



SPECIFICATION // DATA SHEET

DENSITY SENSITIVE VALVE FLUID DIFFERENTIAL APPLICATIONS

Introduction

The Density Sensitive Valve was developed for a major oil company to detect the differences in density between two fuels. This version is designed for gravity fed applications, with the Thornton Pilot fitted to our Servo Valves used for pumped applications (see separate Servo Valves datasheet).

Initially used to discriminate between aviation fuels and prevent the wrong grade fuel being used, the product has been designed to detect a density change of up to 1%.

Key Benefits

- » Mechanically operated
- » Easy to install
- » Low maintenance requirements
- » Environmental protection
- » Prevents pollution
- » Reduces wastage of valuable stock
- » Heavy duty for durability
- » Customisable to suit application requirements
- » Manual test facility
- » Rapid response to density change

This allows the valve to be used in a wide range of filling and draining applications for environmental, safety and quality control purposes in Oil & Gas, Aviation, Chemical, Marine, Transportation and many other industries.

Mechanical in operation with only one moving part the Density Sensitive Valve design enables easy installation with low maintenance costs. The hydraulic design is such that it is unaffected by flow but very rapid in response to density change.

The float profile ensures that when the density change occurs, a liquid tight seal is created against the valve seat.

Both the cast and fabricated versions of the valve are supplied with a manual test facility to enable regular checking of the valves operation.



