

# A.R.I. D-040

 **Aquestia**  
Directing the Flow



Mining

## Reduced Bore, Combination Air Valve Series

### Description

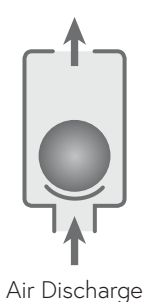
A.R.I. D-040 is a reduced bore Combination Air Valve Series. Installed on liquid transmission systems, the Air Valve is designed to improve hydraulic operation by protecting the pipeline, increasing pipeline efficiency and reducing energy requirements.

Applicable for: Desalination & Sea Water, Mines, Marine - Ballast Water, Oil & Gas, Food Industry, Power Plant Cooling, CBM, Hydro / Thermal Power.

### Installation

- Pump stations: downstream of the pump and the check valve
- Downstream and upstream of shut-off valves
- Downstream of deep-well pumps
- On long constant-sloped pipeline segments
- At peaks along the pipeline and at peaks relative to hydraulic gradient
- At end lines
- Before water meters

### Operation



## Features and Benefits

|                                                                                                             |                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reliable operation                                                                                          | Reduces water hammer impact, saves energy and increases system efficiency                                                                                                                          |
| Dynamic design                                                                                              | High capacity air discharge                                                                                                                                                                        |
|                                                                                                             | Easy to install and simple to maintain                                                                                                                                                             |
| Unique orifice seat / seal design                                                                           | Long-term maintenance-free operation                                                                                                                                                               |
| Accessible discharge outlet                                                                                 | For connecting a vent pipe                                                                                                                                                                         |
| Construction materials                                                                                      | UV resistant, non-corrosive and durable                                                                                                                                                            |
| Rolling seal                                                                                                | Leak-free sealing over a wide range of pressure differentials                                                                                                                                      |
|  ATEX certified air valves | ATEX certified air valves are optional by customer request.<br>Certification is conditional upon the customer connecting the designated part on the product to a dedicated ground connection point |

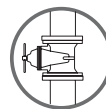
## Technical Specifications

|                        |                                                                                            |                |                |
|------------------------|--------------------------------------------------------------------------------------------|----------------|----------------|
| Size range             | ½" – 2"                                                                                    |                |                |
| Working pressure range | 0.1 - 10 bar (PN10)                                                                        | A.R.I. D-040   | A.R.I. D-040 C |
|                        | 0.2 - 16 bar (PN16)                                                                        | A.R.I. D-040   | A.R.I. D-040 C |
|                        | 0.02 - 10 bar (PN10)                                                                       | A.R.I. D-040 L |                |
|                        | 0.05 - 16 (PN16)                                                                           | A.R.I. D-040 L |                |
| Testing pressure       | 1.5 times maximum working pressure                                                         |                |                |
| Temperature            | Maximum working temperature: 60° C<br>Maximum intermittent temperature: 90° C              |                |                |
| Valve coating          | Fusion bonded epoxy coating in compliance with standard DIN 30677-2 (Model A.R.I. D-040-C) |                |                |

Upon ordering, please specify: model, size, working pressure, thread/flange standard and type of liquid

The isolation valve installed under the air valve must be fully open to prevent damage or malfunction and ensure performance within the specifications of the air valve.

For complete installation instructions, please refer to the IOM document.



## Valve Selection Options

|                            |                                                                                                                                                                                                                                                                 |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Models                     | A.R.I. D-040<br>A.R.I. D-040 C - Protecting Shell<br>A.R.I. D-040 L - Specifically designed to operate with liquids containing small suspended solids                                                                                                           |
| Valve connection           | Threaded male BSPT/NPT<br>Flanged ends to meet various requested standard                                                                                                                                                                                       |
| Standard materials         | Reinforced Nylon, Polypropylene, Stainless Steel 316, Super Duplex grade 5A                                                                                                                                                                                     |
| Optional add-on components | One-way Out attachment, allows for air discharge only, prevents air intake<br>One-way In attachment, allows air intake only, not allowing air discharge<br>Non-slam, discharge-throttling attachment, allows full air intake, throttles air discharge (2" only) |
| Pressure rating            | PN10 / PN16     A.R.I. D-040   A.R.I. D-040 C   A.R.I. D-040 L                                                                                                                                                                                                  |



