



TwistFlow Strainer AutoFilt® ATF

Flow rate: up to 400 m³/h, up to 16 bar
Filtration rating: 200 to 3000 µm

ATF-1 ATF-2 ATF-2.5 ATF-3 ATF-3.5 ATF-4



1. TECHNICAL SPECIFICATIONS

1.1 GENERAL

The HYDAC AutoFilt® TwistFlow Strainer ATF is used to filter solid particles from water and other fluids similar to water.

With filtration ratings of between 200 and 3000 µm, the AutoFilt® TwistFlow Strainer ATF is particularly suitable for separating suspended solid particles up to several g per litre from preferably low viscosity fluids.

1.2 APPLICATIONS

The AutoFilt® ATF can be used to separate solids and fluids in low viscosity fluids and if, for example, used for

- Pre-separation before the AutoFilt® RF3 / RF4
- Prefiltration in order to relieve the load on sand filters
- Prefiltration before membrane systems
- Filtration of surface water
- Filtration of sea water
- Filtration of process water
- Filtration of wastewater

1.3 CONSTRUCTION AND FUNCTION

This filter is a hybrid system consisting of a centrifuge separator and an inline filter. The fluid to be cleaned enters the housing tangentially – similar to a centrifuge separator – and accelerates down as a result of the tapered housing cross-section. The resulting spiral flow with its centrifugal force carries the coarsest contamination first – its density is obviously higher than that of the fluid – to the inner wall of the housing.



1.4 FUNCTION

When pressed against the filter wall, the particles sediment at a higher density in the lower part of the filter, where they are finally carried out. The remaining particles, which only marginally differ in density from the fluid, are separated by a conical filter element which is located in the middle of the filter.

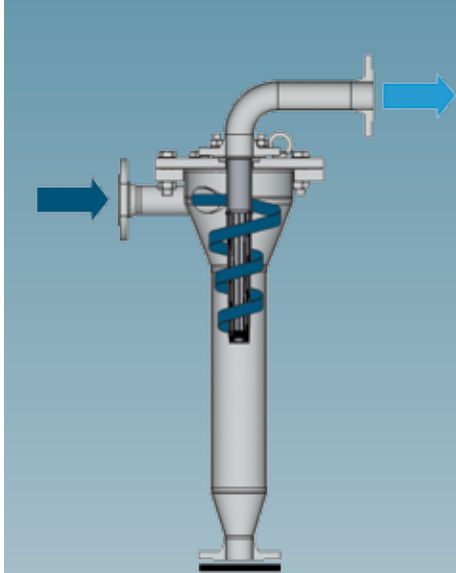
This conical filter element specially developed for the filter ensures optimum flow characteristics, and on the one hand makes possible continual self-cleaning of the filter during operation, and on the other makes the pressure drop of the whole filter much lower compared with a centrifugal separator of a similar size. Both the sedimented particles and those separated by the filter element finally collect in the lower part of the housing and are discharged periodically from the system by opening the contamination flap.

During this cleaning procedure (depending on the installation situation of the strainer) part of the untreated water flow is used for a few seconds to clean the elements and to rinse the filter.

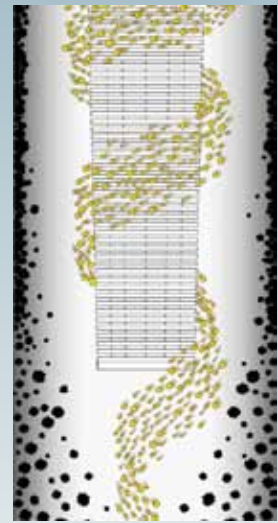
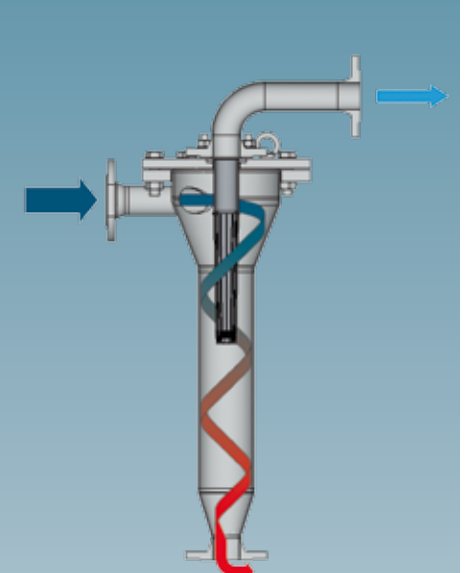
Because only a partial flow is used for rinsing, the filtration operation is continuous. In addition, the unit is of course excellent for bypass flow applications which are able to do without a partial flow for short periods. Depending on the application and the amount of solid particles, the contamination interval can be adapted individually to the preparation process via a timer function.