CAST VERSION

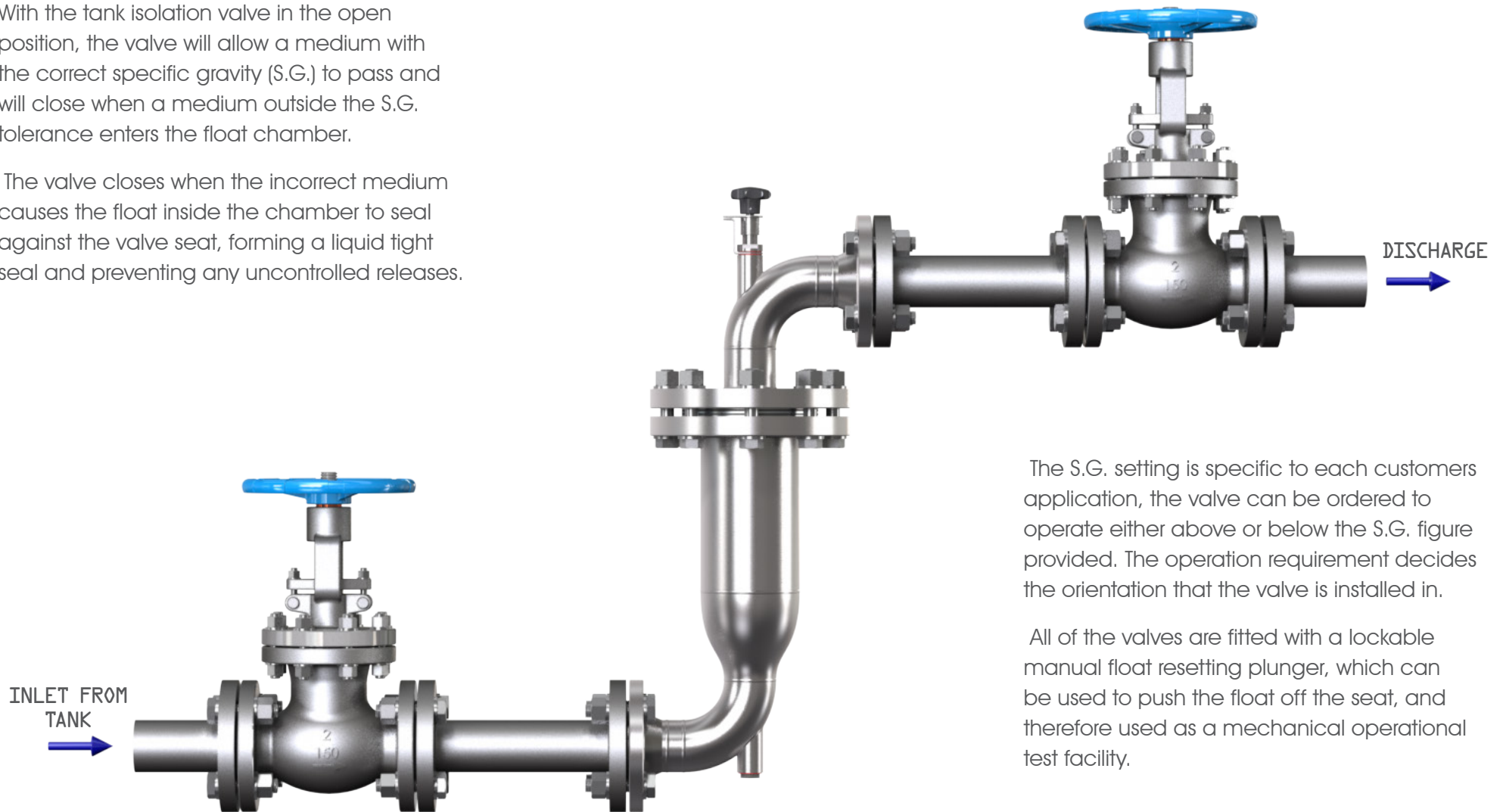


FABRICATED VERSION

Operation

With the tank isolation valve in the open position, the valve will allow a medium with the correct specific gravity (S.G.) to pass and will close when a medium outside the S.G. tolerance enters the float chamber.

The valve closes when the incorrect medium causes the float inside the chamber to seal against the valve seat, forming a liquid tight seal and preventing any uncontrolled releases.



FABRICATED VERSION

The S.G. setting is specific to each customer's application, the valve can be ordered to operate either above or below the S.G. figure provided. The operation requirement decides the orientation that the valve is installed in.

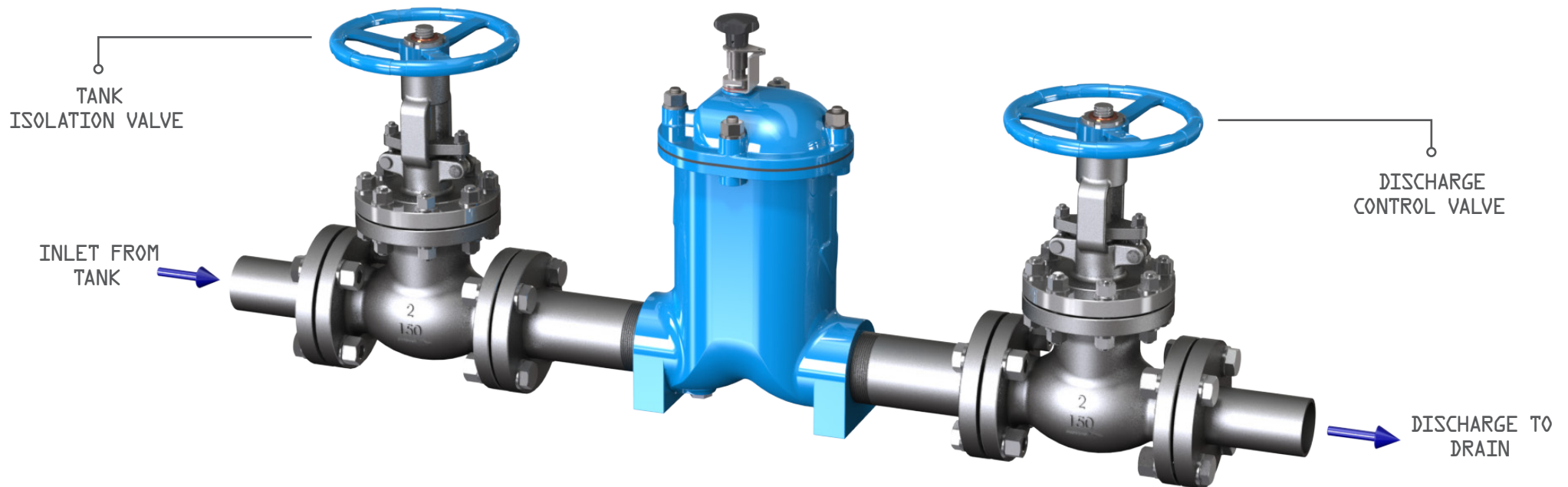
All of the valves are fitted with a lockable manual float resetting plunger, which can be used to push the float off the seat, and therefore used as a mechanical operational test facility.