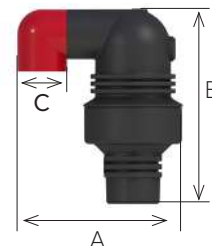
A.R.I. D-040



A.R.I. D-040 C



A.R.I. D-040 L



## ➤ Dimensions and Weight

| Size                                    | Dimensions (mm) |     | Connections     | Weight (kg) | Orifice Area (mm²) |       |
|-----------------------------------------|-----------------|-----|-----------------|-------------|--------------------|-------|
|                                         | max. A          | B   | C               |             | A / V              | Auto. |
| Composite materials models              |                 |     |                 |             |                    |       |
| D-040                                   |                 |     |                 |             |                    |       |
| 1/2" (15mm), 3/4" (20mm), 1" (25mm) THR | 100             | 143 | 3/8" BSP Female | 0.33        | 100                | 7.8   |
| 2" (50mm) THR                           | 183             | 215 | 1½" BSP Female  | 1.1         | 804                | 12    |
| 2" (50mm) FL                            | 211             | 222 | 1½" BSP Female  | 1.6         | 804                | 12    |
| D-040 L                                 |                 |     |                 |             |                    |       |
| 1/2" (15mm), 3/4" (20mm), 1" (25mm) THR | 100             | 227 | 3/8" BSP Female | 0.6         | 100                | 7.8   |
| 2" (50mm) THR                           | 183             | 346 | 1½" BSP Female  | 2           | 804                | 12    |
| 2" (50mm) FL                            | 211             | 354 | 1½" BSP Female  | 2.5         | 804                | 12    |
| Metal Models                            |                 |     |                 |             |                    |       |
| D-040 C (Protective Shell)              |                 |     |                 |             |                    |       |
| 1/2" (15mm), 3/4" (20mm), 1" (25mm) THR | 119             | 144 | 3/8" BSP Female | 1.3         | 100                | 7.8   |
| 2" (50mm) THR                           | 185             | 217 | 1.5" BSP Female | 4           | 804                | 12    |
| 2" (50mm) FL                            | 214             | 221 | 1.5" BSP Female | 5.9         | 804                | 12    |
| D-040 STST                              |                 |     |                 |             |                    |       |
| 1/2" (15mm), 3/4" (20mm), 1" (25mm) THR | 100             | 143 | 3/8" BSP Female | 1.4         | 100                | 7.8   |
| 2" (50mm) THR                           | 185             | 217 | 1.5" BSP Female | 4           | 804                | 12    |
| 2" (50mm) FL                            | 210             | 205 | 1.5" BSP Female | 5.7         | 804                | 12    |
| D-040 L STST                            |                 |     |                 |             |                    |       |
| 1/2" (15mm), 3/4" (20mm), 1" (25mm) THR | 94              | 216 | 3/8" BSP Female | 1.7         | 100                | 7.8   |
| 2" (50mm) THR                           | 183             | 335 | 1.5" BSP Female | 4.4         | 804                | 12    |
| 2" (50mm) FL                            | 210             | 335 | 1.5" BSP Female | 6.6         | 804                | 12    |

### NOTE

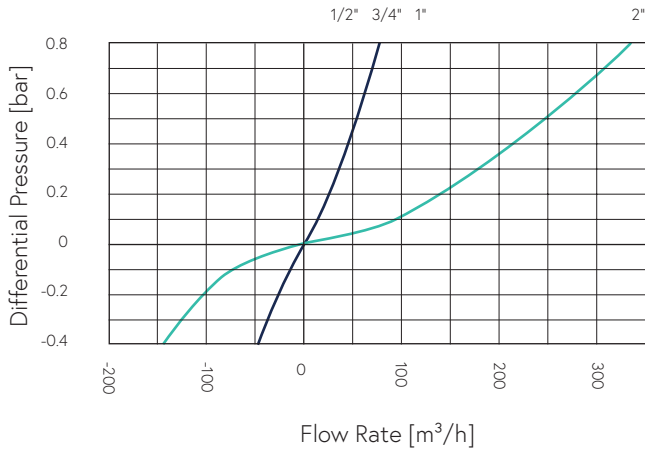
Dimension A in the picture and in the table shows the maximum product width. All product weights are approximate, due to the differences in flange standards, materials and variable accessories.