In order to filter high flow rates, the TwistFlow Strainer AutoFilt® ATF can also be supplied as a skid solution.

Filtration phase



Cleaning phase



1.5 SPECIAL FEATURES OF THE TWISTFLOW STRAINER

The ATF is particularly suited to high levels of contamination and large fluctuations in the solid particle content of the untreated water.

Due to the use of conical slotted tube and sintered wire meshes with filtration ratings of between 200 and 3000 µm, a precise selectivity and therefore a constant filtrate quality is ensured – independent of fluctuations in operating pressure or flow rate.

Due to the special flow conditions resulting from the element geometry and their arrangement, the pressure drop on the overall unit is relatively low at < 1.0 bar.

The pre-filtration of solid particles of a higher density means that the filter surface area can take a correspondingly higher load and the filter size can therefore be comparatively small.

The filter elements are cleaned solely by flushing with untreated fluid.

The ATF saves on space in comparison to conventional separating units such as lamellar separators or sand filters.

Several TwistFlow Strainers can be integrated in almost any quantity into systems and as a result can be flexibly adapted to the required flow rates.

The filter unit ATF is maintenance-friendly, as it is equipped with a flange cover. On sizes 2 to 4, it is also possible to replace the filter element without having to open the filter.

2. FILTER SPECIFICATIONS

2.1 SUMMARY OF TECHNICAL SPECIFICATIONS OF THE FILTER HOUSING (STANDARD CONFIGURATION)

Size	Pressure range [bar]		Connection Inlet/outlet	Connection cleaning line	Filter area [cm ²]	Temperature [°C]	Weight [kg]	Volume [l]
	PN10	PN16						
1		●	G 1"	G 1"	150	0 to 90	15	1.8
2	●	●	DN 50	DN 50	360		60	13.5
2.5	●	●	DN 80	DN 80	966		135	28
3	●	●	DN 100	DN 100	1720		200	55
3.5	●	●	DN 150	DN 100	3500		263	130
4	●	●	DN 200	DN 150	3900		418	230

2.2. FURTHER SPECIFICATIONS OF THE FILTER HOUSING (STANDARD CONFIGURATION)

2.2.1 Material of seal

- asbestos-free gasket (C4400)

2.2.2 Control parameters

0: without valve, without control

M: manual

EP: electro-pneumatic drain valve without timer function

EPZ: electro-pneumatic drain valve with timer function

E: electrical drain valve without timer function

EZ: electrical drain valve with timer function

2.2.3 Flange connections

- DIN flanges
- ANSI flanges
- JIS flanges
- NPT thread optional (only ATF-1)

2.2.4 Housing materials

- Stainless steel (AISI 304 / 1.4301)
- Carbon steel

2.2.5 Materials for elements

- Stainless steel

2.2.6 External corrosion protection

- 2 coats of primer RAL 9006 (not required for stainless steel housings)

2.2.7 Internal corrosion protection

- 2K polyurethane coating, internal

2.2.8 Filtration ratings

- Conical slotted tube with or without Superflush 200 to 3000 µmm

2.2.9 Pressure ranges

- 10 bar
- 16 bar

2.2.10 Operating temperatures

- 0 to 90 °C

2.2.11 Documentation

- Operating and maintenance instructions

2.3. OPTIONAL VERSIONS

2.3.1 Housing manufacture

- ASME Code Design with or without U-Stamp

2.3.2 Housing materials

- Duplex, Superduplex
- Different stainless steel and carbon steel qualities

2.3.3 Documentation

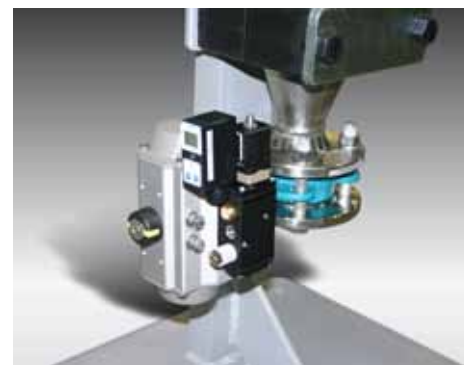
- Manufacturer's test certificates
- Material certificates 3.1 according to DIN EN 10204
- And many others available on request