Installation

The Density Sensitive Valve should be installed after a isolation valve and before a control valve. There is no minimum distance required between the isolation and control valve and the Density Sensitive Valve inlet and outlet; however AMS would recommend a distance of at least 200mm.

The orientation of the valve is dependent on the application. The diagram shows an installation which allows lower density mediums to pass through and will close when a higher density medium enters the valve. To achieve the opposite, the valve body should simply be installed in the inverted position.

NOTE: The DSV's are designed for use in gravity fed system and do not operate on a pump fed system, for density shut off on pump fed systems please refer to the AMS fuel grade monitoring valve.



SUGGESTED INSTALLATION FOR THE CAST DENSITY SENSITIVE VALVE WITH SCREWED CONNECTION
(OPTIONAL FLANGED VERSION ALSO AVAILABLE)

Specification

	Cast Versions	2" Fabricated Version	4" Fabricated Version
Part No:		DSV-SV2107	
Body Material:	Aluminium Alloy or 316 Stainless Steel	316L Stainless Steel / Carbon Steel	316L Stainless Steel / Carbon Steel
Float Material:	Polypropylene	Polypropylene	Polypropylene
Seal Materials:	Viton / Klingersill	Viton / Klingersill	Viton / Klingersill
Std Process Connections:	Screwed connections 2.5" BSPP or 2" NPT Flanged Connections 2" or 3" ANSI/ASME 150lb or 300lb*	Flanged 2" ANSI/ASME 150lb. RF	Flanged 4" ANSI/ASME 150lb. RF
Max Flow Rate:	300 Ltrs/Min	300 Ltrs/Min	1250 Ltrs/Min
Max Line Pressure:	10 Bar	10 Bar	15 Bar
Temperature Rating:	-18 to 200°C	-18 to 200°C	-18 to 200°C
Weight:	10 Kgs	35 Kgs	70 Kgs

*Other flange sizes/ratings available on request.

Density range (S.G.) can be from 0.68 to 1.2. Dependant on user requirements the float can be set to either shut off above or below the required density value.

If the line medium freezes the valve will return to operation once the medium has thawed. Although Viton seals have a brittle point of -45°C and can operate satisfactorily at temperatures approaching this, it is recommended that they are replaced if subjected to temperatures below -18°C before the valve returns to operation.

AMS specialise in custom made instrumentation & valve products and as such offer a wide range of documentation options and where possible, will amend standard features to meet customer specific requirements.

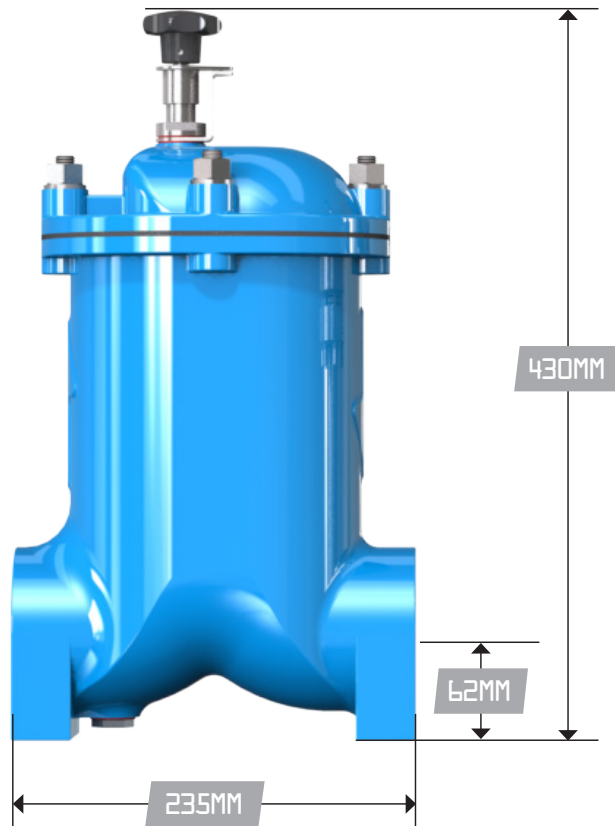
A version of this valve has been created specifically for draining water in hydrocarbon storage tanks, see our Density Sensitive Valve for Water Drain Applications for more information.

