



Insurance for Your Process Equipment and Instruments

08

Suction
diffuser



A suction diffuser is fitted on the suction side of a pump to protect it from debris and to straighten the flow into it. It replaces a long-radius elbow, a strainer and an extended entry pipe with a single component.

The saving is space and installation cost. Flow-stabilising vanes on the outlet reduce turbulence, and with it the stress and vibration carried into the pump. An oversized body and screen keep the pressure drop low.

It is normally supplied with a 20 mesh 304 stainless steel removable start-up sleeve, fitted over the permanent screen to catch construction debris and taken out once the system is clean.



Cast suction diffuser. It replaces the elbow, the strainer and the straight entry pipe on a pump suction with one component.

CONSTRUCTION

CAST

2" x 1.25" to 12" x 12", ANSI Class 150# to Class 300#.

FABRICATED

2" x 2" to 42" x 42", ANSI Class 150# to Class 600#.
Welding to ASME Section IX, NDE to code.

STANDARD FEATURES

- Replaces elbow, strainer and entry pipe in one component
- Flow-stabilising vanes reduce turbulence, stress and vibration
- Oversized body and screen for low pressure loss
- 20 mesh removable start-up sleeve supplied as standard
- Convoluted screen, perforations 1/16" to 1/2"
- Vertical or horizontal orientation
- 90 and 180 degree flow paths
- Welding carried out to ASME Section IX
- NDE carried out to code requirements

A suction diffuser is sized by the pump connection and the line, so the two figures are the inlet and the outlet. Cast covers the smaller sizes and the lower classes; fabricated takes it to 42" and Class 600#.

CAST SUCTION DIFFUSERS

END CONNECTION	FROM	TO	MAXIMUM PRESSURE RATING
Flanged	2" x 1.25" (50 x 32 mm)	12" x 12" (300 x 300 mm)	ANSI Class 150# to 300#

FABRICATED SUCTION DIFFUSERS

END CONNECTION	FROM	TO	MAXIMUM PRESSURE RATING
Flanged and butt weld	2" x 2" (50 x 50 mm)	42" x 42" (1000 x 1000 mm)	ANSI Class 150# to 600#

END CONNECTION STANDARDS

END CONNECTION	GOVERNING STANDARDS
Flanged	ANSI B16.5 · ANSI B16.47 Series A & B · BS 10 · BS 4504 · EN 1092 · DIN · JIS · ISO
Butt weld	ANSI B16.25

Sizes and ratings shown are the standard offering. Consult Hydrotherms for other end connections, standards and combinations.

CHOOSING BETWEEN THE TWO

A casting is normally the economical route wherever a pattern exists for the size, rating and material – it is compact and the cost per unit falls with quantity. Beyond that point the same duty is met by a fabricated body built to drawing: large bore, high rating, exotic alloy, or a geometry no pattern covers.

Neither is the lesser option. Both are welded to ASME Section IX, examined to code, hydrostatically tested at 150% of design pressure and certified to EN 10204 Type 3.1. Send the line size, rating, material and service and Hydrotherms will state which route applies.

Body material is selected against the process fluid, temperature, pressure and corrosion duty. The specification that governs depends on the product form – a cast body, a forged component and a fabricated body are each written to a different standard for the same alloy.

MATERIAL	CAST	FORGED	PLATE / PIPE
Carbon steel	A216 WCB	A105	A516 Gr 70 / A106 Gr B
Low-temperature CS	A352 LCB / LCC	A350 LF2	A516 Gr 70 (impact tested)
Stainless steel 304 / 304L	A351 CF8 / CF3	A182 F304 / F304L	A240 304 / 304L
Stainless steel 316 / 316L	A351 CF8M / CF3M	A182 F316 / F316L	A240 316 / 316L
Stainless steel 904L	—	A182 F904L	A240 904L
Duplex 2205	A890 Gr 4A	A182 F51	A240 S31803 / S32205
Super duplex 2507	A890 Gr 5A / 6A	A182 F53 / F55	A240 S32750 / S32760
Alloy 20	A351 CN7M	B462 N08020	B463 N08020
Monel 400	A494 M35-1	B564 N04400	B127 N04400
Inconel 625	A494 CW6MC	B564 N06625	B443 N06625
Hastelloy C276	A494 CW12MW	B564 N10276	B575 N10276
Cast iron	A126	—	—
Bronze	B62	—	—

Specifications shown are those governing each product form. Alloy steels, engineered PVC and other grades are supplied to customer specification. Screen and internal materials are selected independently of the body.