2.3.4 Accessories

- Frame for ATF-2, ATF-2.5 and ATF-3
- Mounting clips for ATF-2, ATF-2.5 and ATF-3
- Differential pressure gauge for customer use



Solenoid valve on ATF-1



Flap on ATF-2, 2.5



Flap on ATF-3, 3.5, 4

3. MODEL CODE TwistFlow Strainer

ATF - 2 - EPZ1 - E - NN - 10 - 0 - X / UKS2 200 - 12345678

TwistFlow Strainer

Size/ connections

- 1 = inlet/outlet G 1"
- 2 = inlet/outlet DN 50
- 2.5 = inlet/outlet DN 80
- 3 = inlet/outlet DN 100
- 3.5 = inlet/outlet DN 150
- 4 = inlet/outlet DN 200

Control

- 0 = without valve, without control
- M = manually-operated drain valve
- EP = electro-pneumatically-operated drain valve, without timer function
- EPZ = electro-pneumatically-operated drain valve, with timer function
- E = electrically-operated drain valve, without timer function
- EZ = electrically-operated drain valve, without timer function

Type of voltage (EP, EPZ, E and EZ)

- 1 = control voltage 230 V AC, 50-60 HZ
- 2 = control voltage 110 V AC, 50-60 HZ
- 3 = control voltage 24 V AC, 50-60 HZ
- 4 = control voltage 24 V DC

Housing materials

- N = carbon steel or SG cast iron (RAL 9006)
- E = stainless steel
- A = For ANSI flanges, add A
- J = For JIS flanges, add J
- T = NPT threaded connection (only for size 1) also add T
- P = internal coating with 2-K polyurethane paint (also add P)

Drain valve

- 0 = without drain valve
- NN = flap GGG 40 coated, cuff NBR, washer, stainless steel
- NE = flap GGG 40 coated, cuff EPDM, washer, stainless steel
- NV = flap GGG 40 coated, cuff Viton, washer, stainless steel
- BN = flap GGG 40 coated, cuff NBR, washer, bronze
- BE = flap GGG 40 coated, cuff EPDM, washer, bronze
- BV = flap GGG 40 coated, cuff Viton, washer, bronze
- E = ball valve, stainless steel (only size 1)
- M = ball valve, brass (only size 1)

Pressure ranges

- 10 = PN 10
- 16 = PN 16

Equipment

- 0 = without accessories
- 1 = with base frame (only ATF-2, ATF-2.5 and ATF-3)
- 2 = mounting clips set (only ATF-2, ATF-2.5 and ATF-3)
- 3 = differential pressure gauge pressure chamber aluminium (only for customer use)
- 4 = differential pressure gauge stainless steel (only for customer use)
- 5 = differential pressure gauge pressure chamber brass (only for customer use)

Modification number

Element set

- UKS1 = conical slotted tube for size 1
- UKS2 = conical slotted tube for size 2
- UKS2.5 = conical slotted tube for size 2.5
- UKS3 = conical slotted tube for size 3
- UKS3.5 = conical slotted tube for size 3.5
- UKS4 = conical slotted tube for size 4
- SUKS1 = conical slotted tube Superflush for size 1
- SUKS2 = conical slotted tube Superflush for size 2
- SUKS2.5 = conical slotted tube Superflush for size 2.5
- SUKS3 = conical slotted tube Superflush for size 3
- SUKS3.5 = conical slotted tube Superflush for size 3.5
- SUKS4 = conical slotted tube Superflush for size 4

