

DURGA VALVES

DVPL
**DOUBLE
AIR
VALVE
DS-1**



WITH INBUILT
**SCREW DOWN
ISOLATING VALVE**



DVPL stands at the forefront of Fluid Management Technology, a position earned through years of expertise and in-depth knowledge. The company is dedicated to creating advanced, innovative solutions for Water Management Systems, which have been successfully implemented in a wide range of projects, both large and small. This commitment to excellence allows DVPL to address complex water challenges with precision and efficiency.

Every day, the impact of DVPL's work is felt as its valves play a crucial role in providing clean, safe water to millions of people across India. These moments of service, however small they may seem, represent a larger vision of improving lives and contributing to the nation's well-being.

As a company, DVPL takes immense pride in supporting the Make-in-India initiative. By manufacturing high-quality, locally-made products, DVPL not only strengthens the country's industrial capabilities but also fosters innovation that resonates globally.



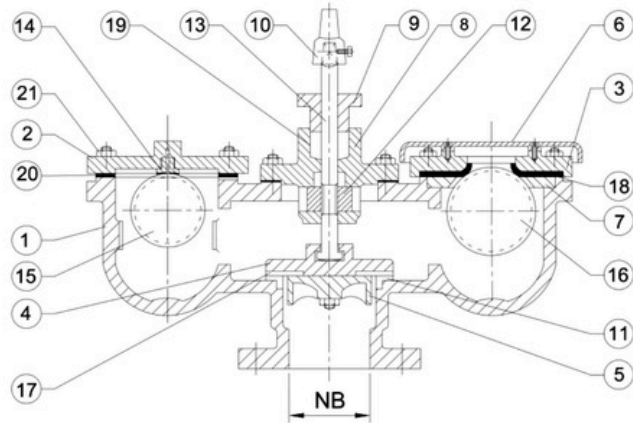


DOUBLE AIR VALVE DS-1

DOUBLE AIR VALVE WITH ISOLATING VALVE



DS1 / H-40



SL. No.	DESCRIPTION	MATERIAL
1	BODY	CI / DI / SS
2	HIGH PRESSURE COVER	CI / DI / SS
3	LOW PRESSURE COVER	CI / DI / SS
4	VALVE	CI / DI / SS
5	VALVE HOLDER	CI / DI / SS
6	COWL	CI / DI / SS
7	JOINT SUPPORT RING	CI / DI / SS
8	COVER	CI / DI / SS
9	GLAND	CI / DI / SS
10	CAP	CI / DI / SS
11	SEAT RING	LT BRONZE / SS
12	SPINDLE NUT	LT BRONZE / SS
13	SPINDLE	STAINLESS STEEL
14	H.P. ORIFIC	LT BRONZE / SS
15	BALL FOR H.P. CHABER	SOFT RUBBER COAQTED SEASONED TIMBER / SS
16	BALL FOR H.P. CHABER	HARD VULCANITE COATED SEASONED TIMBER / SS
17	VALVE SEAT	LT BRONZE / SS
18	L.P. SEAT RING	RUBBER
19	PACKING	JUTE & HEMP
20	GASKET	RUBBER
21	BOLTS & NUTS	CARBON STEEL / SS

DESIGN FEATURES	
SIZE RANGE	40 mm to 200 mm
PRESSURE RATING	PN 1.0, PN 1.6
DESIGN STANDARD	IS: 14845
TESTING STANDARD	IS: 14845
FLANGE ENDS	BS / IS / ANSI / DIN
MATERIAL	CI / DI / SS

HYDROSTATIC TEST PRESSURE (Kg/Cm ²)		
RATING	BODY	SEAT
PN 1.0	15	10
PN 1.6	24	16

*Attached separate dimension table.



DOUBLE AIR VALVE

DS-1

MATERIALS OF CONSTRUCTION		DESCRIPTION	MATERIAL	SPECIFICATION
1	SL. NO.	BODY	CAST IRON	IS 210 Gr. FG-200
2		HIGH PRESSURE COVER		
3		LOW PRESSURE COVER		
4		VALVE		
5		VALVE HOLDER		
6		COIL		
7		JOINT SUPPORT RING		
8		COVER		
9		GLAND		
10		CRP		
11		SEAT RING	L.T. BRONZE	IS 318 Gr. LTB 2
12		SPINDLE NUT	STAINLESS STEEL	ASTM A276 TYPE-410
13		SPINDLE	L.T. BRONZE	IS 318 Gr. LTB 2
14		H.P. ORRICE	SOFT RUBBER COATED SEASONED TIMBER	
15		BALL FOR H.P. CHAMBER	HARD VULCANITE COATED SEASONED TIMBER	
16		BALL FOR L.P. CHAMBER	RUBBER	NEOPRENE
17		VALVE SEAT	RUBBER	NITRILE RUBBER
18		L.P. SEAT RING	JUTE & HEMP	IS 5414
19		PACKING	RUBBER	IS 638 Type-9
20		GASKET		
21		BOLTS & NUTS	CARBON STEEL	IS 1367 Class-4.6 & 4.0

