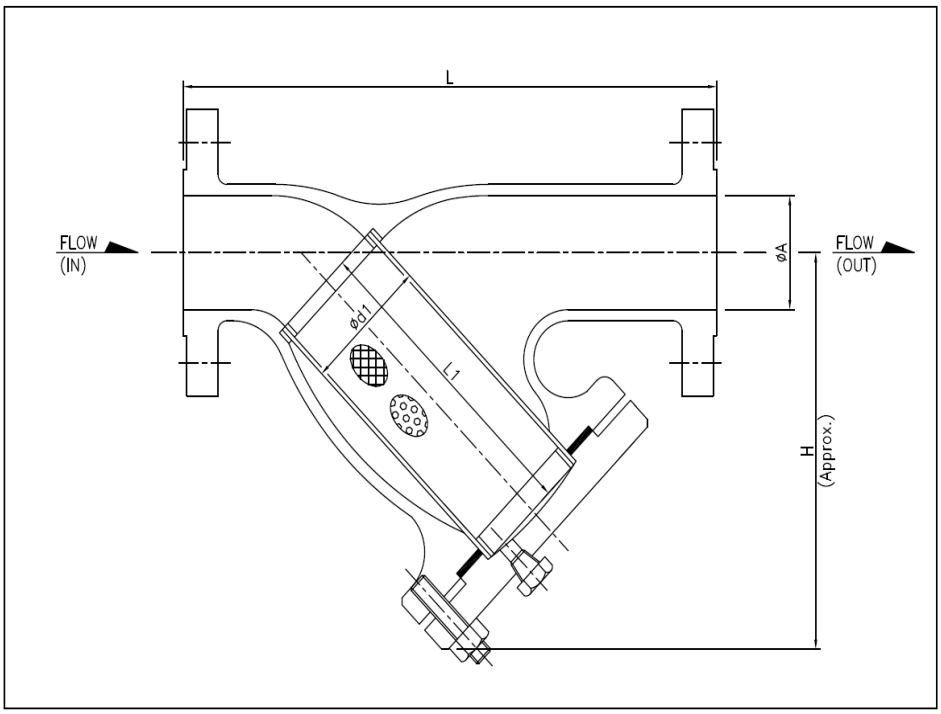
Y type is normal process strainer and is used for protecting pump, control valve, flow meter and steam trap.

Model No. MSNT-Y001 - Y-Forging : ½" ~ 2" (Rating : 600#, 1500#)



NOM'L SIZE D (SCH.)	L	L1	H	d1	A	B
1/2"	92	58	85	21	13	22
3/4"	92	58	85	27	18	27.4
1"	111	71	105	31	23	34.1
1 1/2"	140	87	137	45.5	35	49
2"	170	106	152	54	38	61.45

Model No. MSNT-Y002 - Y-Casting : ½" ~ 20" (Rating : 150#, 300#, 600#, 900#, 1500#, 2500#)



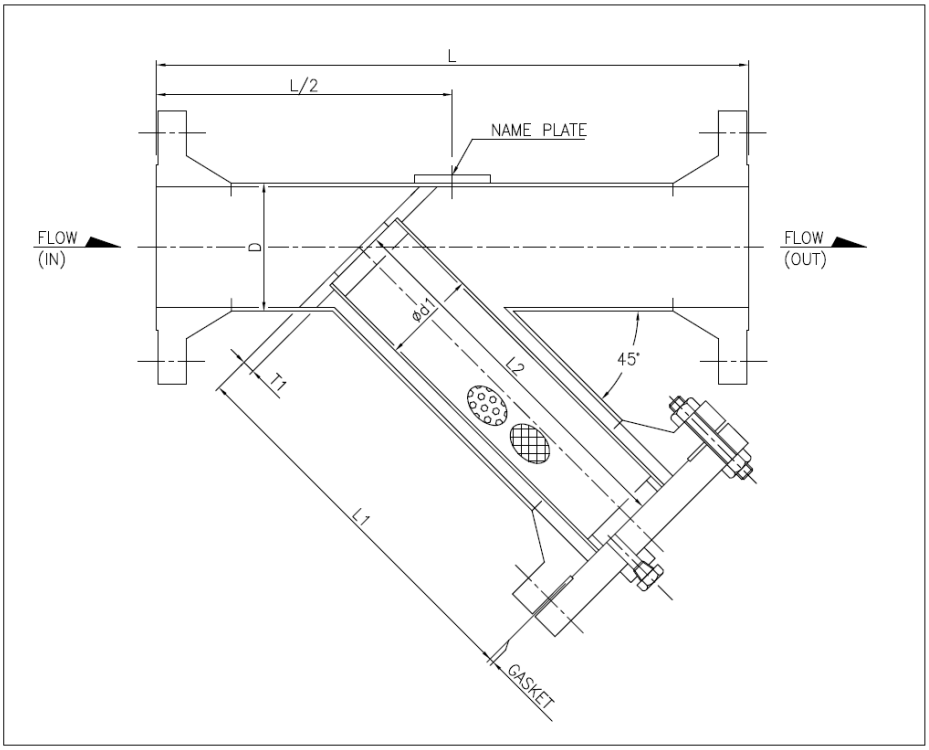
NOM'L SIZE	L	L1	H	d1	A
1/2"	160	67	105	25	12.7
3/4"	160	74	115	30	19.1
1"	180	80	120	32	25.4
1 1/2"	240	106	150	54	38.1
2"	260	112	170	57	50.8
2 1/2"	275	131	185	74	63.5
3"	290	165	220	90	76.2
4"	335	233	320	130	101.6
6"	520	291	380	200	152.4
8"	580	406	500	250	203.2
10"	710	482	605	300	254
12"	820	606	650	350	304.8

Strainer

2) Y Type

Y type is normal process strainer and is used for protecting pump, control valve, flow meter and steam trap.