SCREENS AND INTERNALS

The permanent screen is stainless steel, convoluted for area, with perforations from 1/16" to 1/2". A 20 mesh 304 stainless steel removable start-up sleeve is supplied as standard.

SOUR SERVICE

Where hydrogen sulphide is present, NACE MR0175 / ISO 15156 compliance is mandatory. Material selection, hardness limits, heat treatment and alloy composition are controlled across all wetted parts, and the strainer is certified to EN 10204 Type 3.1 or Type 3.2.

The strainer is configured to the line, not the other way round. Everything below is supplied to order.

NOZZLES AND ACCESS

- Rotated or offset nozzle placement
- Vent valves and drain valves

SCREEN AND ELEMENT

- Removable 20 mesh start-up sleeve
- Pleated baskets, for a higher open area ratio
- Wedge wire screens
- Perforated stainless steel, 1/32" to 1/2"
- Mesh 20, 40, 60, 80, 100, 150, 200, 325 and 400

WHAT TO STATE WITH THE ENQUIRY

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|---|--|
| ■ Line size, pressure class and the governing flange standard | ■ End connections required |
| ■ Fluid, operating temperature and design temperature | ■ Body and element materials, or the specification that governs them |
| ■ Flow rate, and the pressure drop that can be allowed | ■ How the element will be cleaned, and how often |
| ■ Particle size to be retained, and the expected solids loading | ■ Certification and third-party inspection required |

A strainer is a pressure-containing part. What matters is not that it was made carefully but that it can be shown to have been — every claim below is evidenced on the documentation package that ships with the strainer.

CARRIED OUT ON EVERY STRAINER

Hydrostatic test	Every strainer is hydrostatically tested at 150% of design pressure, to ANSI B16.34 and ASME Section III.
Welding qualification	All welding procedures — WPS and PQR — and all welders are qualified to ASME Boiler and Pressure Vessel Code Section IX.
Non-destructive examination	NDE to code requirements, executed in house by ASNT Level II and Level III personnel. Radiography by X-ray and Iridium-192.
Material verification	100% verification against Mill Test Certificates, with individual heat-number tracking. Records retained on file for five years.
Quality plan	A QC plan written around strainer failure modes — the screen, the cover joint and the body weld — rather than a generic works procedure.

CONDUCTED WHEN REQUESTED

- Air / pneumatic testing
- Pressure drop testing
- Helium leak test
- Hydrostatic burst test
- Shock test
- Vibration test
- Surge test
- Ferroxyl test
- Radiographic examination
- Magnetic particle examination
- Dye penetrant examination
- Ultrasonic testing
- Strain-gauge testing
- Brittle (coating) lacquer testing
- Cryogenic testing
- Tensile tests
- Hardness tests
- Impact test
- Manipulating tests
- Sulfide stress cracking test (SSC)
- Hydrogen induced cracking test (HIC)

Material certification to EN 10204 Type 3.1 is supplied as standard on every Hydrotherms strainer. Nothing below is charged as an extra unless it is marked as available on request.

MATERIAL CERTIFICATION

EN 10204 Type 3.1 Supplied as standard on all Hydrotherms strainers. Certified by the manufacturer against the order, with test results from the material used.

EN 10204 Type 3.2 Available on request. Verified and countersigned by an independent third-party inspector as well as the manufacturer.

CODES AND STANDARDS APPLIED

STANDARD	APPLIED TO
ANSI B16.34	Pressure testing
ASME Section III	Pressure testing
ASME Section IX	Welding and welder qualification
ASME B16.5 / B16.47	Flanged end connections
EN 10204	Material certification
NACE MR0175 / ISO 15156	Sour service
ASNT	NDE personnel qualification

THIRD-PARTY INSPECTION

Extensive experience delivering equipment released by Lloyd's Register, Bureau Veritas, TÜV and Engineers India Limited. Nominate your inspection authority with the enquiry.

Visit **www.hydrotherms.in** to download the complete quality control manual.

Protection through reliable performance

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