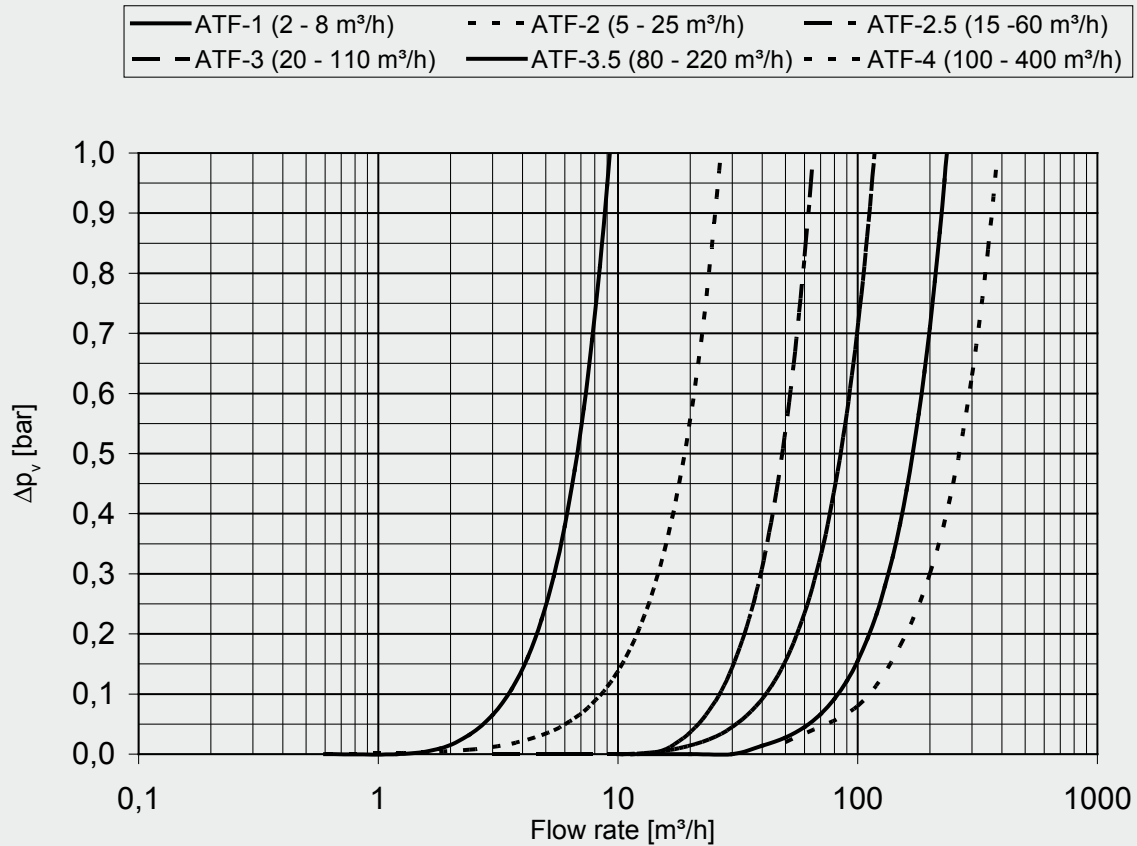
Filtration ratings

- 200 = 200 µm (not for size 4)
- 300 = 300 µm (not for size 4)
- 500 = 500 µm
- 1000 = 1000 µm
- 2000 = 2000 µm
- 3000 = 3000 µm

Drawing number

4. FILTER CALCULATION / SIZING

4.1 PRESSURE DROP CURVES



In order to be able to size the filter correctly, the following design data should be available:

- Flow rate
- Type of medium
- Materials / resistance
- Viscosity
- Required filtration rating
- Particulate loading in the fluid
- Solid particle type and density/ densities
- Operating Pressure
- Operating temperature

The AutoFilt® TwistFlow Strainer ATF is sized based on the pressure drop curve.