Model No. MSNT-Y003 - Y-Welding : 2" and above (Rating : 150#, 300#, 600#, 900#, 1500#, 2500#)

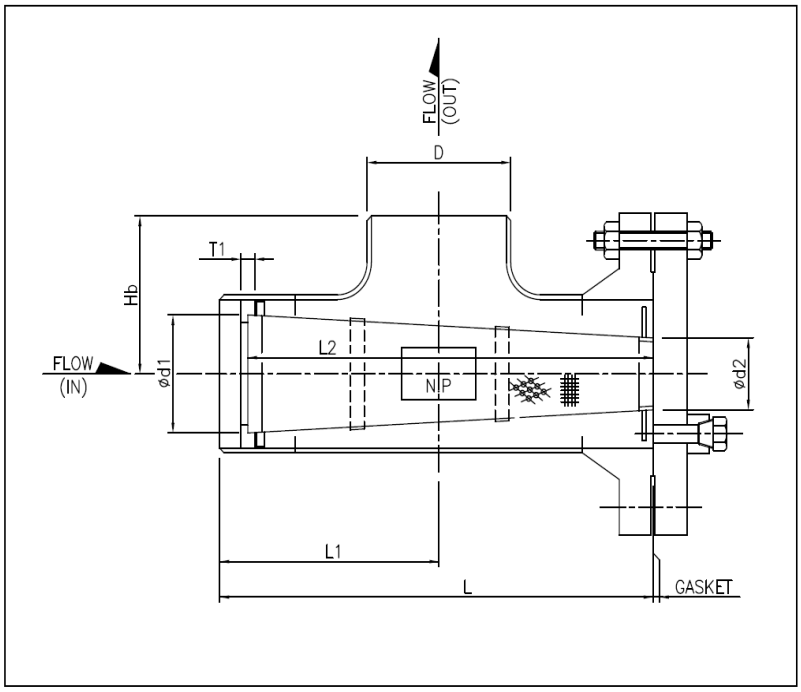


NOM'L SIZE D(SCH.)	L	L1	L2	d1	T1
2" (STD)	400	300	294	38	12
3" (STD)	500	400	394	60	12
4" (STD)	550	400	394	80	12
6" (STD)	680	500	494	120	12
8" (STD)	800	600	594	170	12
10" (STD)	950	700	694	220	12
12" (STD)	1100	850	844	265	12
14" (STD)	1200	900	892	300	16
16" (STD)	1300	980	972	340	16
18" (STD)	1400	1050	1042	380	16
20" (STD)	1550	1100	1092	430	16
24" (STD)	1700	1250	1242	530	16

3) T1 Type

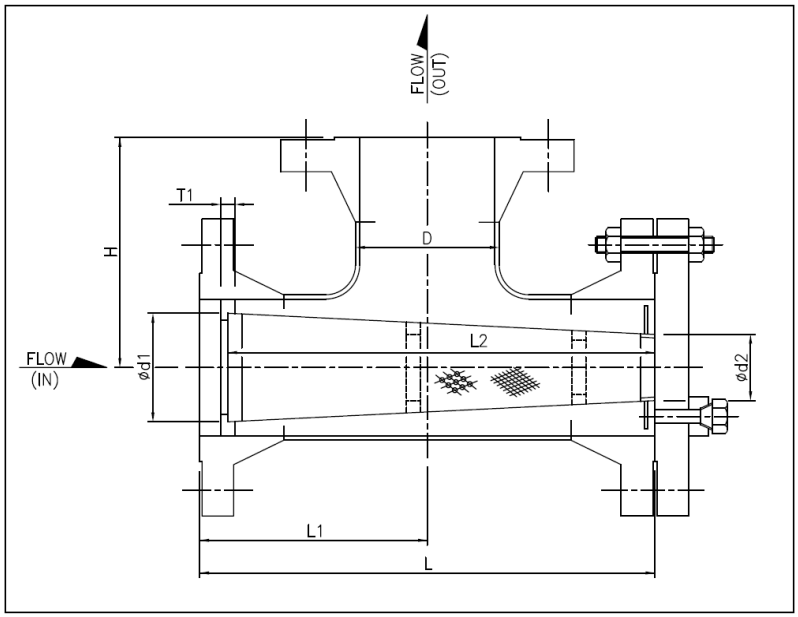
The structure is same as Y type but it has T shape. It has three different types, and the types should be decided depending on the fluid direction. The straight type, for example, needs cleaning often and it is usually installed for process liquid and oil line for cleaning quickly

Model No. MSNT-T001 - T1 : 2″ and above (Experience up to 72″)



NOM'L SIZE D	L	L1	Hb	d1	d2	L2	T1
2"	242	114	64	38	26	215	12
3"	342	186	86	60	40	315	12
4"	406	225	105	80	54	370	12
6"	575	343	143	120	80	530	12
8"	628	348	178	170	114	570	12
10"	734	416	216	220	148	680	12
12"	862	494	254	265	177	810	12
14"	915	509	279	300	200	860	16
16"	1057	625	305	340	226	1000	16
18"	1206	723	343	380	254	1150	16
20"	1407	881	381	430	288	1350	16
24"	1516	932	432	530	354	1460	16

Model No. MSNT-T001F - T1 RF : 2″ and above (Experience up to 72″)



