

FIRE PUMPS

HORIZONTAL SPLIT CASE, END SUCTION, VERTICAL TURBINE,

CONTAINERIZED PUMP, PACKAGED FIRE PUMP, FUEL TANK & ANTI-VORTEX PLATE





VERTICAL TURBINE TYPE

Bristol Vertical Turbine centrifugal pump is developed and fabricated by our company, according to NFPA20. This pump is used for any underground water source where the water level is below the ground level, its Impeller remains submerged with the water tank at all times and supported by column pipe.

Where the fire protection water source is located below ground or deck level, the best technical pumping solution is the vertical suspended multi stage turbine pump. With this type of unit the impellers are fully immersed in the water maintaining prime at all times. The pumps are driven by vertical electric motors or by diesel engines through a right angle gearbox .



Features

- Performance and hydrostatic tests
- In compliance with NFPA 20, UL 448 requirements
- Materials of construction: cast iron, bronze fitted
- Sealing arrangement: packing with flushing
- Modular construction: assures complete flexibility in selecting a pump
- Pre-engineered standard components
- Space-saver design: requires minimum floor space
- Static suction lift: permissible by NFPA 20 where water source is located below ground
- Open line shaft: water-lubricated bowl and line-shaft bearings
- Stuffing Box (Gland) - (Bronze) - to press the packing gland into the seal area through bolt
- Bolted bowl: bowls and suction bell are bolted together, allowing easier disassembly
- Dynamic balanced impellers: secured to the shaft with steel locking collets
- Discharge gauge connection
- UL File No. EX26745

Performance Range:

Capacity	: From 200 GPM up to 1500 GPM
Head	: From 50 meter up to 210 meters

Materials of Construction:

Shaft	: Stainless Steel
Head	: Cast Iron
Impeller	: Bronze /Stainless Steel

Gearbox & Motor



Angle Gear Box

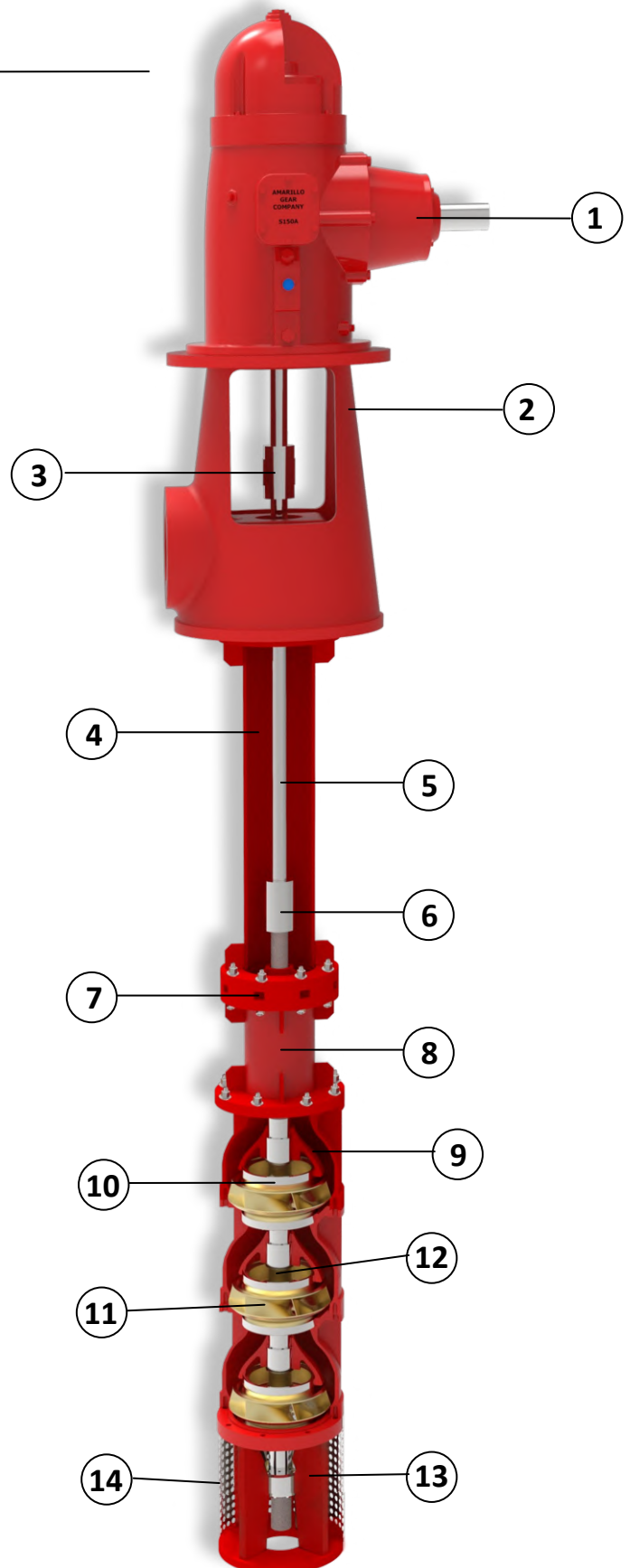


VHS Motor



Vertical Turbine Components

To request the spare parts, contact us with item description and material

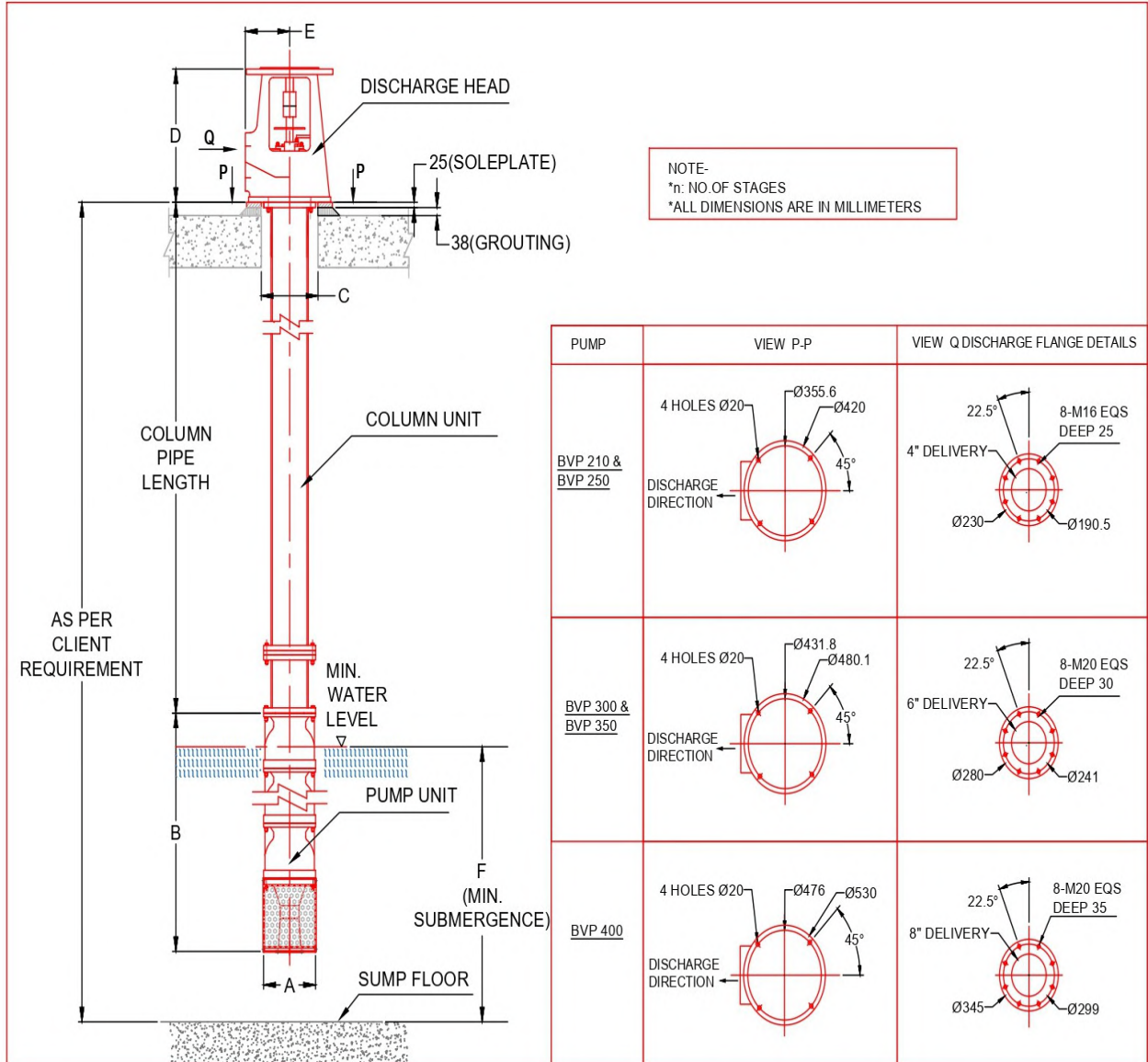


Description

1. **Right Angle Gear Drive**
2. **Discharge Head** - Ductile Iron
3. **Head Shaft Coupling** - Stainless Steel
4. **Column Pipe Assembly** - AISI 1020/ASTM A106 Gr. B
5. **Line Shaft** - Stainless Steel/Duplex Steel
6. **Line Shaft Coupling** - Stainless Steel
7. **Bearing Spider w/ Bushing** - ASTM A48
8. **Interconnection Pipe** - AISI 1020 / ASTM A106 Gr.B
9. **Upper Casing / Top Bowl** - ASTM A48
10. **Wear Ring** - Stainless Steel
11. **Impeller** - Bronze/SS304
12. **Shaft Sleeve** - Stainless Steel
13. **Suction Assembly** - ASTM A48
14. **Strainer** - Stainless Steel



Vertical Turbine Dimensional Details



Model	A	B	C	D	E	F
BVP 210	170	280+(150Xn)	250	490	254	500
BVP 250	208	280+(135Xn)	290	490	254	600
BVP 300	240	300+(200Xn)	340	640	260	950
BVP 350	310	350+(265Xn)	340	640	260	1000
BVP 400	352	350+(340Xn)	390	660	292	1200

- Sole plate is optional, supplied on special request



Vertical Turbine Selection Chart

MODEL	CAPACITY (US GPM)	SPEED(RPM)						
		1470		1770		1630	1960	2950
		UL LISTED PRESSURE (PSI)	FM Approved Pressure (PSI)	UL LISTED PRESSURE (PSI)	FM Approved Pressure (PSI)	UL LISTED PRESSURE (PSI)		
BVP-210	50							103-239
BVP-210	100							102-236
BVP-210	150							97-226
BVP-250	150							123-257
BVP-210	200							91-210
BVP-250	200							118-250
BVP-350	200	96-102	91-242	103-111	101-245	88-94	127-136	
BVP-350	200	120-127		138-148		117-125	169-181	
BVP-350	200	144-152		172-185		146-157	211-226	
BVP-350	200	168-178		207-222		175-188	253-272	
BVP-350	200	192-203		241-259		204-220		
BVP-350	200	216-254						
BVP-250	250							113-239
BVP-350	300	95-101	91-239	103-110	101-244	87-94	127-136	
BVP-350	300	119-126		138-147		116-125	169-181	
BVP-350	300	142-151		172-184		145-156	211-226	