HYDROSTATIC TEST PRESSURE FOR PN-1.6
 BODY TEST PRESSURE :- 24 Kg./Sq.Cm (g) WITH WATER DURATION 5 MIN.
 SEAT TEST PRESSURE :- 16 Kg./Sq.Cm (g) WITH WATER DURATION 2 MIN.

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE STATED.
2. KINETIC AIR RELEASE VALVE GENERALLY CONFORMING TO IS-14845 (DS-1).
3. FLANGED ENDS SHALL BE FLAT FACED & DRILLED TO IS:1538 TABLE-4 & 6. FOR 40 & 50 NB AS PER IS:6392 TABLE-17
4. PAINTING- ALL VALVES SHALL BE PAINTED WITH BLACK BITUMINOUS PAINT.
5. MARKING : BRAND NAME/SIZE/RATING/HEAT NO./SL. NO.

PROJECT / SITE	---	2021	INITIAL	DATE
PO. NO.	--	DRAWN	S.PAL	08.01.2021
CONTRACTOR	--	CHECKED	S.DAS	08.01.2021
PURCHASER	--	APPROVED	P.ROY	08.01.2021

ENQ. No. : ENQ-309
 SCALE : M.T.S.

DVPL
 DURGA VALVES PRIVATE LIMITED
 (INCORP. ROAD, CALUL. SDC, HOWRAH-4 (W.B.))

TITLE: CI FLANGE END DOUBLE ACTING AIR RELEASE VALVE WITH IN-BUILT ISOLATING VALVE (DS-1).

DRAWING No. : DVPL / CI-DAV / 11433
 REV. 0

n = No. OF HOLES
 $\varnothing h$ = HOLE DIA. ON P.C.D. OFF CRS

SL. No	Nos.	NB	ØD	T	ØC	n	Øh
6	-	200	340	24.5	295	8	23
5	-	150	285	23	240	8	23
4	-	100	220	22	180	8	19
3	-	80	200	21	160	4	19
2	-	50	165	18	125	4	18
1	-	40	150	16	110	4	18
	Nos.	NB	ØD	T	ØC	n	Øh

FLANGE DIMENSIONS

REV	0	ZONE	-	P.ROY	08.01.2021	ISSUED FOR APPROVAL
REV		ZONE		APPROV BY	DATE	PARTICULARS

REFERENCE DRAWING

REVISION

PN-1.6





DOUBLE AIR VALVE DS-1

The Double Air Valve, designed as per IS 14845 and illustrated in Figure DS-1, follows the same fundamental principles as the G&K Figure H-40 but conforms to Indian Standards. This valve is commonly used in water supply, irrigation, and industrial pipelines for efficient air release and intake while incorporating an inbuilt screw-down isolation valve for maintenance and control.

Design & Construction as per IS 14845 (Figure DS-1)

The Double Air Valve with Screw-Down Isolation Valve consists of the following components:

Air Valve Assembly

Large Orifice (Kinetic Air Release & Intake):

- Releases large volumes of air during pipeline filling.
- Allows air entry when the pipeline is emptied, preventing vacuum formation.

Small Orifice (Automatic Air Release):

- Continuously releases small entrapped air pockets during normal operation.

Float Mechanism:

- Typically made of Stainless Steel, Rubber Moulded Wooden Core materials to ensure smooth movement and corrosion resistance.
- Seals the orifice when water reaches the valve chamber.



DOUBLE AIR VALVE

DS-1

Working Principle

Pipeline Filling:

As water enters the pipeline, large volumes of air are expelled through the large orifice.

Once water reaches the float, it rises, sealing the large orifice to prevent water leakage.

Normal Operation:

Small air bubbles trapped in the pipeline migrate to the highest points and enter the valve chamber.

The small orifice automatically releases these air pockets, maintaining efficient flow.

Pipeline Draining or Negative Pressure:

If the pipeline is drained or experiences a sudden pressure drop, the large orifice opens.

This allows air to enter rapidly, preventing pipe collapse due to vacuum formation.