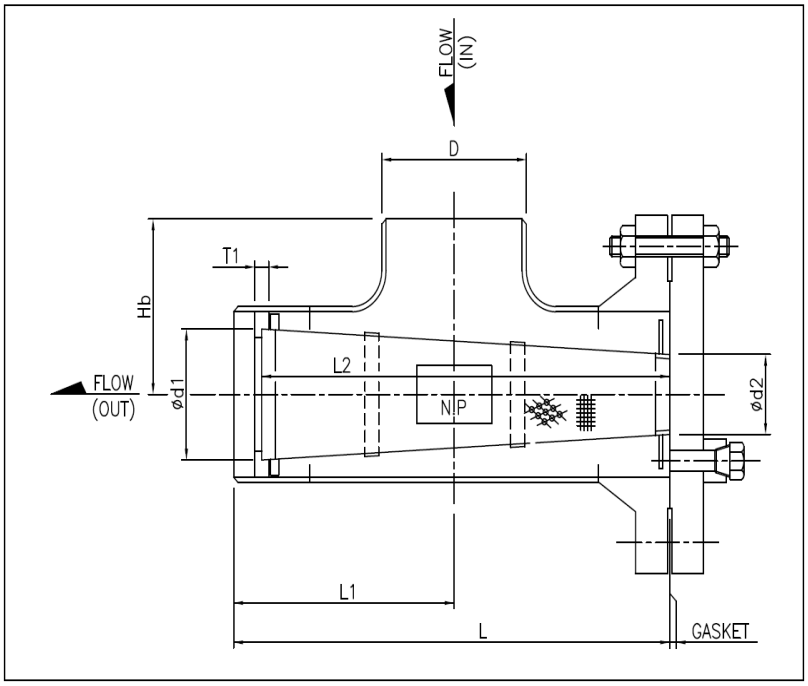
NOM'L SIZE D	L	L1	d1	d2	H	L2	T1
2"	254	127	38	26	127	229	12
3"	311	156	60	40	156	286	12
4"	362	181	80	54	181	337	12
6"	530	299	120	80	232	505	12
8"	650	370	170	114	279	620	12
10"	780	463	220	148	318	750	12
12"	930	561	265	177	368	900	12
14"	1010	603	300	200	406	980	16
16"	1170	738	340	226	432	1040	16
18"	1340	858	380	254	483	1300	16
20"	1470	942	430	288	523	1430	16
24"	1750	1166	530	354	584	1710	16

Strainer

3) T2 Type

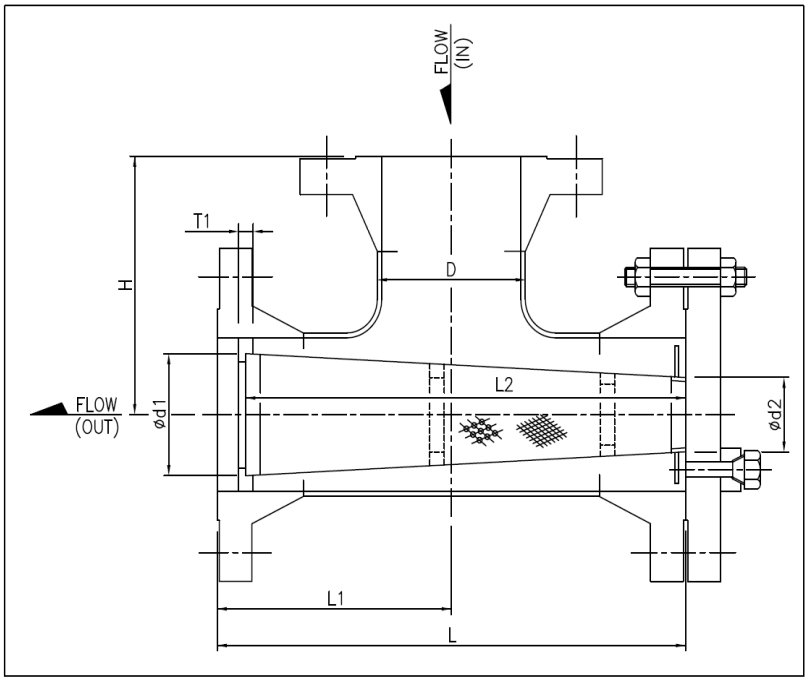
The structure is same as Y type but it has T shape. It has three different types, and the types should be decided depending on the fluid direction. The straight type, for example, needs cleaning often and it is usually installed for process liquid and oil line for cleaning quickly

Model No. MSNT-T002 - T2 : 2″ and above (Experience up to 72″)



NOM'L SIZE D	L	L1	Hb	d1	d2	L2	T1
2"	242	114	64	38	26	215	12
3"	342	186	86	60	40	315	12
4"	406	225	105	80	54	370	12
6"	575	343	143	120	80	530	12
8"	628	348	178	170	114	570	12
10"	734	416	216	220	148	680	12
12"	862	494	254	265	177	810	12
14"	915	509	279	300	200	860	16
16"	1057	625	305	340	226	1000	16
18"	1206	723	343	380	254	1150	16
20"	1407	881	381	430	288	1350	16
24"	1516	932	432	530	354	1460	16

Model No. MSNT-T002F - T2 RF : 2″ and above (Experience up to 72″)



