

SPIROVENT® AIR
SPIROVENT® DIRT
SPIROTRAP®
AIR ELIMINATORS AND
DIRT SEPARATORS

SPIROTHERM

WORLD LEADER IN DISTRIBUTION EFFICIENCY



- 4-5 Combination Air Eliminator / Dirt Separator
- 6-7 Air Eliminator
- 8-9 Dirt Separator
- 10 Model Designations / Flow Rates
- 11 Dimensional Data —
Combination Air Eliminator / Dirt Separator
- 12 Dimensional Data — Air Eliminator
- 13 Dimensional Data — Dirt Separator
- 14 Pressure Drop — Standard Velocity
- 15 Pressure Drop — High Velocity

Considerable improvements have been made in generating the hot and chilled water for building comfort systems and Spirotherm® has raised the bar with engineered products designed and manufactured specifically for distributing that water efficiently. Standard designs and specifications for old style centrifugal separators around for more than fifty years are being changed in recognition of the Spirotherm technology driven by building owners who have reaped the benefits in existing buildings and progressive consulting engineers who want to prevent problems in new buildings. Sidestream filtration devices that cannot keep up with the continued corrosion brought about by the presence of air are being replaced by combination air and dirt separators that offer two full flow functions in one vessel. The air and dirt problems in the system fluid that inhibits heat transfer, collects in the piping or equipment, and restricts flow, takes away from the return on the investment made in high efficiency boilers and chillers and the Spirotherm technology has provided a positive impact.

The following pages represent a condensed illustrated overview of the Spirovent® and Spirotrap® products that have become the standard with many commercial, industrial, and institutional clients as well as the basis of design with many consulting engineers. Since 1970 when the first technology research component of our founding company in Europe began, the concept of coalescing type separators is rapidly becoming the norm. With sales and manufacturing in Europe since 1985 and in North America since 1990, representatives and distributors are located around the world. Contractors, homeowners, major universities, school districts, health care facilities, and Fortune 500 companies now ask for Spirovents by name. For actual case histories, references, and additional technical details please request our Spirotism booklet.

Spirotherm, Inc. maintains a North American network of factory trained professionals to assist with application and selection questions. Our regional offices across North America also provide direct on-site factory support to facilities and design professionals as needed.

Value propositions, best practices, and innovative sustainable system design have demonstrated that increased attention to this system component have made it exempt from “VE” consideration due to its long term benefits to the overall system performance.

- 100% of all free and entrained air eliminated
- Absorption of air pockets throughout system that impede heat transfer
- Eliminate air related “routine” maintenance
- Cost effective full flow dirt and sediment removal
- Boost chiller output
- Improve ΔT
- Energy savings considerations
- Ideal for Retro-commissioning projects



AIR- AND DIRT-FREE SYSTEM WATER THROUGH A SINGLE UNIT

The life and efficiency of a heating or cooling system are greatly dependent on the quality of the system water. Air and dirt problems cause frequent breakdowns and increased customer complaints. Corrosion, cavitation, and component wear are consequences of air-saturated, dirty water.

Recurring problems and increased maintenance results in unnecessary costs and dissatisfied owners.

There is a solution!

A system without air and dirt is possible! There is a unique dual-purpose device that will remove air and dirt down to the smallest particle, keeping the system free from air and dirt, permanently. It requires little maintenance, and works without strainers or filters. Less maintenance, fewer costs, satisfied owners!

The name:

SPIROVENT DIRT

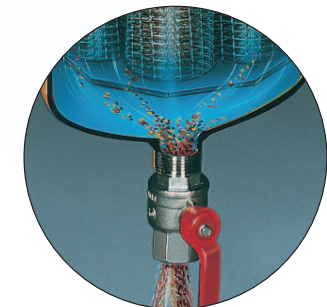
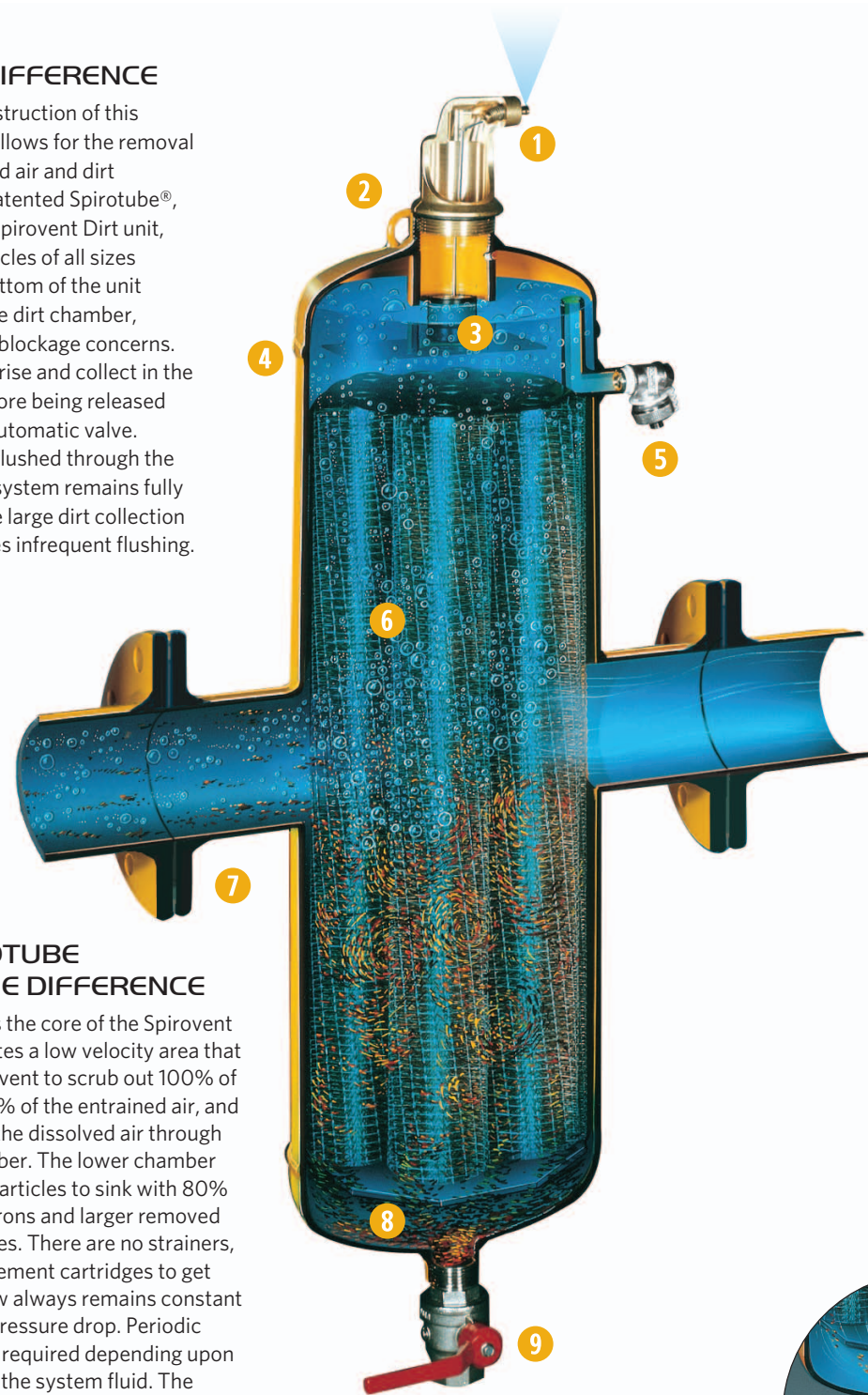


THE KEY DIFFERENCE

The unique construction of this combined unit allows for the removal of both entrained air and dirt particles. The patented Spirotube®, the core of the Spirovent Dirt unit, causes dirt particles of all sizes to sink to the bottom of the unit and collect in the dirt chamber, eliminating any blockage concerns. The air bubbles rise and collect in the air chamber before being released via an integral automatic valve. The dirt can be flushed through the drain while the system remains fully operational. The large dirt collection chamber ensures infrequent flushing.