Applications

Water Transmission & Distribution Systems

Irrigation Pipelines

Sewage and Effluent Pipelines (With Special Coatings)

Hydroelectric Power Stations



DOUBLE AIR VALVE DS-1

Screw Down Valve Working Principle

The screw-down type inbuilt isolation valve in a Double Air Valve is a crucial feature that allows for maintenance and operational control without needing an external shut-off valve.

Function & Design of the Screw-Down Inbuilt Isolation Valve

Purpose:

Provides an internal shut-off mechanism within the air valve. Allows for maintenance or replacement of the air valve without shutting down the entire pipeline. Ensures safety by isolating the air valve when necessary.

Design Features:

Screw-Down Mechanism:

Operated by a handwheel or T-key to gradually open or close the internal valve. Uses a threaded spindle that lowers or raises a plug/disc to control the flow of air/water.

Material:

Typically made from brass, stainless steel for corrosion resistance and durability.

Sealing System:

Equipped with rubber O-rings, a resilient seat, metal-to-metal seat to ensure a tight seal when closed.

Positioning:

Located at the valve's inlet, just before the air release mechanism, allowing isolation without disturbing the main flow.



DOUBLE AIR VALVE DS-1

Screw Down Valve Working Principle

Normal Operation (Valve Open)

The screw-down spindle is in the fully raised position. Air flows freely through the air valve, allowing large-volume air release or intake.

Isolation Mode (Valve Closed)

The operator turns the screw-down mechanism, lowering the spindle. The plug/disc seats against the internal sealing surface, completely blocking air or water entry into the air valve chamber.

This allows safe maintenance without affecting the pipeline operation.

Advantages of an Inbuilt Isolation Valve:

1. Eliminates Need for External Shut-Off Valves: Reduces installation space and cost.
2. Quick Maintenance: Enables easy cleaning or replacement of the air valve.
3. Leak Prevention: Prevents uncontrolled water loss thus reducing the NRW (Non Revenue Water)
4. Increased System Reliability: Ensures uninterrupted pipeline operation even when the air valve is isolated.



DOUBLE AIR VALVE

DS-1

Technical Specifications

Parameter Details as per IS 14845 (Figure DS-1)

Body Material:

Ductile Iron (DI) / Cast Iron (CI) / WCB (Cast Steel)

Coating

Liquid Epoxy / Fusion-Bonded Epoxy (FBE) in (DI) for corrosion protection

Float Material

Stainless Steel (SS 304/SS 316) / Rubber Moulded Wooden Core

Orifice Types

Large Orifice (Kinetic Air Release) & Small Orifice (Automatic Air Release)

Sealing Mechanism

EPDM/NBR Rubber Seal / Metal-To-Metal Disc for Leak-Proof Operation

Pressure Ratings

PN10 / PN16 / PN20 / CL-150 / CL-300

Size Range

DN 50 to DN 300

End Connections

Flanged as per IS 1538 / ANSI B16.5 / DIN PN10 & PN16

Screw-Down Isolation Valve

Integrated, Handwheel or T-Key Operated

Max Operating Temperature

Up to 50°C (Water Service)

Application

Water Transmission, Irrigation, Industrial Pipelines



DOUBLE AIR VALVE

DS-1

Installation Guidelines

A. Location Selection

- Install at high points in the pipeline where air accumulates.
- Preferably place it at regular intervals in long pipelines.
- Ensure accessibility for maintenance.

B. Mounting Procedure

1. Flange Connection:

- Use gaskets (rubber or PTFE) between flanges.
- Tighten bolts in a diagonal sequence for uniform pressure distribution.

2. Ensure Vertical Positioning:

- The valve must be mounted vertically to function properly.
- If necessary, use a riser pipe to achieve the correct height.

3. Testing After Installation:

- Open the screw-down isolation valve slowly to check for leaks.
- Observe air release during pipeline filling.
- Ensure proper functioning of both large and small orifices.

C. Maintenance Guidelines

- Routine Inspection: Check for leaks, corrosion, or blockages as and when needed.
- Float Cleaning: If valve performance drops, remove the float and clean it.
- Seal Replacement: Over time, the rubber seals (EPDM/NBR) may require replacement.



DOUBLE AIR VALVE DS-1

Disclaimer

The information provided above is for general guidance only and should not be considered a substitute for manufacturer specifications, site-specific engineering assessments, or regulatory compliance requirements.

Installation, operation, and maintenance of the Double Air Valve with Screw-Down Isolation (IS 14845, Figure DS-1) should be performed by qualified personnel in accordance with local industry standards, project requirements, and applicable safety regulations.

The details, dimensions, and technical specifications may vary based on specific manufacturers, pressure ratings, and design modifications. Users are advised to consult the valve manufacturer, project consultants, and relevant authorities before procurement and installation.





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