BVP-350	300	166-177		206-221		174-187	253-271	
BVP-350	300	190-252		241-258		203-218		
BVP-250	300							109-230
BVP-300	300							111-283
BVP-300	400							106-277
BVP-350	400	92-99	89-238	102-110	101-241	85-93	125-135	
BVP-350	400	115-124		135-147		114-124	167-180	
BVP-350	400	138-149		169-184		142-155	209-225	
BVP-350	400	161-174		203-220		171-186	251-270	
BVP-350	400	184-248		237-257		199-217		
BVP-300	450							104-275
BVP-300	500							101-270
BVP-350	500	88-96	88-230	99-109	98-239	82-91	123-134	
BVP-350	500	111-120		132-145		110-121	164-179	
BVP-350	500	133-143		165-181		137-152	205-223	
BVP-350	500	155-239		198-217		165-212	246-268	
BVP-350	500			231-254				



Vertical Turbine Selection Chart

MODEL	CAPACITY (US GPM)	SPEED(RPM)						
		1470		1770		1630	1960	2950
		UL LISTED PRESSURE (PSI)	FM Approved Pressure (PSI)	UL LISTED PRESSURE (PSI)	FM Approved Pressure (PSI)	UL LISTED PRESSURE (PSI)		
BVP-400	500	54-62	50-248	83-91	80-276			
BVP-400	500	82-94		124-137				
BVP-400	500	109-125		165-183				
BVP-400	500	136-250		207-228				
BVP-400	500			248-274				
BVP-300	750							92-240
BVP-350	750	80-87	79-210	89-100	91-225	74-83	114-126	
BVP-350	750	100-109		119-133		99-111	151-168	
BVP-350	750	119-131		149-167		123-139	189-209	
BVP-350	750	139-219		179-233		148-194	227-252	
BVP-400	750	53-60	50-241	79-88	77-266			
BVP-400	750	79-91		119-132				
BVP-400	750	106-121		159-177				
BVP-400	750	132-241		199-221				
BVP-400	750			238-265				
BVP-350	1000	70-79	71-191	81-93	83-209	66-77	103-117	
BVP-350	1000	88-99		108-124		88-103	138-156	
BVP-350	1000	105-198		135-217		110-180	172-235	
BVP-400	1000	49-57	48-229	76-86	73-256			
BVP-400	1000	74-85		114-129				
BVP-400	1000	99-113		152-172				
BVP-400	1000	123-227		190-215				
BVP-400	1000			228-258				
BVP-400	1250	45-53	43-214	71-81	68-246			
BVP-400	1250	67-79		107-122				
BVP-400	1250	89-211		143-163				
BVP-400	1250			179-244				
BVP-400	1500	41-49	40-200	65-76	64-232			
BVP-400	1500	61-73		98-114				
BVP-400	1500	81-196		131-152				
BVP-400	1500			163-228				