THE SPIROTUBE MAKES THE DIFFERENCE

The Spirotube is the core of the Spirovent Dirt unit. It creates a low velocity area that allows the Spirovent to scrub out 100% of the free air, 100% of the entrained air, and up to 99.6% of the dissolved air through the upper chamber. The lower chamber allows the dirt particles to sink with 80% of those 30 microns and larger removed within 100 passes. There are no strainers, filters, or replacement cartridges to get clogged and flow always remains constant without a high pressure drop. Periodic blow downs are required depending upon the condition of the system fluid. The result: increased component life and heat transfer efficiency; decreased oxygen-based corrosion and pump cavitation; the elimination of air related noises such as gurgling and cascading; and the need for continual "routine" maintenance to vent, bleed, and purge.



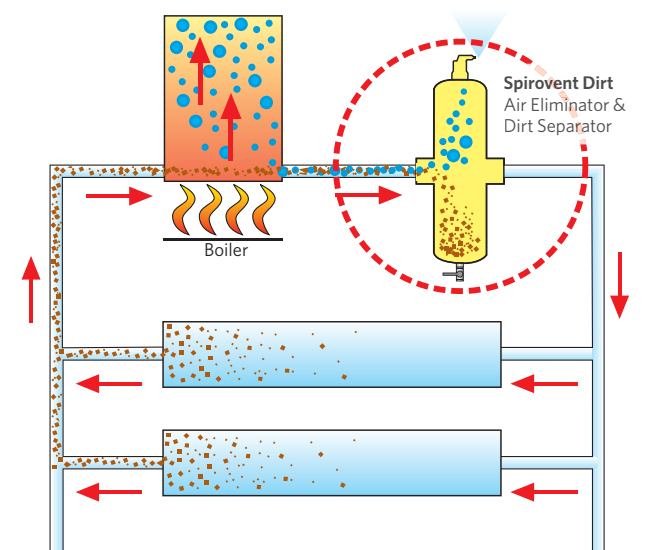
When the drain valve is opened the system pressure flushes out the collected dirt. This only takes a few seconds.



ADVANTAGES TO THE SPECIFIER, INSTALLER AND OWNER

- No bypass, isolating valves or replacement filters to clog and reduce flow
- Dirt can be flushed while the system is in full operation.
- Quiet operation
- Minimum pressure drop; always constant
- Increased component life
- Reduced oxygen-based corrosion and pump cavitation
- Provides optimum heat transfer
- Optional removable head for bundle inspection

- 1 The automatic air vent is guaranteed not to leak and can only be closed by the installer for a pressure test.
- 2 Lifting eyes make installation easy.
- 3 The air chamber has been designed so that dirt cannot reach the valve.
- 4 Welded steel construction guarantees long life.
- 5 Valve for releasing large amounts of air during filling and for skimming off floating dirt.
- 6 The unique Spirotube is the core of the Spirovent. Designed to trap the smallest microbubble and microscopic dirt particle, yet it offers little resistance to flow.
- 7 Threaded or flanged connections available. Threaded 2"- 4" (not available on units with removable head) ; Flanged 2" and up.
- 8 Large capacity collection chamber reduces the need for frequent draining.
- 9 Drain valve for flushing out the dirt.

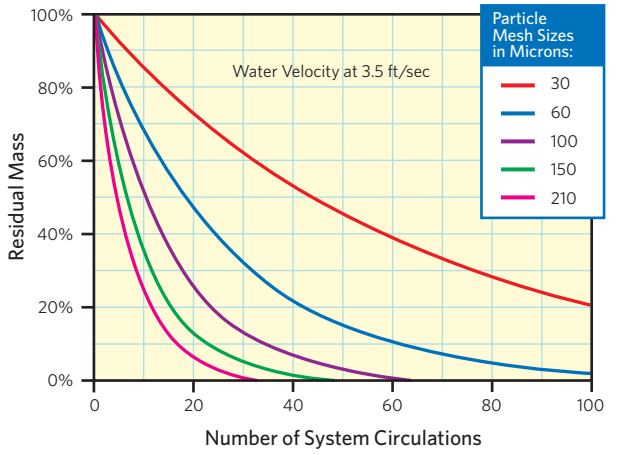


INSTALL THE SPIROVENT DIRT FOR OPTIMUM PERFORMANCE

Ideal placement of a Spirovent unit is based on microbubble separation and Henry's Law. Simply put, Henry's Law states that air is released from water as the temperature increases or the pressure decreases*. For this reason, the Spirovent is typically installed in the hottest point in the system. For a heating installation, this is in the supply from the boiler. In a chilled water circuit, the warmest point is in the return to the chiller.

*For more detailed technical information, ask about our Spirotism booklet.

DIRT SEPARATION EFFICIENCY



PERMANENTLY AIR-FREE SYSTEM WATER

AIR IN SYSTEM WATER CAUSES MANY PROBLEMS.

Noisy pipes, valves and other air-related system noises are often accepted as the signs of a functioning system. Excessive pump noise, cavitation and cascading water in terminal units are considered normal.

But....serious problems can occur. Air in system water can cause corrosion, reduced efficiency, poorly heated or inadequately cooled rooms, accelerated component wear, and ongoing complaints.

Result:
Unnecessary maintenance costs and a dissatisfied owner.

There is a solution!