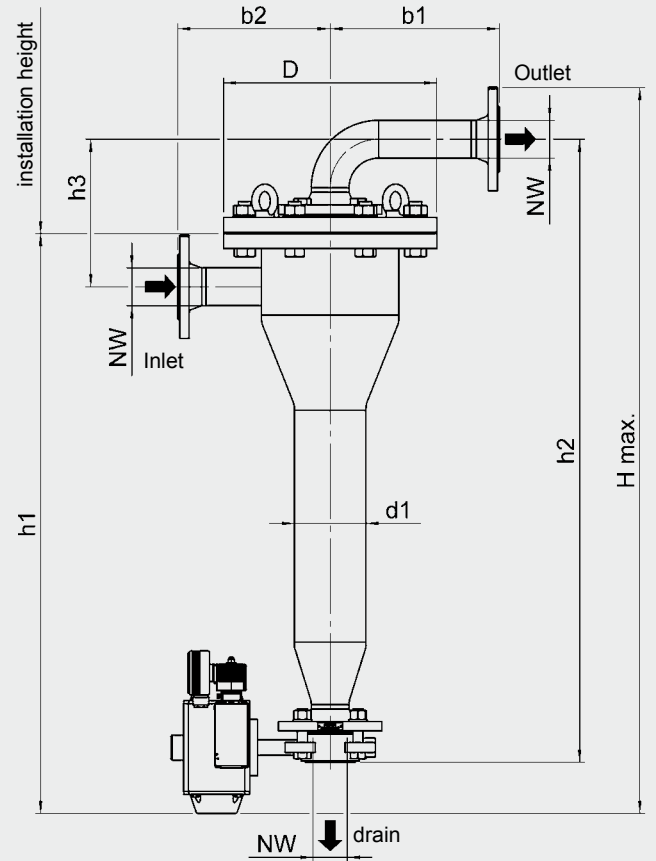
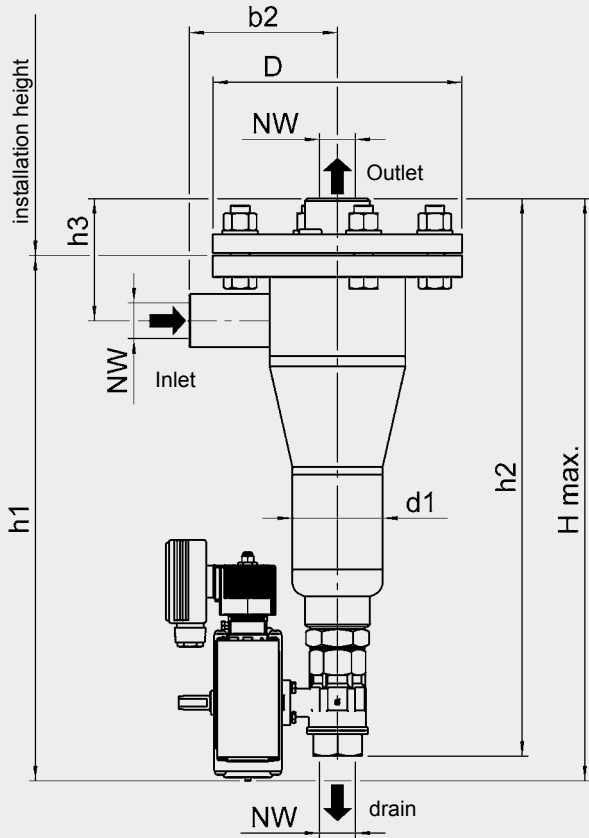
A further factor in the calculation is the flow velocity through the flange inlet. It should not exceed 4 m/s.

In order to filter high flow rates, the TwistFlow Strainer AutoFilt® ATF can also be supplied as a skid solution.



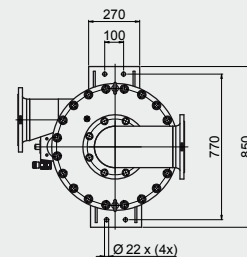
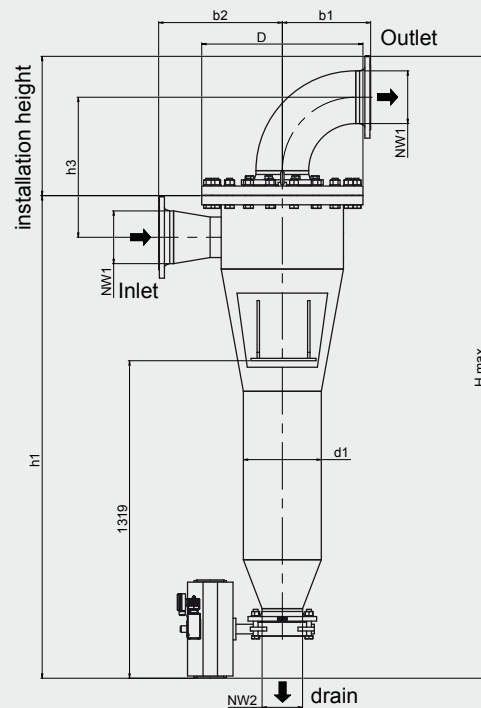
5. DIMENSIONS