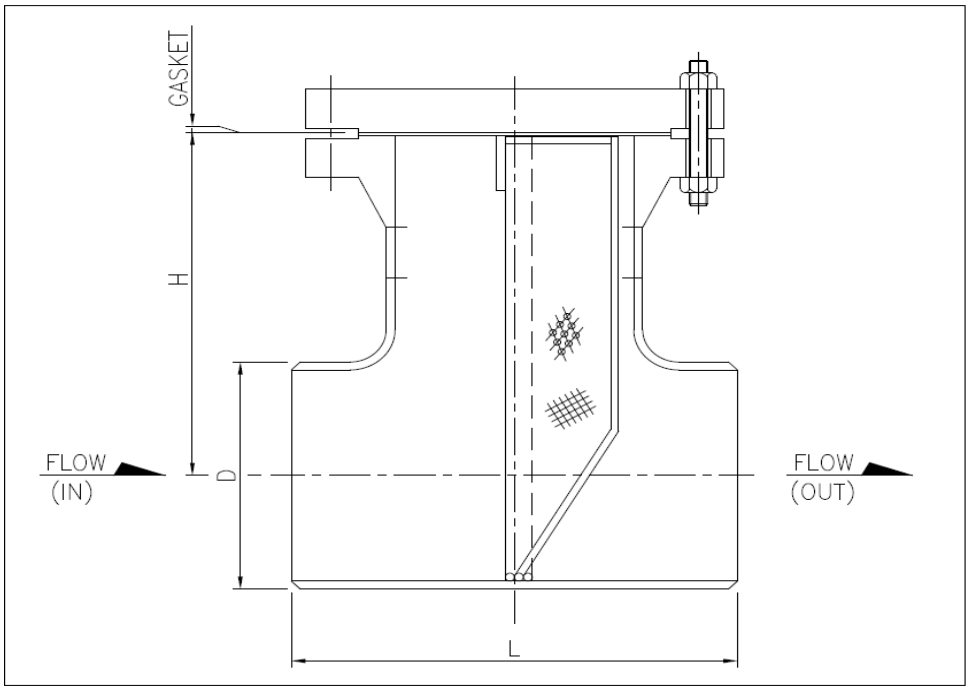
NOM'L SIZE D	L	L1	d1	d2	H	L2	T1
2"	254	127	38	26	127	229	12
3"	311	156	60	40	156	286	12
4"	362	181	80	54	181	337	12
6"	530	299	120	80	232	505	12
8"	650	370	170	114	279	620	12
10"	780	463	220	148	318	750	12
12"	930	561	265	177	368	900	12
14"	1010	603	300	200	406	980	16
16"	1170	738	340	226	432	1040	16
18"	1340	858	380	254	483	1300	16
20"	1470	942	430	288	523	1430	16
24"	1750	1166	530	354	584	1710	16

Strainer

3) T3 Type

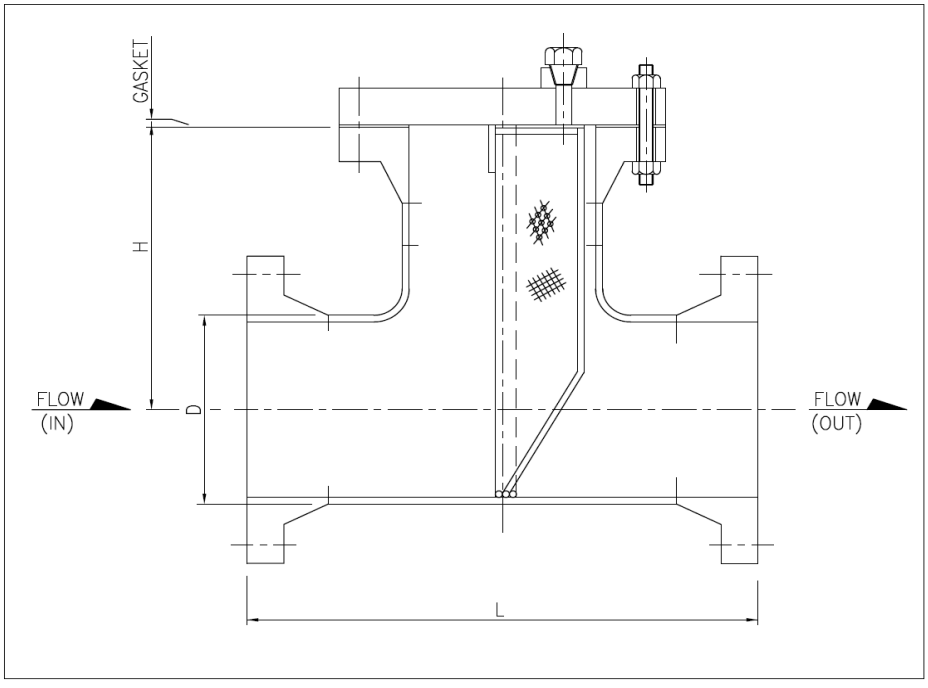
The structure is same as Y type but it has T shape. It has three different types, and the types should be decided depending on the fluid direction. The straight type, for example, needs cleaning often and it is usually installed for process liquid and oil line for cleaning quickly.