CONTAINERIZED FIREFIGHTING PUMP SET

In accordance with NFPA requirements



Bristol offers simplest Single pump system to the most complex Multi-pump system with Containerised enclosures or Custom Built Pump House.

Our complete solution to your Fire Fighting requirements thru Fully Packaged pumping system.



Description:

In the Containerised packages, Main Fire pumps, Jockey pumps, its controllers and all accessories are mounted inside the Container. These sets are highly Engineering with all piping's are in accordance with customer requirements & following to NFPA norms.

All large equipment are accessible by doors around the container. Material handling arrangements are provided for easy unit movement based on requirement

Operating Range:

Flow : up to 5500 GPM

Pressure: 40Mtr to 200Mtr

UL/FM Listed Range

Flow : up to 3000 GPM

Pressure: 40Mtr to 200Mtr

Container/ Pump House Sizes:

20ft Standard & High Cube

40ft Standard & High Cube

Custom Built Pump House

• Features:

- Bristol packaged pump house supplied with Fire-Rated or Fire Retardant enclosures. Fully weather-proof based on specific customer requirement.
- Highly Engineered and constructed in accordance with NFPA-20.
- Our Dedicated Engineering team design packages to your project specifications & requirements following to International standards.
- Bristol cost competitive Containerised fire systems save your space and time as they Engineered accurately to fit the specified area. Only Power & Pipe connection to be made at site & system is ready for use.
- Bristol Containerised fire systems are Factory tested as per stringent International standard's.
- Single responsibility for complete pump house.
- All parts are designed based on Ergonomic consideration so that ease of accessing all instrument, valves, fittings etc.
- Floors are coated with Glass Reinforced Plastic (GRP) lining to make it durable, waterproof so it will be long lasting.
- Inside walls & Roofs are provided with Sandwich panels (PIR/PU/ Rockwool/ Honeycomb) based on customer specification.
- These sets are supplied with complete Electrical connections & piping's which includes Suction line, Discharge line, Test line, PRV line, Sensing line, Fuel In & outlet, pump Drain, Sensing line drain, Engine drain, CRV drain etc.