5.1 ATF-1, ATF-2, ATF-2.5 AND ATF-3



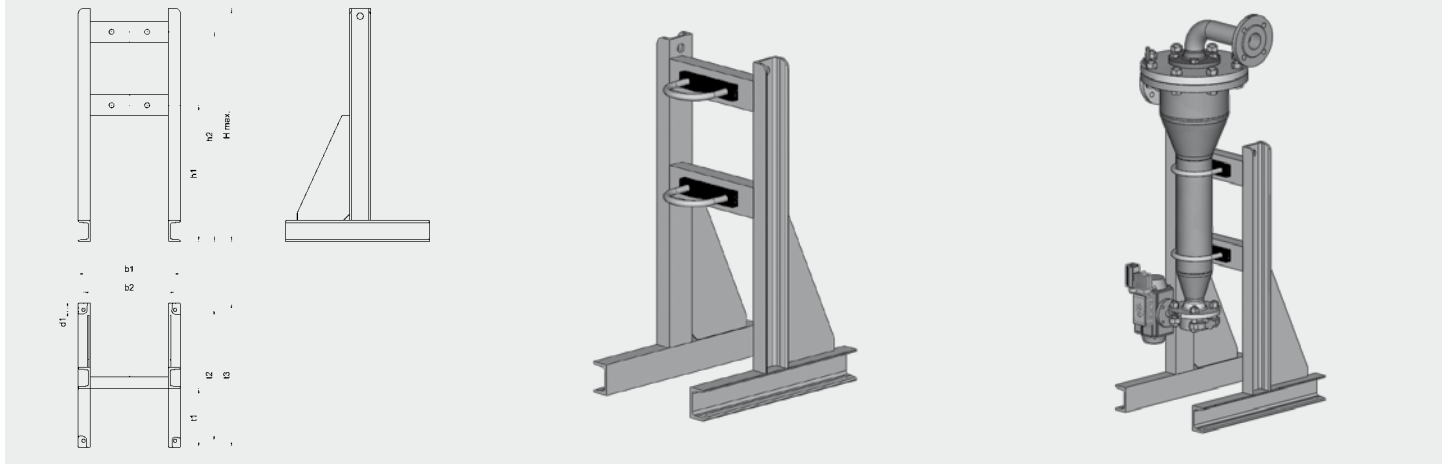
Filter Size	NW	H max.	h1	h2	h3	b1	b2	D	d1	installation height
TwistFlow Strainer-1	1"	490	445	470	103	–	125	210	76.1	350
TwistFlow Strainer-2	50	1160	925	995	235	270	243	340	114.3	500
TwistFlow Strainer-2.5	80	1435	1140	1235	315	220	280	395	139.7	650
TwistFlow Strainer-3	100	1750	1400	1500	350	260	322	445	219.1	1000

5.2 ATF-3.5 AND ATF-4



Filter Size	NW1	NW2	H max.	h1	h2	h3	b1	b2	D	d1	installation height
TwistFlow Strainer-3.5	150	100	2260	1785	1980	478	284	435	565	273	1300
TwistFlow Strainer-4	200	150	2585	2005	2240	582	367	514	670	323.9	1170

5.3 FRAME FOR ATF-2, ATF-2.5 AND ATF-3 (ATF-3.5 and ATF-4 with support brackets)



Filter Size	H max.	h1	h2	b1	b2	t1	t2	t3	d1
TwistFlow Strainer-2	890	520	800	390	350	225	500	550	13
TwistFlow Strainer-2.5	1180	700	1050	430	380	320	790	850	17
TwistFlow Strainer-3	1420	810	1290	510	460	345	840	900	17

NOTE

The information in this brochure relates to the operating conditions and applications described. For applications and operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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