Model No. MSNT-T003 - T3 : 2" and above (Experience up to 72")



NOM'L SIZE D	H	L
2"	209	128
3"	311	172
4"	399	210
6"	543	286
8"	585	356
10"	723	432
12"	823	508
14"	932	558
16"	1057	610
18"	1181	686
20"	1256	762
24"	1505	864

Model No. MSNT-T003F - T3 RF : 2" and above (Experience up to 72")



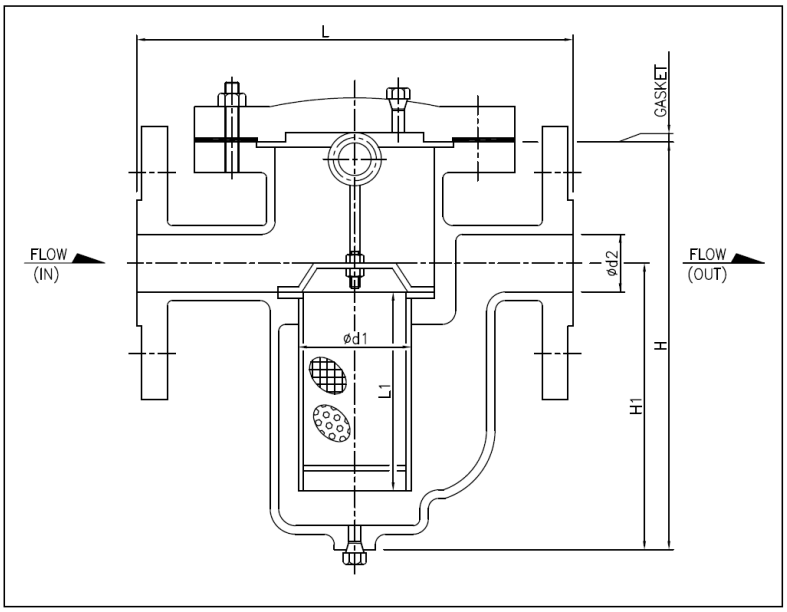
NOM'L SIZE D	H	L
2"	209	254
3"	311	457
4"	399	362
6"	543	436
8"	585	560
10"	723	636
12"	823	737
14"	932	813
16"	1057	864
18"	1181	966
20"	1256	1051
24"	1505	1168

Strainer

4) Bucket Type

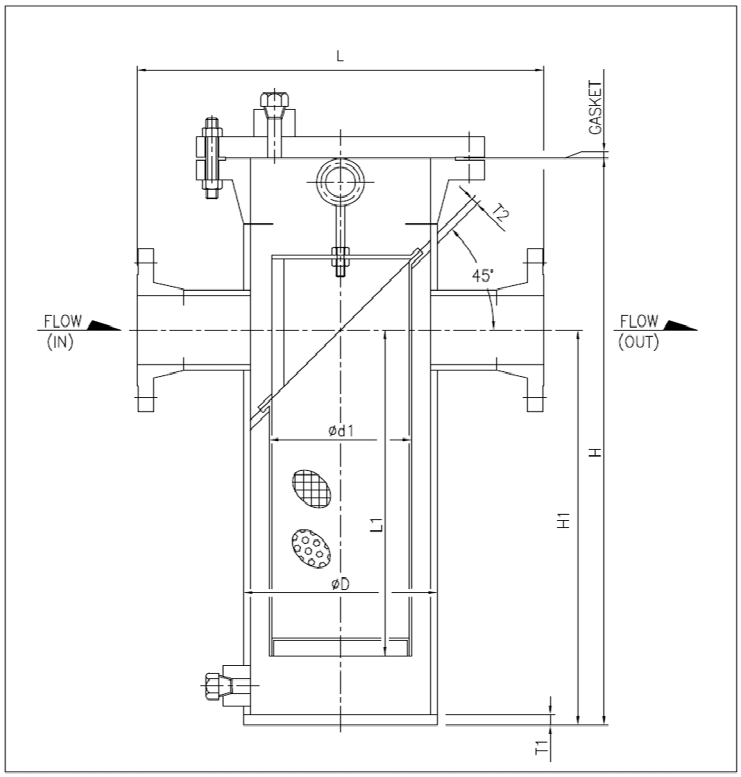
The top of element has cover for pulling out and is bucket shaped. It has biggest filtration area so it doesn't need cleaning inside often. This type also can be installed at high-viscosity line and at the line with plenty of foreign matters. Duplex type, 2 strainer are arranged in a line, is normally installed for supplying oil when it is cleaning.

Model No. MSNT-B001 - B-Casting : ½" ~ 16" (Rating : 150#, 300#, 600#, 900#)



NOM'L SIZE	H	H1	L	L1	ød1	ød2
1/2"	140	104	160	65	32	12.7
3/4"	150	111	160	65	32	19.1
1"	178	132	180	75	42	25.4
1 1/2"	211	155	230	85	60	38.1
2"	222	161	260	85	62	50.8
3"	344	248	355	145	92	76.2
4"	397	286	425	160	112	101.6
6"	560	410	500	280	170	152.4
8"	645	470	590	320	203	203.2
10"	870	650	710	450	255	254

Model No. MSNT-B002 - B-Welding : ½" ~ (Rating : 150#, 300#, 600#, 900#, 1500#, 2500#)