CONTAINERIZED FIREFIGHTING PUMP SET





CONTAINERIZED FIREFIGHTING PUMP SET

UL/FM Listed Pumps Range

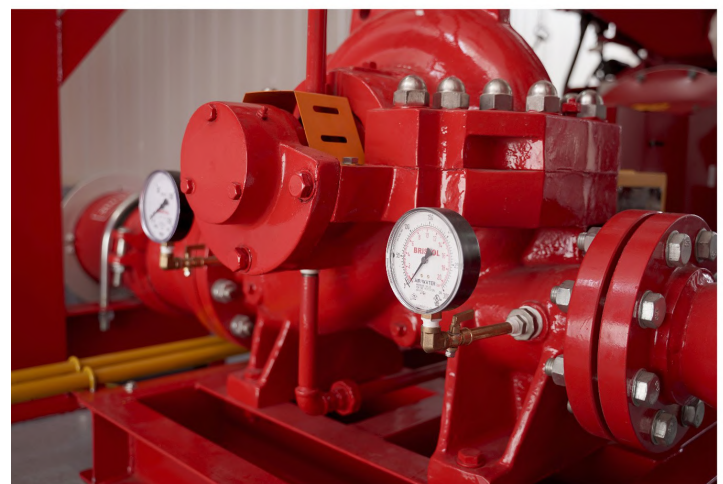
CAPACITY: up to 3000GPM

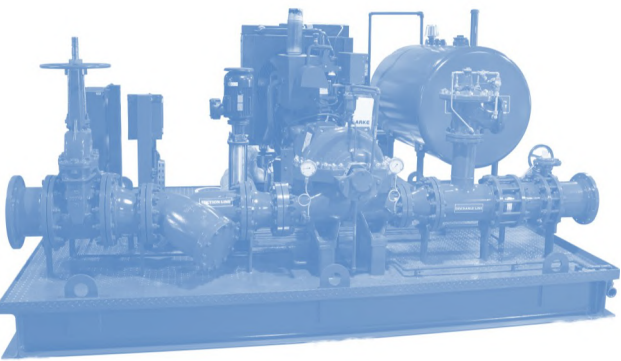
Head: up to 20 BAR

Scope of Supply:

- Bristol FM/UL Horizontal Split case or End suction pump with Electric & Diesel Drive
- Jockey pump
- Automatic Electric pump controller, Diesel Controller & Jockey Controller
- Suction and discharge gauge, Air release valve & Casing relief valve
- Piping's with valves & fittings for Suction, Discharge, Test line & PRV
- Check valves
- Butterfly valves
- OS&Y Gate valves
- Exhaust pipe line with Insulated wrap & Guard
- Complete internal wiring with conduit pipes
- SS 304 piping for pressure sensing line
- Drain piping's, Fuel Inlet & Outlet Piping
- Smoke Detector / Heat Detector
- Interior weather proof lights/Emergency light
- Sandwich panels on wall & roof
- Ventilations fans with louvers
- SMDB & Switches
- Sprinkler system
- Water resistant GRP flooring
- 3 Coat interior & exterior painting system
- Main pressure relief valve
- Flow meter GERAND venture type
- Batteries
- Waste Cone
- Breeching inlet with Cabinet (As an additional scope)
- Fire Hose Cabinet with landing valve (As an additional scope)
- Manual pull station (As an additional scope)
- Sound & Strobe (As an additional scope)
- Addressable FACP (As an additional scope)
- CO2 & DCP Extinguisher (As an additional scope)
- Air conditioner (As an additional scope)

The scope shall be confirmed for project.





PACKAGED FIRE FIGHTING SYSTEMS

In accordance with NFPA requirements



Description

Bristol supplies Fully Engineered Fire Fighting Packaged systems from simplest Single pump system to the most complex Multi-pump system mounted on single skid. In this, Main fire pumps, Jockey pumps, controllers and all accessories are mounted on Single skid.

All piping's are in accordance with customer requirements & following to NFPA requirement supported within Skid.

These are meticulously manufactured fire pump Packages provide reliable and trust-worthy service in Fire Fighting Application.

Operating Range:

Flow : up to 5500 GPM

Pressure: 40Mtr to 200Mtr

UL/FM Listed Range:

Flow : up to 3000 GPM

Pressure: 40Mtr to 200Mtr

Features:

- Bristol packaged pump set supplied with single Skid Fully designed based on Load calculations along Lifting points based on Centre of gravity.
- Highly Engineered and constructed in accordance with NFPA-20.
- Our Dedicated Engineering team design packages to your project specifications & requirements following to International standards.
- Bristol cost competitive Packaged pump set save your space and time as they Engineered accurately to fit the specified area. Only Power & Pipe connection to be made at site & system is ready for use.
- Bristol packaged pump sets are Factory tested as per stringent International standard's.
- All parts are designed based on Ergonomic consideration so that ease of accessing all instrument, valves, fittings etc.
- These sets are supplied with complete Electrical connections & piping's which includes Suction line, Discharge line, Test line, PRV line, Sensing line, Fuel In & outlet, pump Drain, Sensing line drain, Engine drain, CRV drain etc.



FUEL TANK

Bristol Aboveground tanks are primarily designed for safe storage of flammable and combustible liquids. These tanks are designed, fabricated, tested and labelled in accordance with underwriters laboratories, Inc. UL-142 (Steel Aboveground Tanks for Flammable and Combustible Liquids) standard. Tanks are designed and engineered to meet the demanding needs of many industries.