FL - Flanged    THR - Threaded

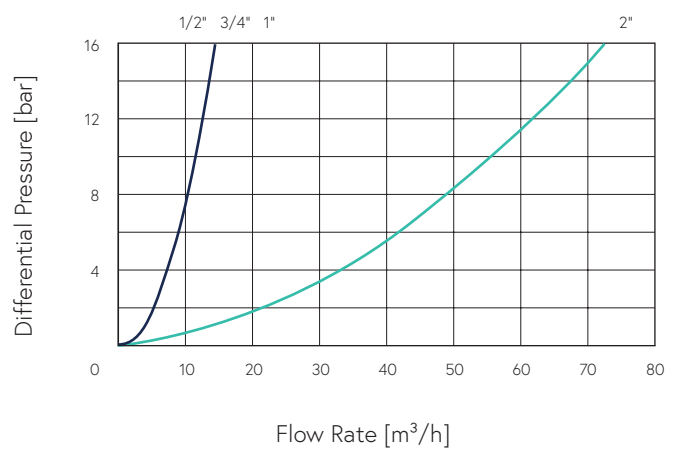
## Flow Charts

### A.R.I. D-040

Air & Vacuum Flow Rate

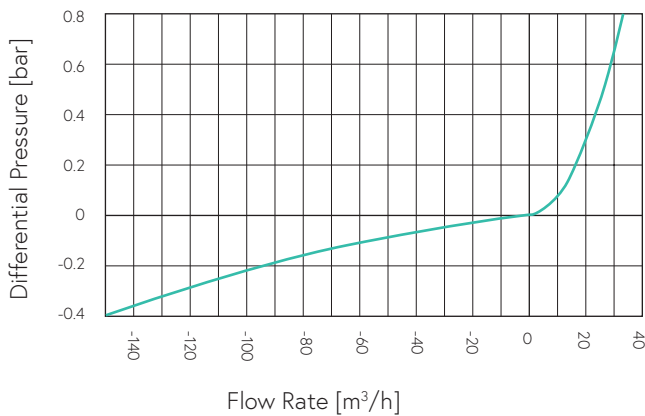


Automatic Air Release Flow Rate

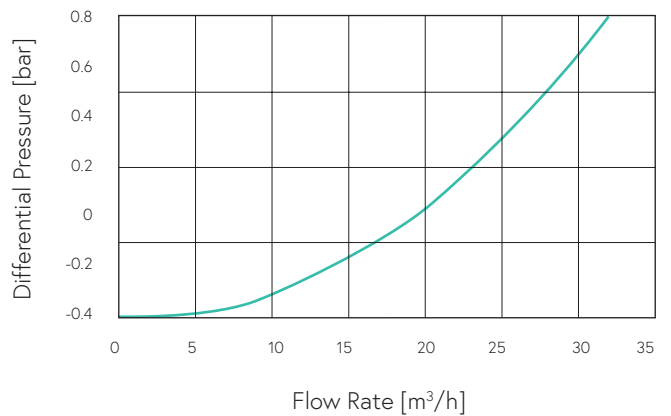


### A.R.I. D-040 NS

Air & Vacuum Flow Rate



Air Discharge Flow Rate



## Parts List and Specifications | 1" Metal Models

| No. | Part                                | Material                                    |
|-----|-------------------------------------|---------------------------------------------|
| 1   | Cover                               | Stainless Steel 316 / Super Duplex Grade 5A |
| 2   | Air Release / Air & Vacuum Assembly |                                             |
| 2a  | Clamping Stem                       | Reinforced Nylon / Polypropylene            |
| 2b  | Float                               | Foamed Polypropylene                        |
| 2c  | Rolling Seal                        | EPDM / VITON                                |
| 3   | Base Assembly                       |                                             |
| 3a  | O-ring                              | EPDM / VITON                                |
| 3b  | Base                                | Stainless Steel 316 / Super Duplex Grade 5A |