Key Benefits

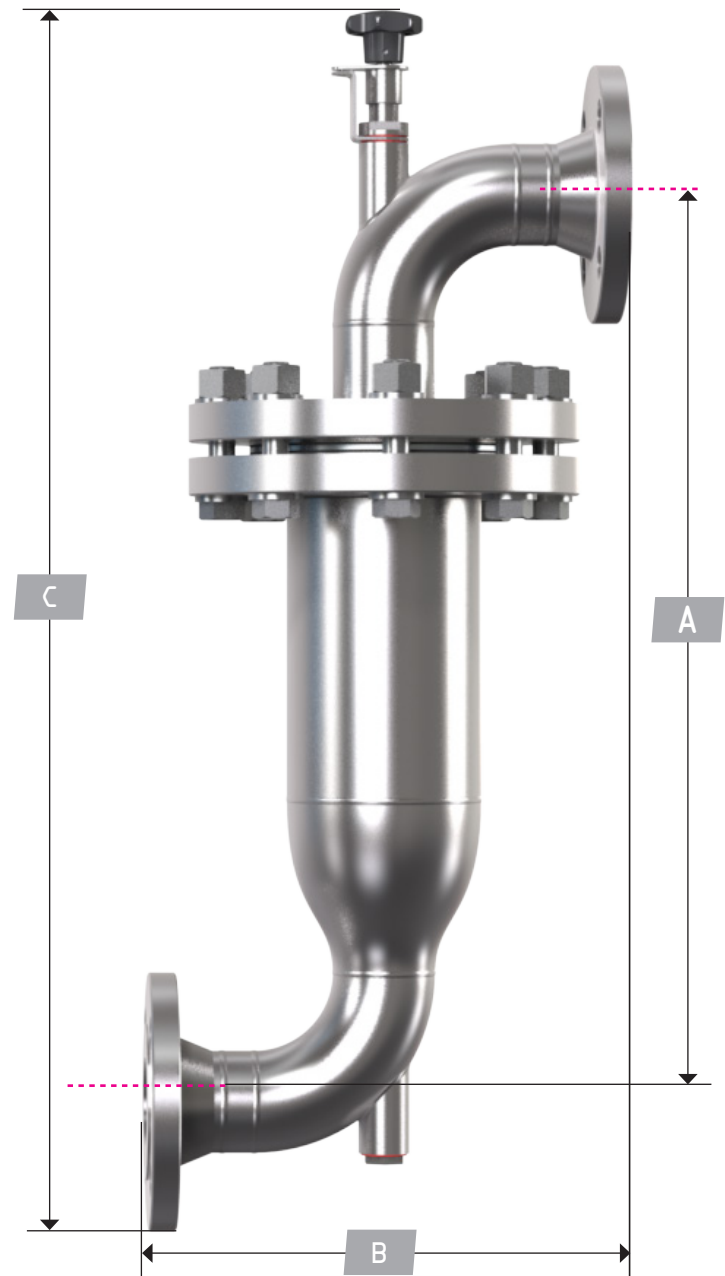
- » Oil/water separator outlets
- » Aviation gasoline quality control to prevent engine failure
- » Forecourt fuel grade monitoring
- » Wastewater package drain lines in marine and transport applications
- » Filtration packages
- » Water/Condensate drain on storage tanks
- » Chemical drain and quality applications (PVDF Version)