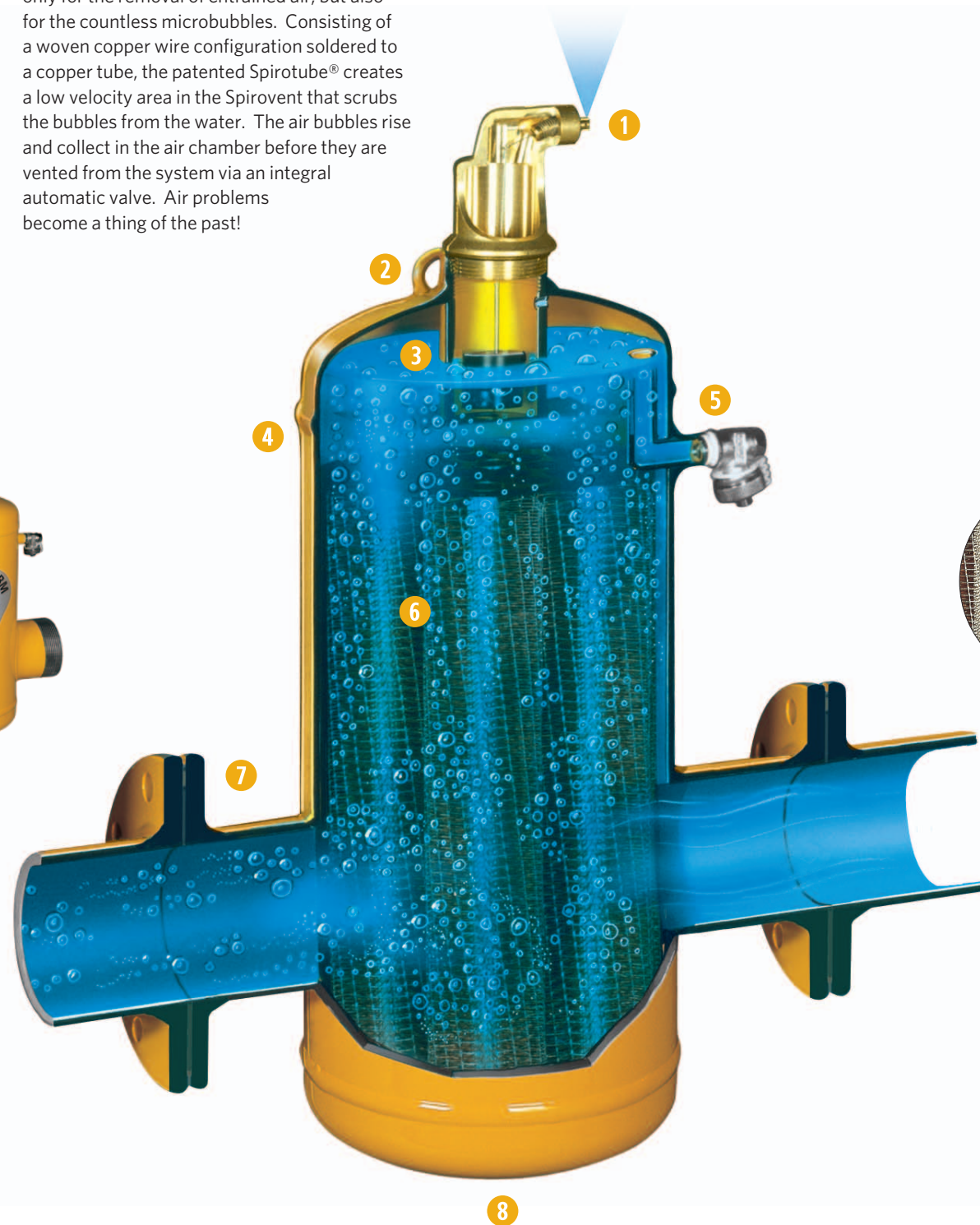
A system without air-related problems is possible! There is a device that will keep your system free of air, permanently. Less maintenance, quiet operation, fewer costs!

The name:
SPIROVENT AIR



THE KEY DIFFERENCE

The Spirovent's unique construction allows not only for the removal of entrained air, but also for the countless microbubbles. Consisting of a woven copper wire configuration soldered to a copper tube, the patented Spirotube® creates a low velocity area in the Spirovent that scrubs the bubbles from the water. The air bubbles rise and collect in the air chamber before they are vented from the system via an integral automatic valve. Air problems become a thing of the past!

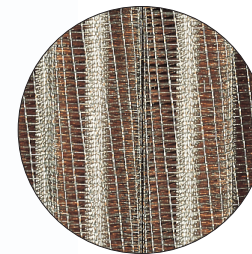


ADVANTAGES TO THE INSTALLER AND THE END-USER

- Greatly reduced initial fill and start-up time
- No venting required
- Optimum heat transfer
- Increased component life
- Reduced oxygen-based corrosion and pump cavitation
- Quiet operation

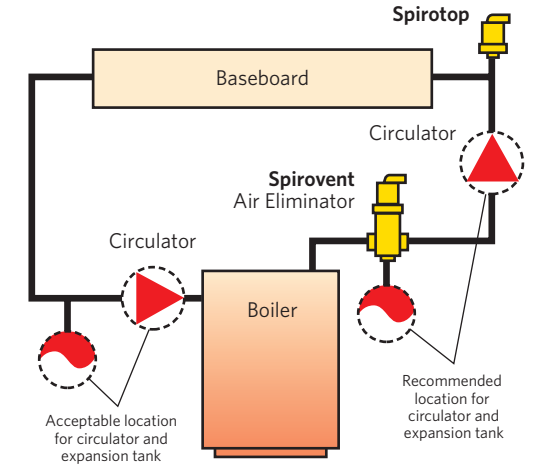
THE SPIROTUBE MAKES THE DIFFERENCE

It allows the Spirovent to scrub out 100% of the free air, 100% of the entrained air, and up to 99.6% of the dissolved air in the system. Even the smallest microbubbles coalesce and rise. Air is eliminated, component life and heat transfer abilities are increased; oxygen-based corrosion and pump cavitation are reduced; and annoying gurgling, cascading, and other air-related system noises are eliminated.



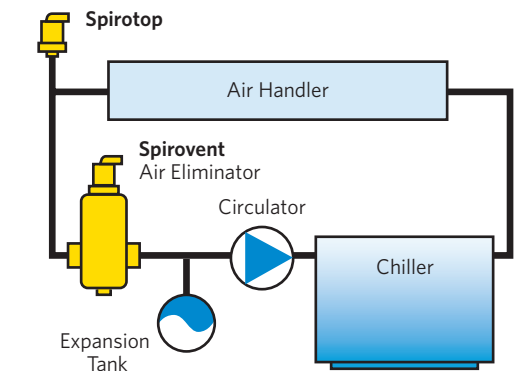
The patented Spirotube, the core of the Spirovent

- 1 The automatic air vent is guaranteed not to leak and can only be closed by the installer for a pressure test.
- 2 Lifting eyes make installation easy.
- 3 The air chamber has been designed so that dirt cannot reach the valve.
- 4 Welded steel construction guarantees long life.
- 5 Valve for releasing large amounts of air during filling and for skimming off floating dirt.
- 6 The unique Spirotube is the core of the Spirovent. Designed to trap the smallest microbubble, yet it offers little resistance to flow.
- 7 Threaded or flanged connections available. Threaded 3/4" - 4"; Flanged 2" and up.
- 8 Drain plug. Also suitable for connecting a valve or temperature sensor.



INSTALL THE SPIROVENT FOR OPTIMUM PERFORMANCE

Ideal placement of the Spirovent is based on microbubble separation and Henry's Law. Simply put, Henry's Law states that air is released from water as the temperature increases or the pressure decreases*. For this reason, the Spirovent is typically installed in the hottest point of the system. For a heating installation, this is in the supply from the boiler. In a chilled water circuit, the warmest point is in the return to the chiller.



*For more detailed technical information, ask about our Spirotism booklet.

CLEAN SYSTEM WATER THROUGHOUT THE LIFE OF THE INSTALLATION

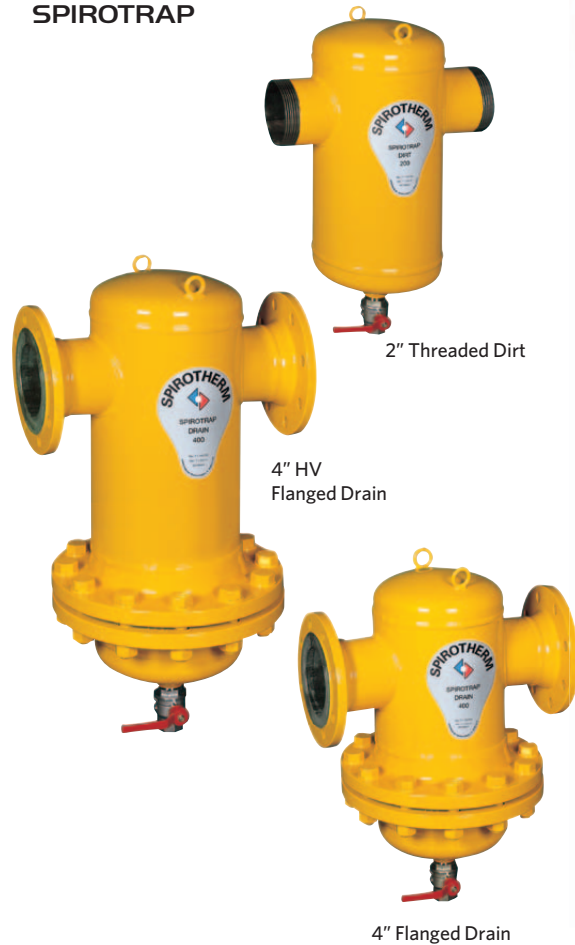
The life and efficiency of a heating or cooling system is greatly dependent on clean system water. Dirt in the system can cause increased component wear and frequent breakdowns. Corrosion, pump and control valve wear, and reduced efficiency result in increased maintenance, unnecessary costs, and dissatisfied owners. Traditionally, strainers or filters that operate under high pressure losses have been installed to deal with dirt problems. However, these require frequent maintenance, and if not cleaned on a regular basis, cause even lower flow rates and, eventually, blockages.

