AS-AVA SERIES

Anti-Vortex Assemblies

Engineered Vortex Control for Reliable Pump Suction Performance

Available Models

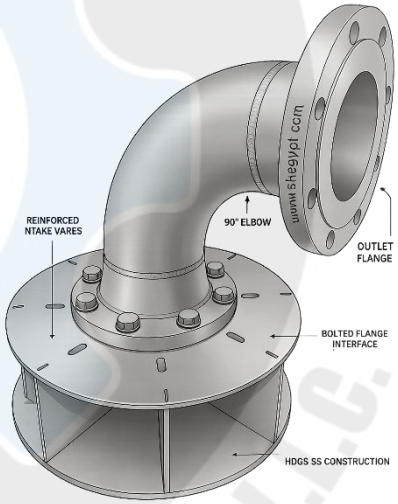
- **AS-AVA-P – Anti-Vortex Plate Type**
- **AS-AVA-I – Vortex Inhibitor Type**

PRODUCT DESCRIPTION

AS-AVA Series Anti-Vortex Assemblies are engineered to control vortex formation at tank suction outlets supplying fire pumps, booster pumps, and water transfer systems.

The assemblies are designed to prevent air entrainment into the suction piping by disrupting rotational flow patterns that may develop within water storage tanks during pump operation.

By maintaining stable hydraulic conditions at the suction inlet, AS-AVA assemblies help improve pump reliability, reduce the risk of cavitation, and support consistent system performance under both normal and peak flow conditions.



APPLICATIONS

AS-AVA assemblies are suitable for a wide range of water storage and fire protection systems:

- Fire Water Storage Tanks
- Potable Water Tanks
- Industrial Water Storage Tanks
- Process Water Systems
- Pump Stations
- Municipal Water Storage Facilities



OPERATING PRINCIPLE

During pump operation, water flowing toward a suction outlet may develop rotational movement. Under unfavorable hydraulic conditions, this rotation can evolve into a vortex extending from the water surface to the suction intake. The resulting vortex may introduce air into the suction line, causing unstable flow conditions and increasing the risk of pump damage.

Potential adverse effects of vortex formation include:

Hydraulic Impact	Equipment & Performance Consequences
Air Entrainment	Reduced pump efficiency and loss of prime performance.
Flow Disturbance	Pressure fluctuations, intense vibration, and operational noise.
Suction Degradation	Cavitation, severe impeller erosion, and accelerated mechanical wear.

AS-AVA assemblies interrupt these rotational flow patterns completely before a vortex can develop, ensuring a continuous, uniform, and stable water supply to the pump suction inlet.

KEY BENEFITS

Hydraulic Performance

- Controls vortex formation at suction outlets effectively.
- Prevents air entrainment into suction piping systems.
- Reduces flow disturbances near pump intakes.
- Promotes stable suction conditions.
- Supports consistent pump performance during emergency and peak-demand operation.

Equipment Protection

- Minimizes the high risk of cavitation.
- Reduces impeller erosion and overall mechanical wear.
- Limits system vibration and hydraulic shock.
- Extends pump operational service life.
- Improves overall system reliability.

Operational Advantages

- Extremely low maintenance requirements.
- Simple, robust, and highly durable construction.
- Suitable for new installations as well as retrofitting existing systems.
- Enhances fire pump operational readiness.
- Helps optimize total usable water storage volume inside the tank.

CONSTRUCTION MATERIALS & ASSEMBLY

Available structural materials include:

- Hot-Dip Galvanized Carbon Steel
- Stainless Steel Grade 304
- Stainless Steel Grade 316

To facilitate ease of transportation, handling, and site installation, assemblies may be supplied as:

- Fully assembled single-piece units.
- Site-assembled kits with precise multi-piece construction configurations.

THE AS-AVA FEATURES

- Simple and highly economical engineering design.
- Suitable for large-diameter suction outlets.
- Available in standard circular or square configurations.
- Low maintenance requirements with no moving components.
- Highly effective vortex suppression even during low-water-level operations.
- Supports improved utilization of tank net storage volume.
- Designed to attach directly to the suction pipe inlet to inhibit vortex formation right at the source.

DESIGN & INSTALLATION CRITERIA

Anti-Vortex Plate Sizing

Unless otherwise strictly specified by the project guidelines:

- The plate diameter or total width shall be not less than two times the standard suction outlet diameter (**2D**).
- The plate must be perfectly centered over the suction opening and installed completely horizontally.