Type	Tank Capacity (US Gal)		Type	Tank Capacity (US Gal)	
	Listed	Non-Listed		Listed	Non-Listed
Single wall (SW)	25	25	Double wall (DW)	-	25
	70	70		70	70
	120	120		120	120
	180	180		180	180
	280	280		280	280
	360	360		360	360
		400		545	400
		460		770	460
		545		1000	545
		770			770
	1000		1000		

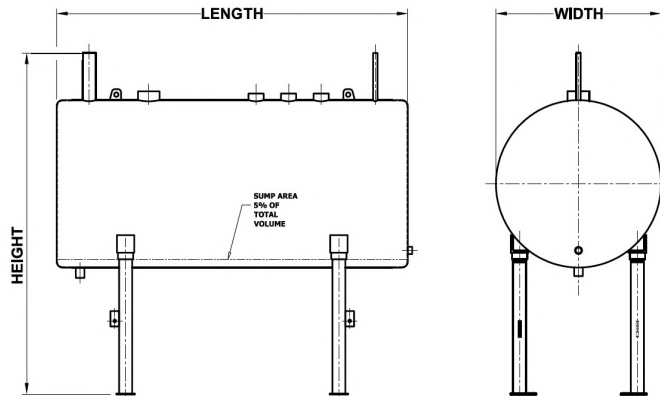


We have experienced team that offers quality engineering and support to help you customize your tank to your specific application. Our tanks are produced according to the highest standards for the commercial, industrial, public and private sectors.

Features

- UL-142 Label
- Standard Capacity: 25 - 1000 US gal.
- MS steel Thickness of 3mm and more.
- connections for normal and emergency venting, gauging, filling and product piping
- Lifting lugs for listed
- Structural legs for easy installation
- Primer paint, Red spray paint finished
- UL File No. MH60409

Tank Dimension

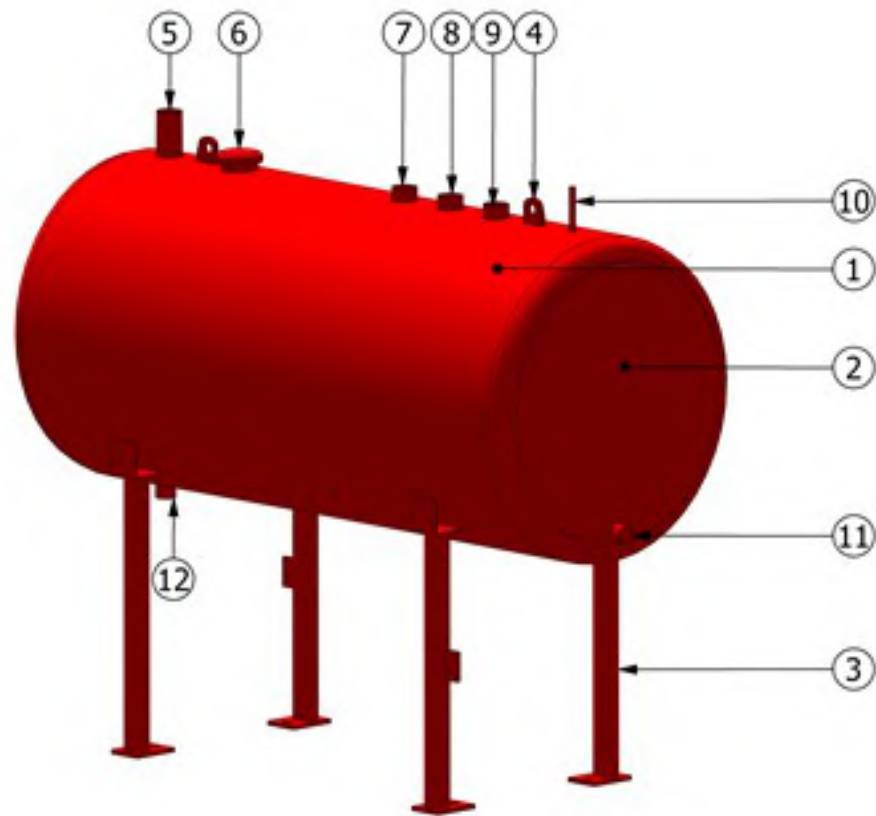


Tank Capacity	Type	Approx. Dimension (Inches)		
		Length	Width	Height
25	SW	33	16	51
70	SW	47	22	49
	DW	49	26	52
120	SW	44	30	57
	DW	47	34	60
180	SW	63	30	57
	DW	67	34	60
280	SW	52	42	66
	DW	55	46	69
360	SW	63	42	66
	DW	67	46	69

* For higher capacities contact Bristol



FUEL TANK COMPONENTS



Description (Typically)