There is a solution!

A system without dirt is possible. There is a unique device that will remove dirt down to the smallest particle. It works continuously and results in less maintenance, fewer costs and satisfied owners!

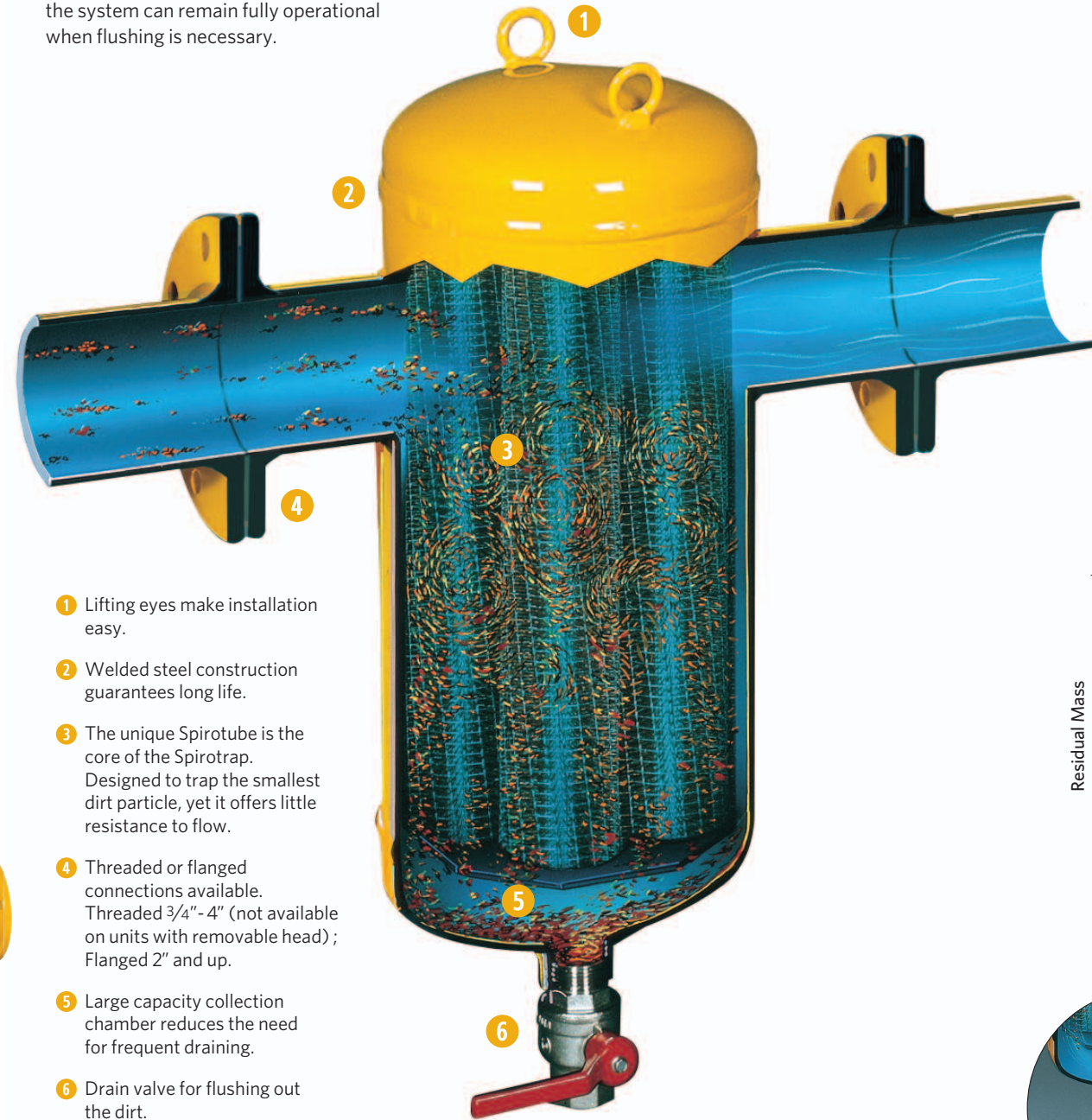
The name:

SPIROTRAP



THE KEY DIFFERENCE

Spirotrap's unique construction allows for the removal of dirt particles of all sizes. The patented Spirotube®, the core of the Spirotrap, creates a low velocity area that forces the dirt particles to sink to the dirt collection chamber at the bottom of the unit. Because the dirt is collected outside of the main flow, blockages do not occur, and the Spirotrap's pressure drop remains constant. While the large dirt collection chamber requires infrequent flushing, the system can remain fully operational when flushing is necessary.



- 1 Lifting eyes make installation easy.
- 2 Welded steel construction guarantees long life.
- 3 The unique Spirotube is the core of the Spirotrap. Designed to trap the smallest dirt particle, yet it offers little resistance to flow.
- 4 Threaded or flanged connections available. Threaded 3/4"-4" (not available on units with removable head); Flanged 2" and up.
- 5 Large capacity collection chamber reduces the need for frequent draining.
- 6 Drain valve for flushing out the dirt.



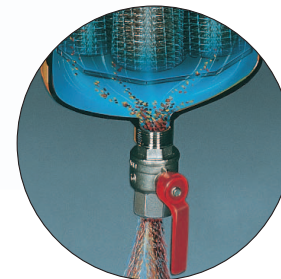
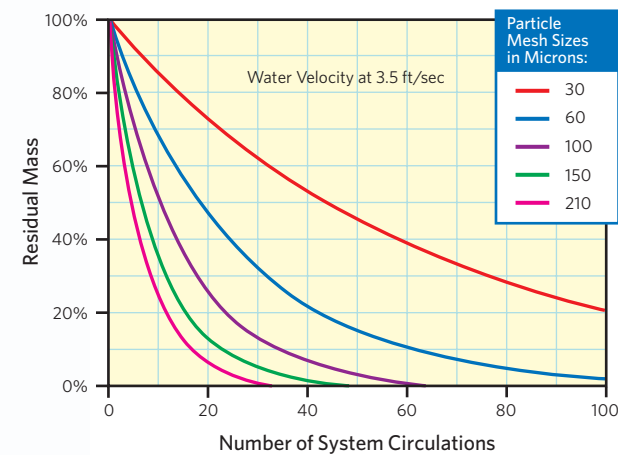
ADVANTAGES TO THE SPECIFIER, INSTALLER AND OWNER

- Virtually no maintenance and no replacement filters
- Dirt can be flushed while system is fully operational
- Will not block the flow
- Minimum pressure drop; always constant
- Optional removable head for bundle inspection
- All dirt can be removed in one central location in the equipment room
- No by-pass or isolating valves required

