



Insurance for Your Process Equipment and Instruments

03

D_{uplex}
strainer



A duplex strainer is two strainer chambers joined by a diverting valve, so that one basket can be taken out and cleaned while the other stays in service. The pipeline never shuts down.

Flow is switched between the chambers by the diverting arrangement. The chamber taken out of service is isolated with positive shut-off, opened and cleaned, while the duty chamber continues to pass full flow – which is what makes the duplex the answer wherever an unbroken fluid stream is critical to the process.

It handles a wide range of flow rates and pressures, and the design carries few moving parts, so maintenance is confined to the baskets and the valve seats. Because the body is a pressure vessel it is designed to ASME Section VIII Division 1, and a code stamp is available.



Duplex strainer with twin chambers, gear-operated diverting valves and support legs. Cast and fabricated construction are both covered by this catalogue.

CONSTRUCTION

CAST

Two cast chambers with an integral diverting valve, to ANSI Class 1500 lb. The most compact arrangement, and the lowest installed cost.

FABRICATED

Built to drawing to ANSI Class 2500 lb, with the diverting arrangement made up from separate valves. This is the route to the higher classes and the wider material range.

STANDARD FEATURES

- Continuous flow – no shutdown to clean a basket
- Compact design, low installation cost
- Large capacity, heavy-duty baskets for long service life
- Low pressure drop and high flow capacity
- Few moving parts and low maintenance cost
- Simple flow switching with positive shut-off
- Complete package hydrostatically tested
- Designed to ASME Section VIII Division 1, optional code stamp
- Welding carried out to ASME Section IX
- NDE carried out to code requirements

Duplex strainers begin at 4". Cast and fabricated construction cover the same size band; what differs between them is the pressure class and the range of materials available.

CAST DUPLEX STRAINERS

END CONNECTION	FROM	TO	MAXIMUM PRESSURE RATING
Flanged and butt weld	4" (100 mm)	48"+ (1200 mm+)	ANSI Class 1500 lb

FABRICATED DUPLEX STRAINERS

END CONNECTION	FROM	TO	MAXIMUM PRESSURE RATING
Flanged and butt weld	4" (100 mm)	48"+ (1200 mm+)	ANSI Class 2500 lb

END CONNECTION STANDARDS

END CONNECTION	GOVERNING STANDARDS
Flanged	ANSI B16.5 · ANSI B16.47 Series A (MSS SP 44) · Series B (API 605) · AWWA C207 Class D & E · BS 10 · BS 4504 · EN 1092 · DIN · NFE · 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

Baskets are stainless steel as standard, with magnetic inserts, pleated and wedge wire elements available. Other alloys are supplied to the service.

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.

DIVERTING ARRANGEMENT

- Choice of isolation valve or diverter valve to suit the line
- Ball-valve cartridge diverter, operated by a single lever
- Plug diverter
- Twin butterfly or ball valves, gear operated from one linkage
- Three-way trunnion ball valve linked to a single operator
- Positive shut-off on the isolated chamber

COVER AND ACCESS

- Davit arm for access to the blind flanges
- Quick-opening cover, swing-away yoke
- Hinge for the access blind flange

BASKET AND ELEMENT

- Magnetic basket inserts
- Pleated baskets, for a higher open area ratio
- Wedge wire baskets, for a larger filtration area
- Backflush, backwash and blowdown

INSTRUMENTATION AND VALVES

- Pressure tap connections
- Differential pressure gauges and switches
- Drain valves and vent valves
- Air or vapour eliminator

BODY AND CONNECTIONS

- Offset inlet and outlet nozzles
- Steam jacketing, for highly viscous fluids
- Vessels designed for high pressure and temperature

COATINGS AND SUPPORT

- Special internal and external coatings
- Support legs and skid mounting

CODE STAMPING

- ASME Section VIII Division 1 "U" stamp

The diverting arrangement is selected against line size, pressure class, material and how often the baskets will be changed – it is the decision that shapes the rest of the strainer. State the duty with the enquiry and Hydrotherms will propose the arrangement.

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 to 1.5 times the maximum allowable working pressure before despatch, in accordance with ASME Section VIII. Shell integrity, joint tightness and cover seal performance are verified under sustained test pressure, and the certificate ships with the order.
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
ASME Section VIII Div 1	Pressure vessel design, and "U" stamp where required
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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