Dimensions

A	B	C
516mm	280mm	668mm
810mm	458mm	1089mm



CAST VERSION



FABRICATED VERSION

Ordering Information

Part Number Selection

DENSITY SENSITIVE VALVE	Dsv-	Xxxx-	Xx-	X-	X-	XX
Base Model						
4" Fabricated Version		Sv596				
2" Fabricated Version		Sv2017				
2" Npt Cast Version		Sv2056				
2" Bspc Cast Version		Sv2050				
BODY MATERIAL						
Aluminium Alloy (Cast) Grade: Lm 25M			Ac			
Stainless Steel (Cast) Grade: Bs3100 316 C16			Sc			
Stainless Steel (Fabricated) Grade: 316Ss			Sf			
Carbon Steel (Fabricated) Grade: Astm A106 (Body) / Astm A234 (Elbows & Reducers)			Cf			
Flange Material						
316 Stainless Steel Grade: Astm A182 F316				S		
Carbon Steel Grade: Astm A105				C		
No Flange				0		
FLANGE SIZE						
2"					2	
3"					3	
4"					4	
Others (Special)					X	
FLANGE RATING						
150Lb Ansi/Asme B16.5						15
300Lb Ansi/Asme B16.5						30
Others (Special)						X

Paint Specification

The Cast Aluminium and Fabricated Carbon Steel Density Sensitive Valves are supplied painted with Amercoat 385 Multi-Purpose Epoxy (+120 Deg C Max), AMS Blue Colour (RAL 5005) as standard. AMS can supply the Density Sensitive Valves painted to suit individual customer paint requirements, please specify at time of enquiry.

Spares

DSV-MSK-SV596	Maintenance Spares Kit for WDV/DSV596, includes 1x gasket for body/cover, 1x SV384 Plunger Assembly
DSV-SV2107	Maintenance Spares Kit for WDV/DSV2107, includes 2x gasket for body/cover, 1x SV471 Plunger Assembly
DSV-MSK-SV2056	Maintenance Spares Kit for WDV/DSV2056, includes 1x gasket for body/cover, 1x SV364 Plunger Assembly
DSV-MSK-SV2050	Maintenance Spares Kit for WDV/DSV2050, includes 1x gasket for body/cover, 1x SV364 Plunger Assembly
SV399	Float Guide Assembly (WDV/DSV596)
SV2070	Float Guide Assembly (WDV/DSV2107)
SV273	Float Guide Assembly (WDV/DSV2050/WDV/DSV2056)

Documentation and Testing

AMS can supply the Density Sensitive Valves with documentation to suit individual customer requirements, these documents include but not limited to:

- » Material Certification EN 10204-3.1
- » Hydrostatic Pressure Test Certificates
- » Weld Procedures
- » Welder Qualifications
- » Certificate of Conformity
- » PED
- » Installation, Operation and Maintenance Manual etc
- » Non-destructive Testing
- » Material Analysis
- » Special Tagging
- » Inspection and Test Plans

In addition to the above AMS can also provide:

- » **Accessories:**

AMS offer a range of accessories for use in conjunction with the Valves, such as Gaskets, nuts/bolts and fittings.

- » **Instrumentation:**

AMS offer a range of process instrumentation and valves to cover a wide variety of process measurement applications.



AM Sensors Ltd,
Chedzoy Lane, Chedzoy,
Bridgwater, Somerset
TA7 8QS

† +44 (0)1278 444 650
f +44 (0)1278 434 449
e info@amsensors.com
www.amsensors.com

AM SENSORS LTD (AMS) RESERVE THE RIGHT TO MAKE TECHNICAL CHANGES OR MODIFY THE CONTENTS OF THIS DOCUMENT WITHOUT PRIOR NOTICE.
AMS DOES NOT ACCEPT ANY RESPONSIBILITY WHATSOEVER FOR POTENTIAL ERRORS OR POSSIBLE LACK OF INFORMATION IN THIS DOCUMENT.
AMS RESERVE ALL RIGHTS IN THIS DOCUMENT AND IN THE SUBJECT MATTER AND ILLUSTRATIONS CONTAINED THEREIN.
ANY REPRODUCTION, DISCLOSURE TO THIRD PARTIES OR UTILIZATION OF ITS CONTENTS - IN WHOLE OR IN PARTS – IS FORBIDDEN WITHOUT PRIOR WRITTEN CONSENT OF AMS.