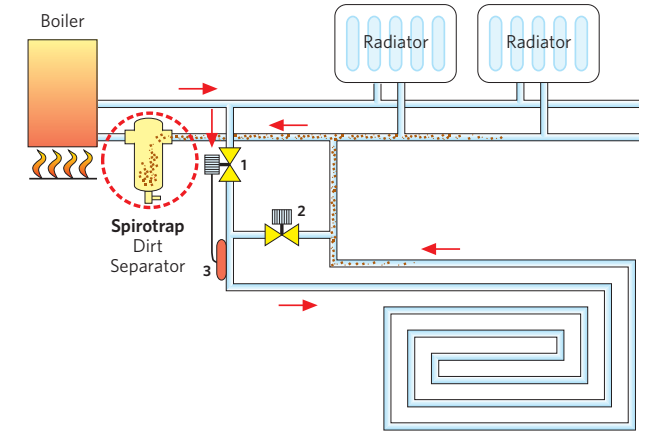
THE SPIROTUBE MAKES THE DIFFERENCE

The Spirotube is the core of the Spirotrap dirt separator. The Spirotube consists of a woven copper wire configuration soldered to a copper tube that creates a low velocity area inside of the Spirotrap, allowing dirt particles of all sizes to sink. Unlike traditional products, the Spirotrap has no strainers, filters or replacement parts to get clogged. The result: increased system efficiency, reduced component corrosion and wear, and little maintenance.

DIRT SEPARATION EFFICIENCY

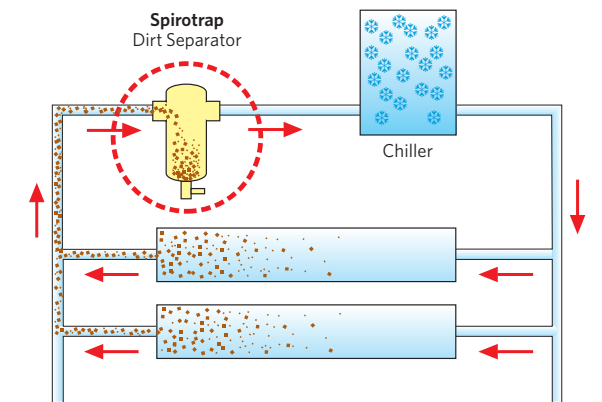


When the drain valve is opened the system pressure flushes out the collected dirt. This only takes a few seconds.



THE BENEFITS ARE CLEAR

The Spirotrap is so much more than your traditional separator. The unique construction of the Spirotrap dirt separator allows for quick and simple dirt removal while the system remains fully operational, whereas traditional products need to be taken apart for cleaning. No more isolating, no more draining, no more air! The patented Spirotube, the core of the Spirotrap dirt separator, allows dirt particles to sink to the bottom, eliminating any blockage concerns. There are no strainers, filters or replacement parts to get clogged. Flow remains constant, without high pressure drop. Clearly beneficial, clearly Spirotrap!



*For more detailed technical information, ask about our Spirotrism booklet.

Spirovent and Spirotrap separators are available in standard and high velocity (HV) models to provide the ultimate in efficiency within a broad application range. Standard velocity models are most often used in heating systems or those with inlet velocities of approximately 6 feet per second or less. High velocity models allow for an inlet velocity of up to 10 feet per second and are most often used in chilled or condenser water systems. While the product features are identical, the HV models are larger and include additional coalescing surface area to maintain efficiencies. All flanged models are fabricated and stamped in accordance with ASME Section VIII, Division 1 for unfired pressure vessels.

SPIROVENT DIRT Air Eliminator / Dirt Separator

Standard Velocity: VDT (Model Number*) FA

High Velocity: VHT (Model Number*) FA

SPIROVENT DRAIN

Air Eliminator / Dirt Separator with Removable Head

Standard Velocity: VDN (Model Number*) FA

High Velocity: VHN (Model Number*) FA

SPIROVENT AIR Air Eliminator

Standard Velocity: VSR (Model Number*) FA

High Velocity: VHR (Model Number*) FA

SPIROTRAP DIRT Dirt & Sediment Separator

Standard Velocity: TDT (Model Number*) FA

High Velocity: THT (Model Number*) FA

SPIROTRAP DRAIN

Dirt & Sediment Separator with Removable Head

Standard Velocity: TDN (Model Number*) FA

High Velocity: THN (Model Number*) FA

Flange Size	*Model Number	Standard Velocity Recommended Flow (GPM)	High Velocity Maximum Flow (GPM)
2"	200	60	100
2½"	250	90	150
3"	300	140	230
4"	400	240	400
5"	500	370	620
6"	600	540	900
8"	800	940	1,550
10"	1000	1,470	2,450
12"	1200	2,090	3,500
14"	1400	2,530	4,300
16"	1600	3,300	5,500
18"	1800	4,180	6,950
20"	2000	5,200	8,650
24"	2400	7,500	12,500
30"	3000	12,100	20,200
36"	3600	17,400	29,600

Flow rates based upon nozzle velocity in Schedule 40 pipe through 10" and standard pipe 12" and up. Consult factory for custom designs or higher flow rates.

STANDARD VELOCITY COMBINATION AIR ELIMINATOR / DIRT SEPARATOR

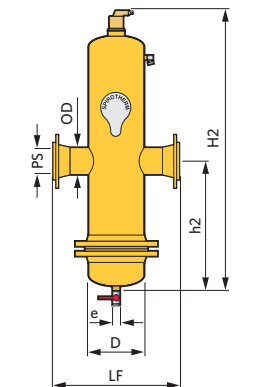
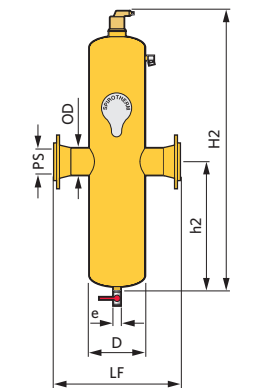
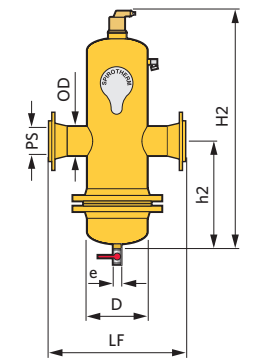
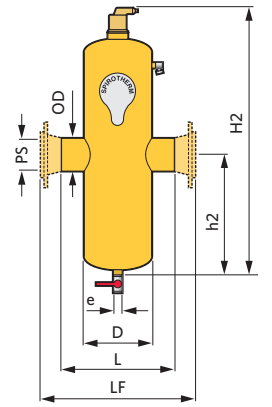
DIRT Part Number	VDT200	VDT250	VDT300	VDT400	VDT500	VDT600	VDT800	VDT1000	VDT1200	
DRAIN Part Number	VDN200	VDN250	VDN300	VDN400	VDN500	VDN600	VDN800	VDN1000	VDN1200	
Pipe Size	Inch	2	2.5	3	4	5	6	8	10	12
O.D.	Inch	2.375	3	3.5	4.5	5.5	6.625	8.625	10.75	12.75
Thread	NPT	2	2.5	3	4	—	—	—	—	—
D	Inch	6.3	6.3	8.6	8.6	12.8	12.8	16.0	20.0	24.0
H2	Inch	25.3	25.3	31.4	31.4	41.7	41.7	51.8	67.5	79.7
h2	Inch	10.4	10.4	13.6	13.6	18.9	18.9	24.2	32.1	38.2
L (Threaded)	Inch	10.2	10.2	14.6	14.6	—	—	—	—	—
LF (Flanged)	Inch	15.2	15.7	20.2	20.6	27.7	27.7	33.6	37.5	42.5
e	Inch	1	1	1	1	1	1	1	1	1
Volume	Gal.	1.8	1.8	6.6	6.6	19.8	19.8	39.6	79.3	132.1
Weight: Dirt										
Threaded	Lbs.	55	56	105	120	—	—	—	—	—
Flanged	Lbs.	66	75	139	149	238	260	436	718	1250
Weight: Drain										
Flanged	Lbs.	107	150	202	233	325	355	686	990	1483