- | | |
|---|---------------------------------------|
| 1. Tank Shell | 7. Normal Vent (2") |
| 2. End Cap (Dish Head) | 8. Fuel Indicator Gauge Connection 2" |
| 3. Leg Assembly | 9. Fuel Switch Connection 2" |
| 4. Lifting Lug (Listed) | 10. Return Connection 1" |
| 5. Fill Cap w/ Provision for pad-lock w/
removable Strainer (1/16" mesh)
(Optional) | 11. Discharge Connection 1-1/4" |
| 6. Emergency Vent (Primary/ Secondary) | 12. Drain Connection |

ANTI-VORTEX PLATES

In accordance with NFPA 20 & 22

About Anti-Vortex Plates:

A vortex is a "Turbulent Flow" that must be controlled to prevent damage to rotating parts. A vortex is a region formed in a fluid when the fluid's flow rotates around an axis line and the fluid flows in a swirling motion at a high velocity towards pump intake.

Bristol Anti-vortex Plates aid to diminishing the speed of a fast moving turbulent flow and smoothen it into a laminar flow, thus reducing wear and tear. **Bristol** Anti-vortex Plates also aid to prevent cavitation (small liquid-free zones such as bubbles or voids) in the fluid. Cavitation can create dents, shock waves and imbalance in the moving parts. Once cavitation affects a surface it tends to erode at an accelerating rate. This makes the surface prone to stress corrosion.

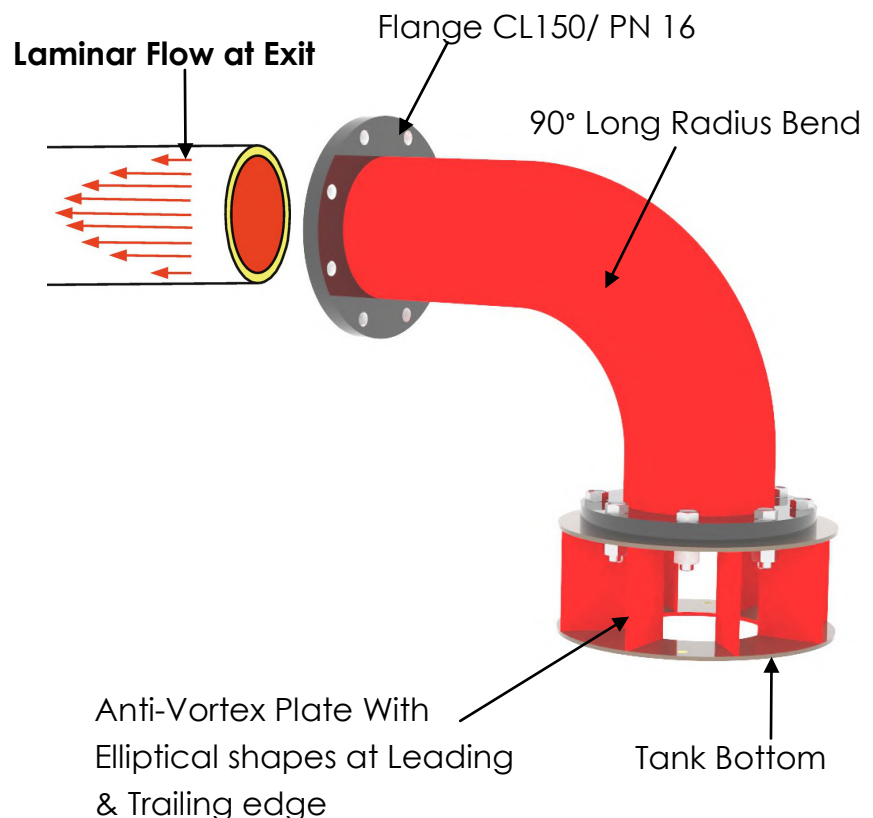
To avoid these issues **Bristol Anti-Vortex Plates** are recommended to installed in the suction line of fire pumps to control the turbulence in flowing water. They are simple in design and very effectively controlling the velocity of the fluid thus preventing cavitation and damage to the impellers. Also it supports off duty conditions when static pressure reduces at the suction along with elevation of the water side level in the tank.