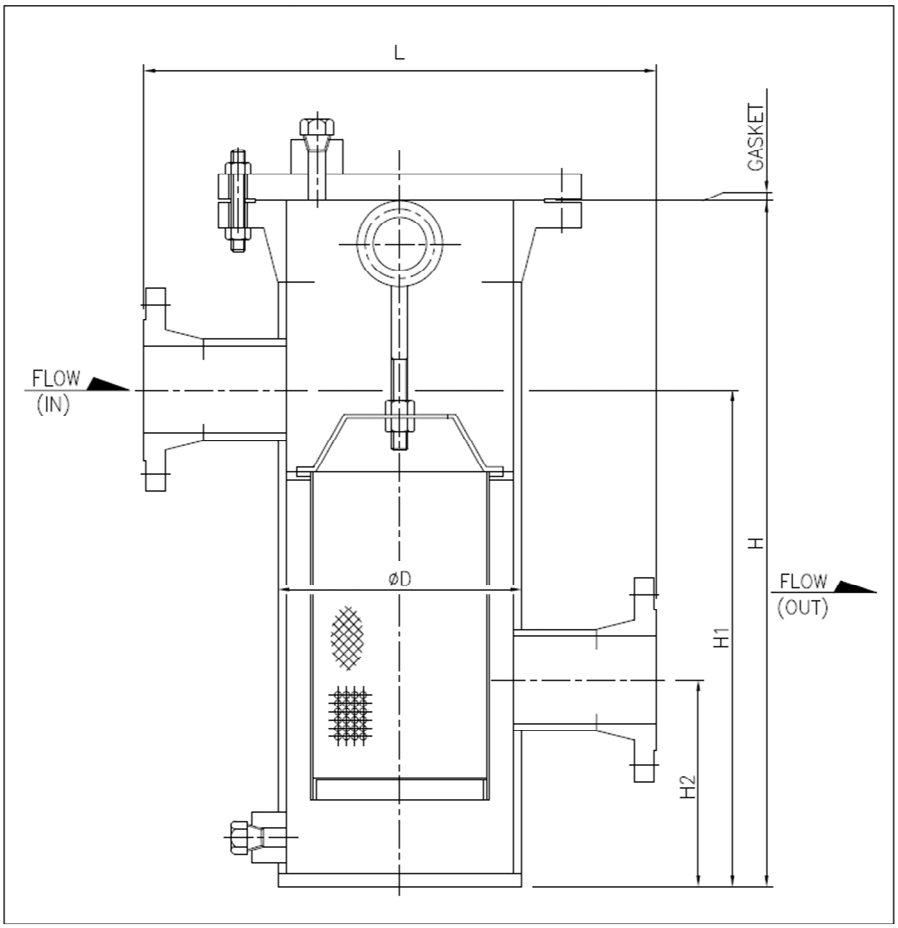
NOZZLE SIZE	NOM'L SIZE øD	H	H1	L	L1	ød1	T1	T2
2"	6"	620	400	450	310	85	12	6
3"	6"	620	400	450	310	85	12	8
4"	8"	690	430	520	330	120	12	8
6"	10"	930	610	650	510	170	12	8
8"	12"	1120	770	740	650	230	12	12
10"	14"	1420	1020	780	900	260	16	12
12"	16"	1640	1220	880	1100	300	16	12
14"	18"	1690	1220	960	1100	360	16	12
16"	20"	1930	1430	1000	1280	410	20	12
18"	24"	2100	1500	1200	1350	500	20	12
20"	24"	2400	1890	1250	1650	500	20	12

Strainer

4) Bucket Type

The top of element has cover for pulling out and is bucket shaped. It has biggest filtration area so it doesn't need cleaning inside often. This type also can be installed at high-viscosity line and at the line with plenty of foreign matters. Duplex type, 2 strainer are arranged in a line, is normally installed for supplying oil when it is cleaning.

Model No. MSNT-B003



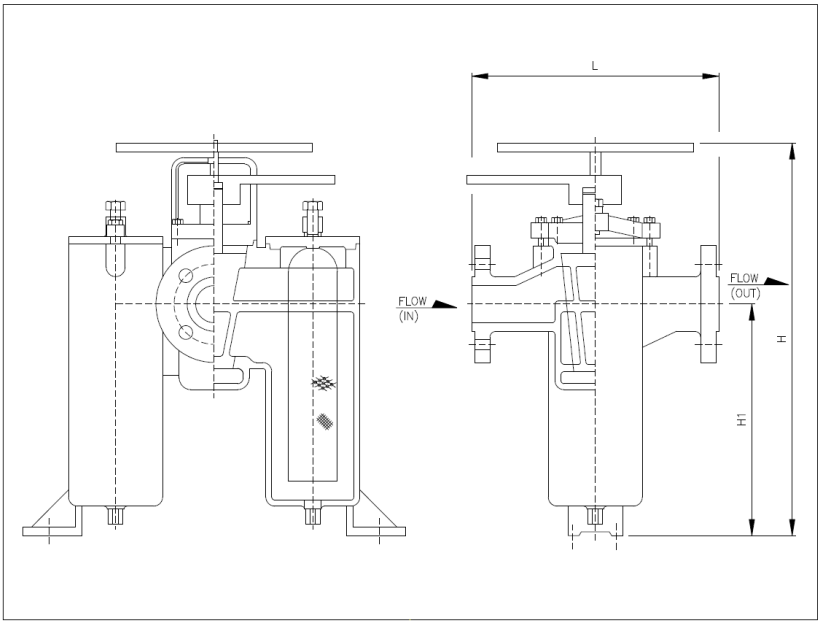
NOZZLE SIZE	øD	H	H1	H2	L
2"	6"	360	250	110	360
2 1/2"	6"	400	280	120	380
3"	6"	470	340	150	400
4"	8"	540	380	170	460
5"	8"	620	460	210	480
6"	10"	700	510	230	520
8"	12"	950	690	350	580
10"	16"	1060	820	440	700
12"	16"	1310	1050	620	760
14"	18"	1520	1240	770	820
16"	20"	1640	1400	800	900
18"	24"	1840	1500	900	960
20"	24"	1900	1620	970	1000
24"	28"	2390	1950	1200	1180