Consult Factory or View On-Line Submittal Data for Larger Models

HIGH VELOCITY COMBINATION AIR ELIMINATOR / DIRT SEPARATOR

DIRT Part Number	VHT200	VHT250	VHT300	VHT400	VHT500	VHT600	VHT800	VHT1000	VHT1200	
DRAIN Part Number	VHN200	VHN250	VHN300	VHN400	VHN500	VHN600	VHN800	VHN1000	VHN1200	
Pipe Size	Inch	2	2.5	3	4	5	6	8	10	12
O.D.	Inch	2.375	3	3.5	4.5	5.5	6.625	8.625	10.75	12.75
D	Inch	6.3	6.3	8.6	8.6	12.8	12.8	16.0	20.0	24.0
H2	Inch	35.8	35.8	45.1	45.1	61.8	61.8	78.5	95.0	113.0
h2	Inch	15.9	15.9	20.7	20.7	29.3	29.3	37.6	47.0	55.0
LF	Inch	15.2	15.7	20.2	20.6	27.7	27.7	33.6	37.5	42.5
e	Inch	1	1	1	1	1	1	1	1	1
Volume	Gal.	3.5	3.5	8.8	8.8	28.9	28.9	59	117	198.4
Weight: Dirt	Lbs.	88	95	178	186	312	336	590	986	1518
Weight: Drain	Lbs.	120	150	195	262	479	505	820	1269	2025

Consult Factory or View On-Line Submittal Data for Larger Models

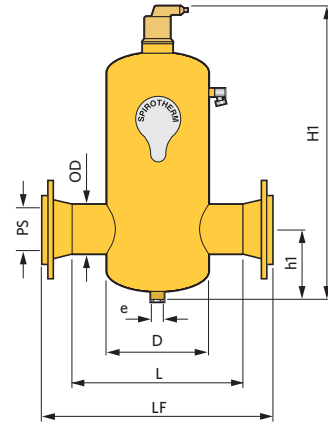


DIMENSIONS

STANDARD VELOCITY AIR ELIMINATORS

Part Number		VSR200	VSR250	VSR300	VSR400	VSR500	VSR600	VSR800	VSR1000	VSR1200
Pipe Size	Inch	2	2.5	3	4	5	6	8	10	12
O.D.	Inch	2.375	3.0	3.5	4.5	5.5	6.625	8.625	10.75	12.75
Thread	NPT	2	2.5	3	4	—	—	—	—	—
D	Inch	6.3	6.3	8.6	8.6	12.8	12.8	16.0	20.0	24.0
H1	Inch	19.0	19.0	23.7	23.7	30.6	30.6	38.4	47.8	56.3
h1	Inch	5.0	5.4	6.4	6.8	8.6	9.2	10.8	13.0	15.2
L (Threaded)	Inch	10.2	10.2	14.6	14.6	—	—	—	—	—
LF (Flanged)	Inch	15.2	15.7	20.2	20.6	27.7	27.7	33.6	37.5	42.5
e	Inch	1	1	1	1	1	1	1	1	1
Volume	Gal.	1.3	1.3	4.5	4.5	13.2	13.2	27.7	55.5	92.5
Weight										
Threaded	Lbs.	23	28	45	47	—	—	—	—	—
Flanged	Lbs.	48	59	95	107	186	200	360	564	1050

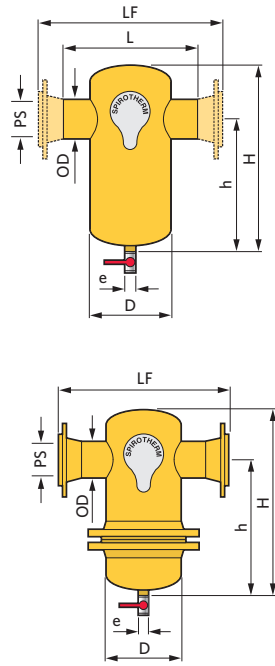
Consult Factory or View On-Line Submittal Data for Larger Models



STANDARD VELOCITY DIRT & SEDIMENT SEPARATORS

DIRT Part Number		TDT200	TDT250	TDT300	TDT400	TDT500	TDT600	TDT800	TDT1000	TDT1200
DRAIN Part Number		TDN200	TDN250	TDN300	TDN400	TDN500	TDN600	TDN800	TDN1000	TDN1200
Pipe Size	Inch	2	2.5	3	4	5	6	8	10	12
O.D.	Inch	2.375	3	3.5	4.5	5.5	6.625	8.625	10.75	12.75
Thread	NPT	2"	2.5"	3"	4"	—	—	—	—	—
D	Inch	6.3	6.3	8.6	8.6	12.8	12.8	16.0	20.0	24.0
H	Inch	15.0	15.0	19.7	19.7	26.2	26.2	34.4	43.9	52.4
h	Inch	10.6	10.2	14.0	13.6	18.7	18.1	24.2	31.5	37.6
L (Threaded)	Inch	10.2	10.2	14.6	14.6	—	—	—	—	—
LF (Flanged)	Inch	15.2	15.7	20.2	20.6	27.7	27.7	33.6	37.5	42.5
e	NPT	1"	1"	1"	1"	1"	1"	1"	1"	1"
Volume	Gal.	1.3	1.3	4.5	4.5	13.2	13.2	27.7	55.5	92.5
Weight: Dirt										
Threaded	Lb.	35	40	66	75	—	—	—	—	—
Flanged	Lb.	48	59	93	102	186	196	359	564	1050
Weight: Drain										
Flanged	Lb.	93	135	178	187	302	328	596	925	1400

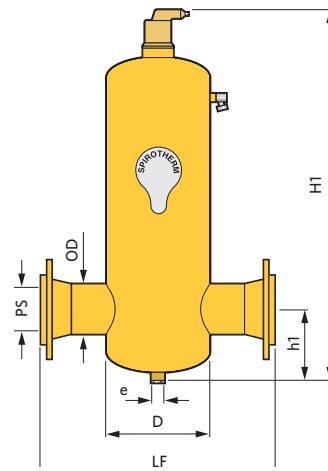
Consult Factory or View On-Line Submittal Data for Larger Models



HIGH VELOCITY AIR ELIMINATORS

Part Number		VHR200	VHR250	VHR300	VHR400	VHR500	VHR600	VHR800	VHR1000	VHR1200
Pipe Size	Inch	2	2.5	3	4	5	6	8	10	12
O.D.	Inch	2.375	3.0	3.5	4.5	5.5	6.625	8.625	10.75	12.75
D	Inch	6.3	6.3	8.6	8.6	12.8	12.8	16.0	20.0	24.0
H1	Inch	24.8	24.8	30.9	30.9	41.1	41.1	51.8	67.5	79.7
h1	Inch	5.0	5.4	6.4	6.8	8.6	9.2	10.8	13.0	15.2
LF	Inch	15.2	15.7	20.2	20.6	27.7	27.7	33.6	37.5	42.5
e	Inch	1	1	1	1	1	1	1	1	1
Volume	Gal.	2.2	2.2	5.9	5.9	18.3	18.3	37.6	78.6	135.9
Weight	Lbs.	69	75	133	152	242	276	432	730	1250