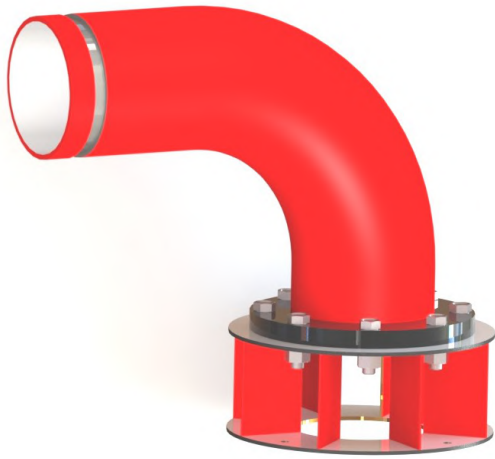
Features

- ◆ Anti-Vortex Plate design is in accordance with NFPA 20/22
- ◆ Where a tank is used as the suction source for a fire pump, the discharge outlet of the tank shall be equipped with an assembly that controls vortex flow in accordance with NFPA 22. i.e. Recommended to use Anti-Vortex Plate.
- ◆ Anti-Vortex plates are provided with Elliptical shapes at leading & trailing edge for getting streamlined flow.
- ◆ The water velocity at the Anti-Vortex Plate is maintained below 1m/Sec limit for maximum flow condition
- ◆ The minimum distance above the bottom of the tank shall be 152 mm (6 Inch).

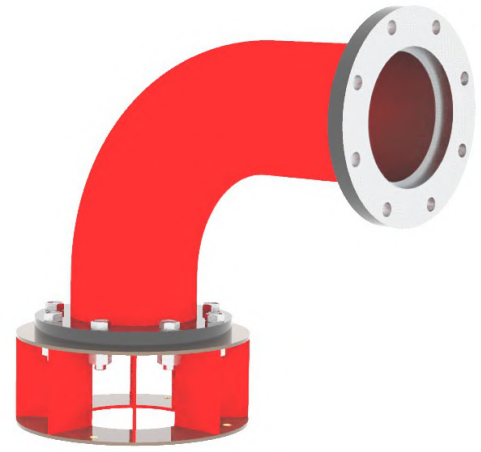
Material:

- Mild Steel (Standard)
- SS 304/SS316 (Optional)





Anti-Vortex Plate: Grooved Design



Anti-Vortex Plate: Flanged Design

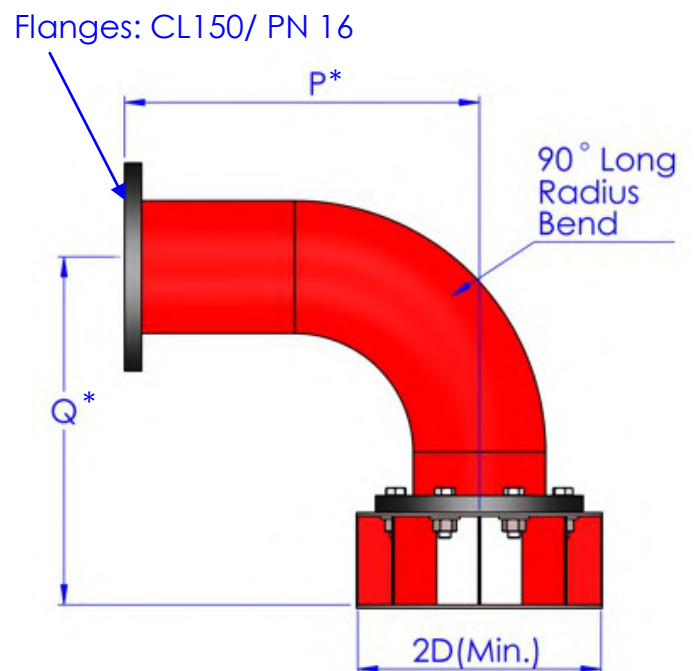
Bristol offers two types of Anti-Vortex plate design to suit Client requirements:

1. Fully assembled **Anti-Vortex Plates with Flanged design**
2. **Anti-Vortex Plates with Grooved Design** to suit site conditions

Selection of Anti-Vortex Plate:

- The sizes indicated in the table below shall be used as a minimum size of the suction pipe & Anti-Vortex Plate .
- Below table shows dimensions for standard Anti-Vortex Plate Design off the Shelf available with **Bristol**.

Pump Rating (GPM)	Min. Suction Size (Inch)	P* (mm)	Q* (mm)
300	4	406	252
400	4	406	252
450	5	406	290
500	5	406	290
750	6	457	331
1000	8	558	405
1250	8	558	405
1500	8	558	405
2000	10	660	481
2500	10	660	481
3000	12	762	557
3500	12	762	557



- ◆ Depending upon site requirements Bristol provides **Custom build Anti-Vortex plates** Assembly. (P* & Q* dimensions are as standard scope & can be varied to suit client requirement)
- ◆ *For higher capacities contact Bristol*