Strainer

5) Duplex Type

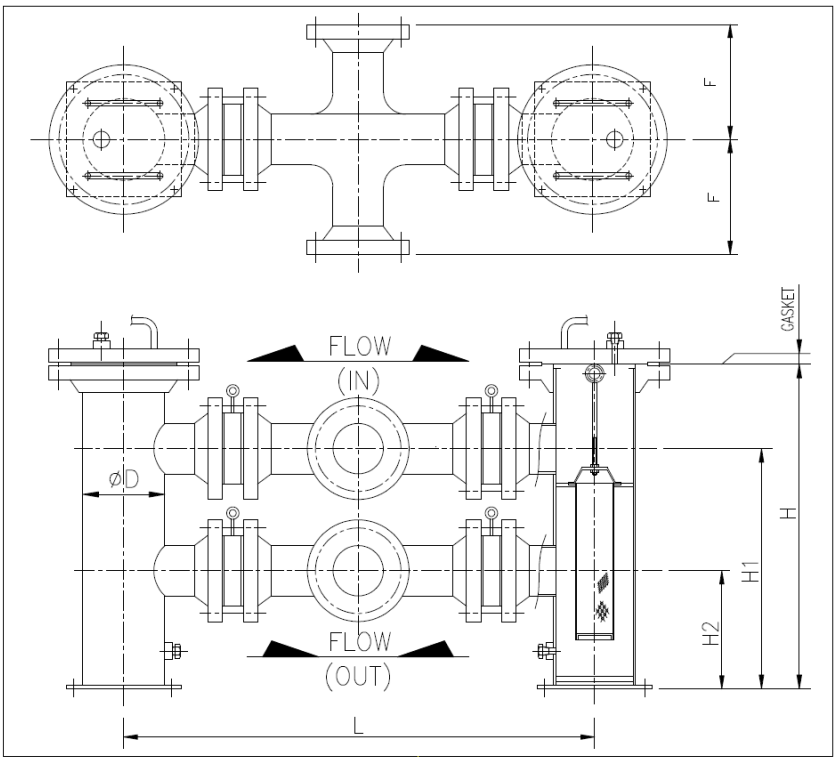
The top of element has cover for pulling out and is bucket shaped. The element needs to be cleaned often and it is usually installed for processing liquid and oil lines for quick cleaning. It is put up on BC line, which is using way of fuel oil. Duplex type, 2 strainer are arranged in a line, is normally installed for supplying oil when it is cleaning.

Model No. MSNT-D001 - D-Casting : ½" ~ 20" (Rating : 150#, 300#, 600#, 900#)



NOZZLE SIZE	L	H	H1
1″	250	360	150
1 1/2″	270	480	215
2″	300	500	220
3″	343	546	225
4″	406	765	336
5″	510	1050	400
6″	570	1140	550
8″	580	1140	550
10″	750	1630	840
12″	760	1630	845
14″	900	1700	900
16″	1000	1750	1000
18″	1050	1800	1050
20″	1100	1850	1150
24″	1200	1900	1250

Model No. MSNT-D002 - D-Welding : ½" ~ (Rating : 150#, 300#, 600#, 900#, 1500#, 2500#)



Please contact MSNT for dimension.
Dimension varies according to valve type, connection type, etc.

Inspection

Quality and Pressure

The appropriate quality of filters and strainers is determined by the type of fluids, process pressure, temperature, etc.

The housing can be in all quality material such as carbon steel, casting, stainless steel, alloy steel, Inconel, etc.,
but the basket of strainers and metal filters cannot be in carbon steel material.

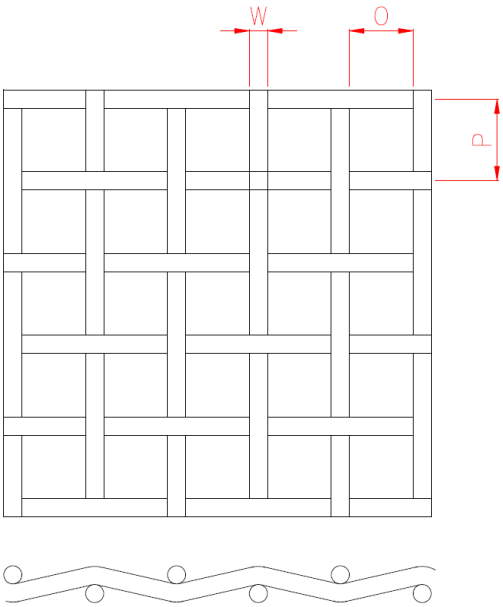
Design of filters and strainers, such as sizing of the housing, thickness by strength calculation, pound rating of flanges are influenced by design temperature and pressure.

EQUIP. NAME	TYPE/MODEL	MFG	RANGE	GRADATION
Digimatic Caliper	CD-20CPX	Mitutoyo	0 ~ 200 mm	0.01 mm
Manual Pump for Internal Pressure Test	RX-50	ROX	0 ~ 3.5 MPa	0.1 Mpa
Pump for Internal Pressure Test	KHW-60H	한국유수압	0 ~ 676 bar	10 Bar
Clamp Meter	ST-3236A	Saehan	0 ~ 600 A (AC), 0 ~ 600 V (AC/DC)	0.1 A, 1 mV
Ultrasonic Thickness Gauge	C204-1	Elcometer	0 ~ 200 mm	0.01 mm
Digital Thermometer	Therma1	ETI	-50 ~ 1000 ℃	1 ℃
Coating Thickness Gauge	PosiTector 6000FNS1	DeFelsko	0 ~ 1500 ㎛	0.1㎛

Strainer Element

WIRE MESH (SCREEN)