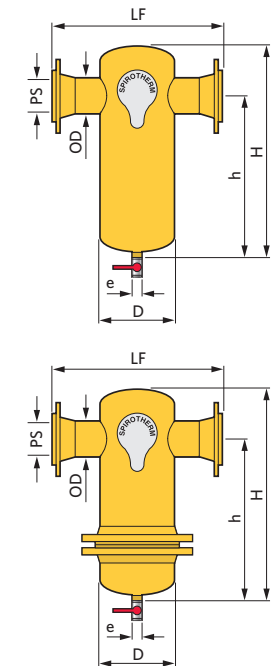
Consult Factory or View On-Line Submittal Data for Larger Models



HIGH VELOCITY DIRT & SEDIMENT SEPARATORS

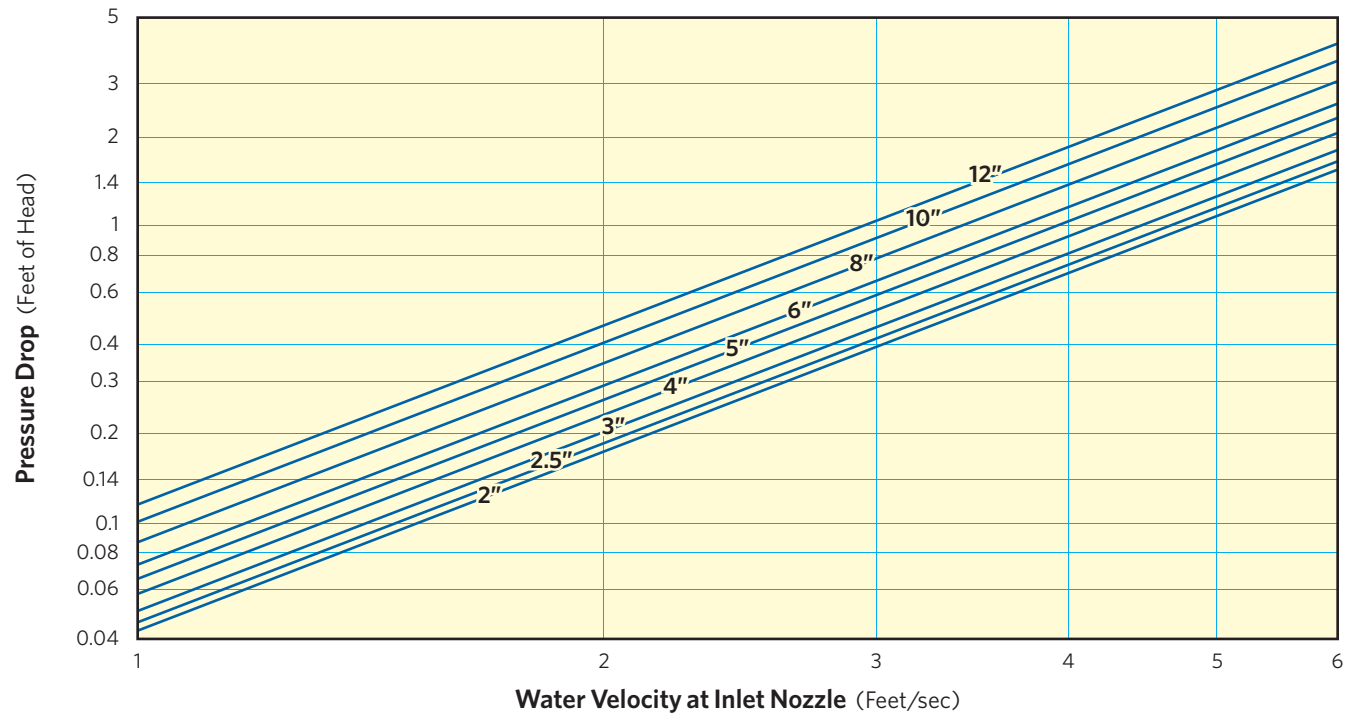
DIRT Part Number		THT200	THT250	THT300	THT400	THT500	THT600	THT800	THT1000	THT1200
DRAIN Part Number		THN200	THN250	THN300	THN400	THN500	THN600	THN800	THN1000	THN1200
Pipe Size	Inch	2	2.5	3	4	5	6	8	10	12
O.D.	Inch	2.375	3	3.5	4.5	5.5	6.625	8.625	10.75	12.75
D	Inch	6.3	6.3	8.6	8.6	12.8	12.8	16.0	20.0	24.0
H	Inch	21.3	21.3	27.4	27.4	37.2	37.2	47.8	63.6	75.8
h	Inch	16.9	16.5	21.7	21.3	29.7	29.1	37.6	51.2	61.0
LF	Inch	15.2	15.7	20.2	20.6	27.7	27.7	33.6	37.5	42.5
e	NPT	1"	1"	1"	1"	1"	1"	1"	1"	1"
Volume	Gal.	2.2	2.2	5.9	5.9	18.3	18.3	37.6	78.6	135.9
Weight: Dirt	Lb.	69	75	120	141	242	277	427	730	1250
Weight: Drain	Lb.	107	150	202	233	325	355	686	990	1483