Minimum Clearance Above Tank Floor

The anti-vortex assembly must be installed at a minimum clear elevation equal to the greater value of:

- **0.5 × Outlet Diameter (D)**, or **152 mm (6 inches)**

Effective Water Level Requirement

Where Loss Prevention Certification Board (LPCB) regulations apply, the minimum usable water level shall be maintained at least 100 mm above the lowest suction point. The elevation of the anti-vortex assembly must be carefully considered when calculating the effective tank capacity, usable water volume, and dead water volume zones.

INSTALLATION & MAINTENANCE GUIDELINES

Installation Guidelines

- Install the entire assembly concentrically with the suction outlet layout.
- Maintain the specified strict minimum clearance above the tank finished floor.
- Ensure adequate liquid submergence under all dynamic operating conditions.
- Utilize installation materials that are fully compatible with the stored water quality and surrounding environment.
- Verify total hydraulic performance during commissioning and full flow testing phases.

Inspection and Maintenance

- Periodically check for signs of structural corrosion, external damage, or physical deformation.
- Verify secure attachment and tight torque of all fixing components and anchors.
- Remove any accumulated sediment, rust scale, or external debris around the assembly.
- Confirm design clearances remain unchanged and unobstructed over time.
- Inspect assemblies comprehensively following any tank modifications, structural repairs, or lining updates.

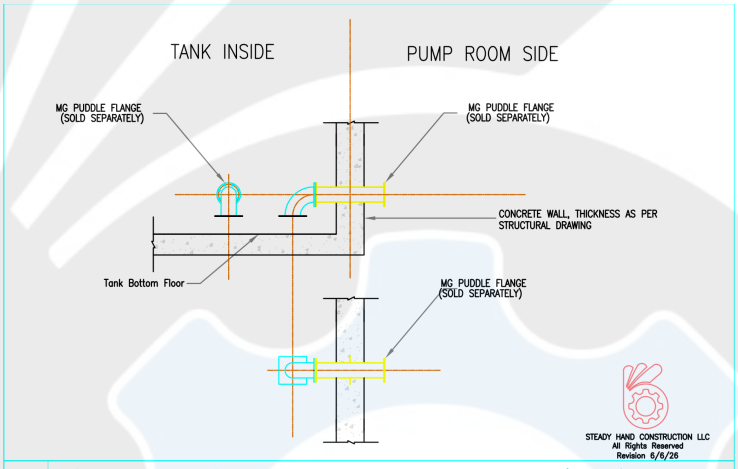
REGULATORY COMPLIANCE

AS-AVA Series Anti-Vortex Assemblies are designed to fully support compliance with the applicable engineering criteria of:

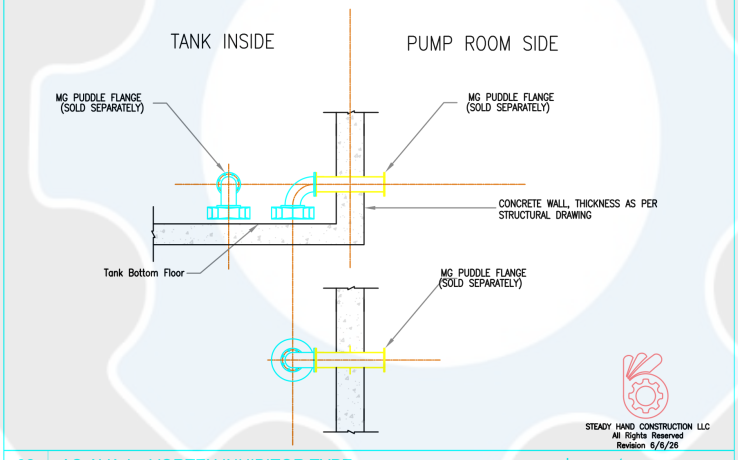
- **NFPA 20** – Standard for the Installation of Stationary Pumps for Fire Protection.
- **NFPA 22** – Standard for Water Tanks for Private Fire Protection.
- **NFPA 25** – Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection
- Systems.

STEADY HANDS CONSTRUCTION L.L.C.

ASSEMBLY



02 AS-AVA-P – ANTI-VORTEX PLATE TYPE shcegypt.com



02 AS-AVA-I – VORTEX INHIBITOR TYPE shcegypt.com

STEADY HANDS CONSTRUCTION L.L.C.