Screen-Plain Weave



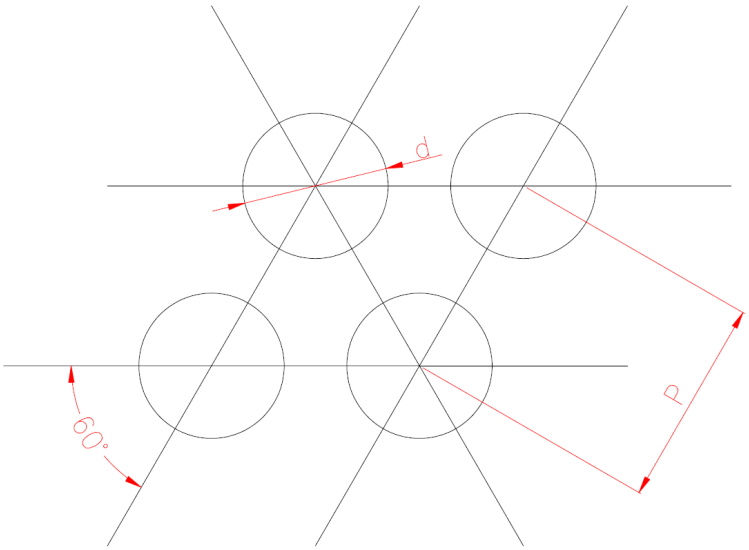
P = 25.4 / M

N = (O/P)^2
= ((P-W)/P)^2

M : Mesh
P : Pitch
W : Wire Diameter
N : Porous Ratio
O : Opening

MESH COUNT	DIA (㎜)	S.W.G. NO.	OPENING (㎜)	OPEN AREA (%)
2	1.016	19.0	11.684	0.8464
3	1.016	19.0	7.460	0.7744
4	0.914	20.0	5.436	0.7327
5	0.813	21.0	4.267	0.7056
6	0.584	23.5	3.649	0.7430
7	0.584	23.5	3.044	0.7039
8	0.457	26.0	2.718	0.7327
10	0.417	27.0	2.123	0.6989
12	0.457	26.0	1.659	0.6147
14	0.361	28.5	1.454	0.6419
16	0.813	21.0	0.775	0.2381
18	0.345	29.0	1.066	0.5703
20	0.295	31.0	0.975	0.5898
24	0.234	34.0	0.825	0.6072
30	0.234	34.0	0.613	0.5242
32	0.254	34.0	0.560	0.4979
36	0.254	33.0	0.452	0.4096
40	0.193	36.0	0.442	0.4844
50	0.132	39.0	0.376	0.5477
60	0.132	39.0	0.291	0.4735
70	0.152	38.0	0.210	0.3364
80	0.122	40.0	0.196	0.3795
100	0.102	42.0	0.152	0.3600
120	0.081	44.0	0.130	0.3797
150	0.061	46.0	0.108	0.4096
165	0.051	47.0	0.103	0.4489
180	0.051	47.0	0.090	0.4096
200	0.041	48.0	0.086	0.4624
250	0.030	49.0	0.071	0.4900
300	0.041	48.0	0.044	0.2704
325	0.036	48.5	0.043	0.2970
350	0.030	49.0	0.042	0.3364
400	0.030	49.0	0.033	0.2704

PERFORATE PLATE (60° Zig Zag)



N = 0.91 x (d/P)^2

d : Pore Diameter
N : Porous Ratio
P : Pitch

PUNCHING PLATE (mm) (mm)	OPEN AREA (%)
ø 1.0 x 2.0 P	0.2275
ø 2.0 x 3.0 P	0.4044
ø 2.0 x 4.0 P	0.2275
ø 3.0 x 5.0 P	0.3276
ø 4.0 x 6.0 P	0.4044
ø 5.0 x 7.0 P	0.4643
ø 6.0 x 8.0 P	0.5119
ø 8.0 x 12.0 P	0.5824
ø 10.0 x 12.0 P	0.6319

Unit Conversion

AREA

1m2 = 10,000cm2 = 1,000,000mm2
1ft2 = 144inch2 = 0.0929m2

DENSITY

1kg/m3 = 0.06243lb/ft3

FLOWRATE

1m3/hr = 0.01666m3/min = 0.0002777m3/s
1m3/hr = 1,000,000cm3/hr
1m3/hr = 4.403gpm
1m3/hr = 16.666lpm
1m3/hr = 35.315ft3/hr

1gpm = 60gal/hr = 0.01666gal/s
1gpm = 0.227m3/hr
1gpm = 3.7854lpm
1gpm = 8.021ft3/hr

$$\text{SCFM} = \frac{\text{ACFM}}{(14.7 / (14.7+\text{psig})) \times ((460+ \text{°F}) / 520)}$$

ACFM = Actual ft3/min
SCFM = Standard ft3/min

LENGTH

0.001m = 0.1cm = 1mm = 1,000um
1ft = 12inch, 1inch = 25.4mm

PRESSURE

atm = 14.69595 psi
bar = 14.50377 psi
kg/cm2 = 14.22334 psi
kPa = 0.14504 psi
mbar = 0.01450 psi
mmHg = 0.01934 psi
mmH2O = 0.00142 psi
mPa = 145.0377 psi
Pa = 0.000145 psi
psi = 0.06895 bar = 0.07031 kg/cm2

inH2O/ft = 0.00817 bar/m
psi/ft = 0.22621 bar/m

TEMPERATURE

°F = (Temp. - 32) / 1.8 ℃
℃ = Temp. x 1.8 + 32 °F

VELOCITY

1m/s = 60m/min = 3,600m/hr
1m/s = 3.281ft/s