Consult Factory or View On-Line Submittal Data for Larger Models

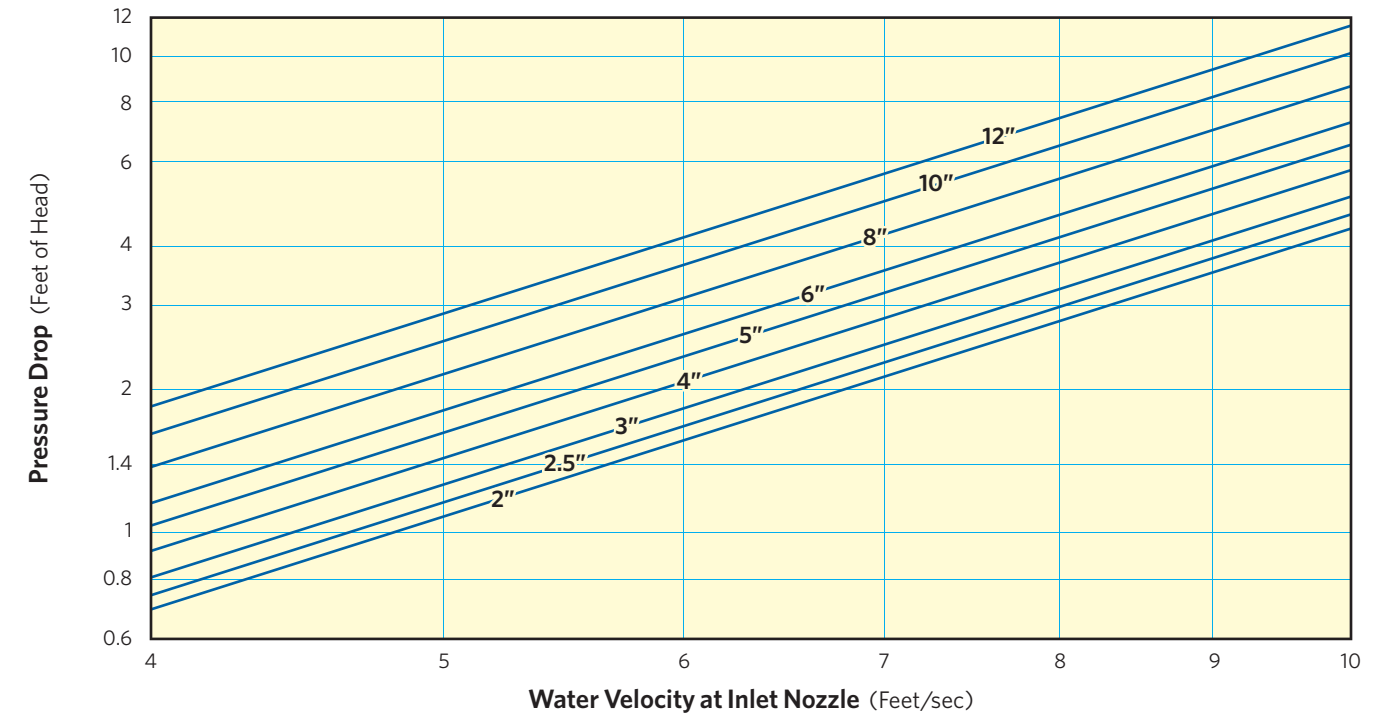


PRESSURE DROP

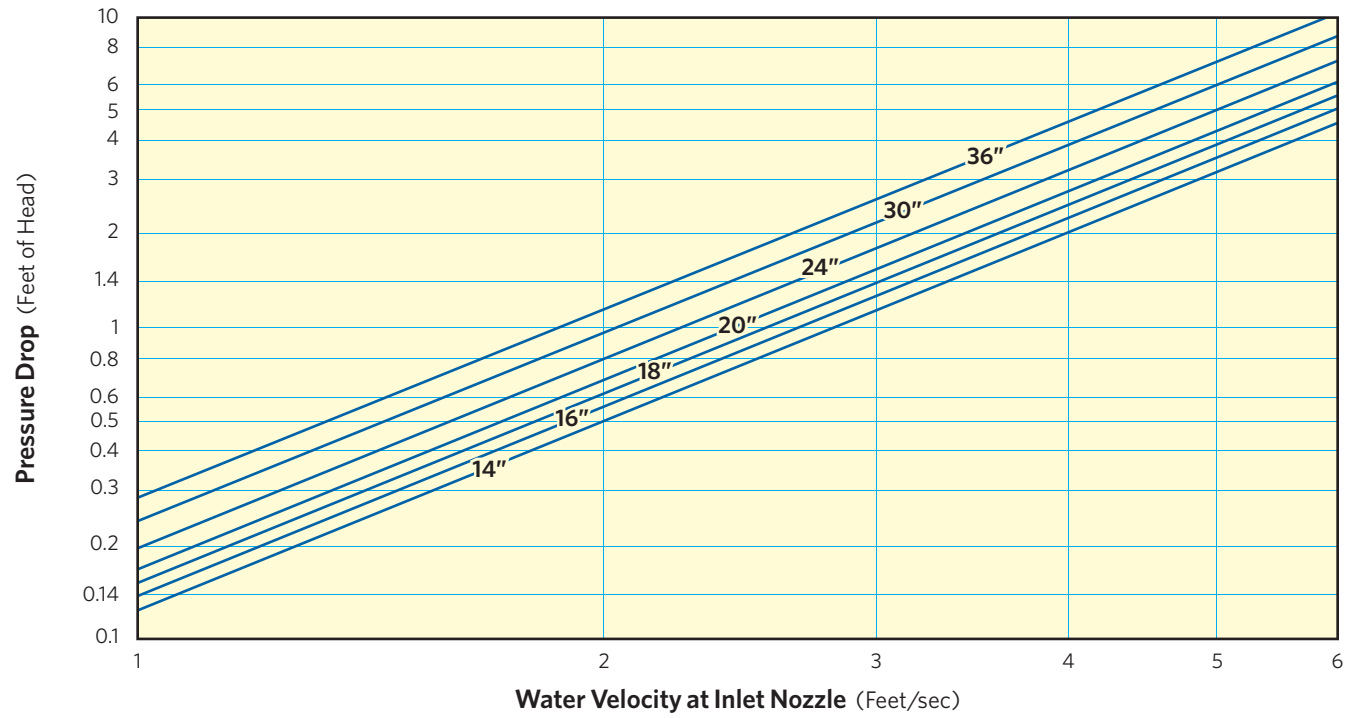
STANDARD VELOCITY 2" through 12"



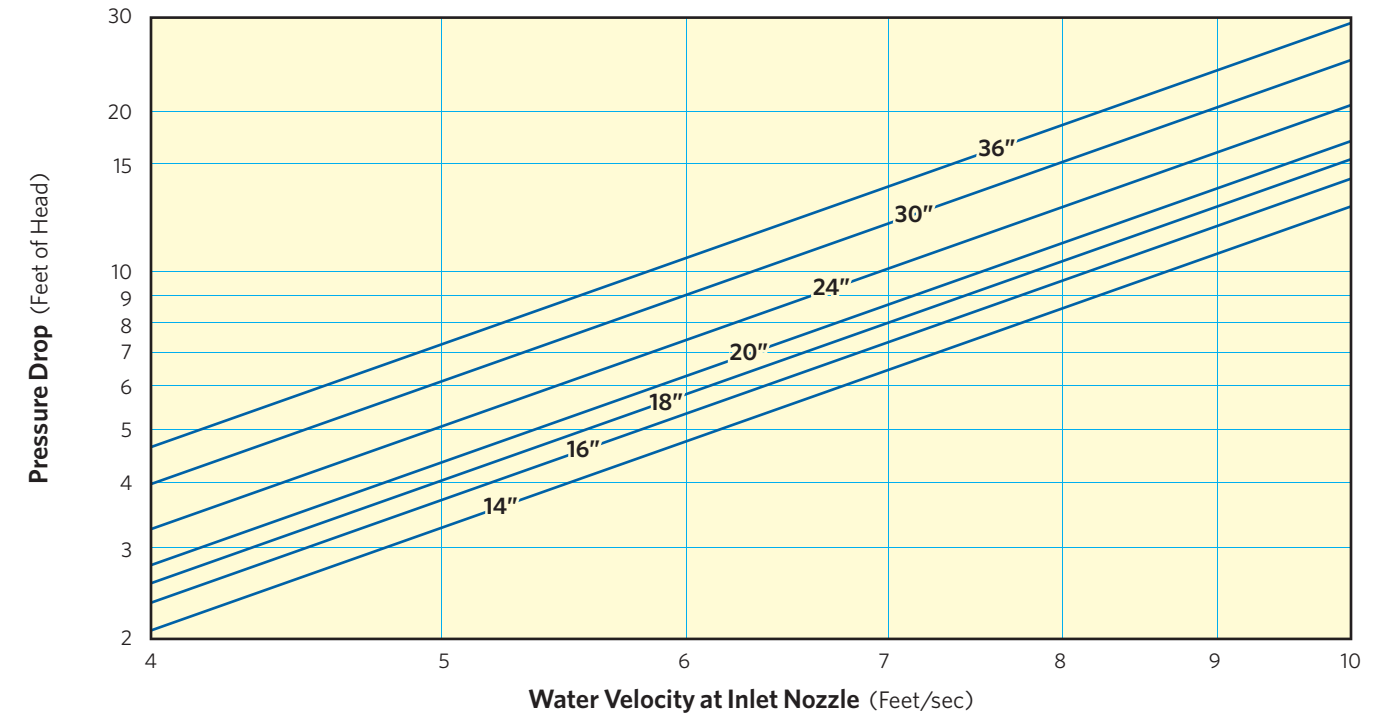
HIGH VELOCITY 2" through 12"



STANDARD VELOCITY 14" through 36"



HIGH VELOCITY 14" through 36"





Spirotherm, Inc.
25 N. Brandon Drive
Glendale Heights, IL 60139

Tel.: 630-307-2662
Fax: 630-307-3773
www.spirotherm.com
E-mail: info@spirotherm.com