## Parts List and Specifications | 1" Composite Materials Models

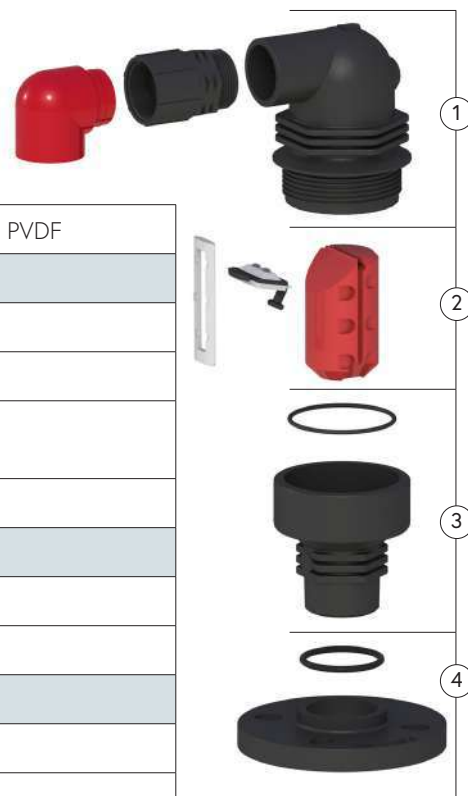
| No. | Part                                | Material                                |
|-----|-------------------------------------|-----------------------------------------|
| 1   | Cover Assembly                      |                                         |
| 1a  | Discharge Outlet                    | Polypropylene                           |
| 1b  | Body                                | Reinforced Nylon / Polypropylene / PVDF |
| 2   | Air Release / Air & Vacuum Assembly |                                         |
| 2a  | Clamping Stem                       | Reinforced Nylon / Polypropylene        |
| 2b  | Float                               | Foamed Polypropylene                    |
| 2c  | Rolling Seal                        | EPDM / VITON                            |
| 3   | Base Assembly                       |                                         |
| 3a  | O-ring                              | EPDM / VITON                            |
| 3b  | Base                                | Reinforced Nylon / Polypropylene / PVDF |

NOTE: Polypropylene body for PN10 models only



## ➤ Parts List and Specifications | 2" Composite Materials Models

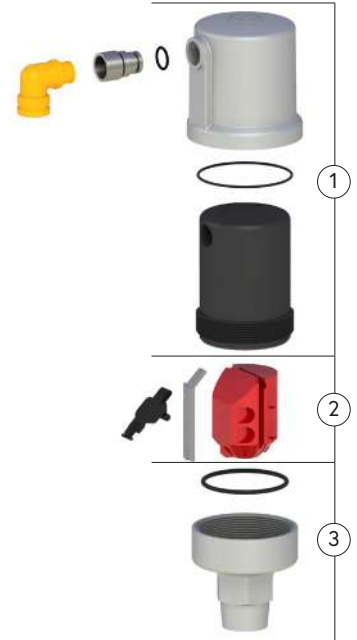
| No. | Part                                 | Material                                                          |
|-----|--------------------------------------|-------------------------------------------------------------------|
| 1   | Cover Assembly                       |                                                                   |
| 1a  | Discharge Outlet                     | Polypropylene                                                     |
| 1b  | One-way or NS Check Valve (Optional) | Polypropylene                                                     |
| 1c  | Body                                 | Reinforced Nylon / Polypropylene / PVDF                           |
| 2   | Air Release / Air & Vacuum Assembly  |                                                                   |
| 2a  | Clamping Stem                        | Reinforced Nylon / Polypropylene                                  |
| 2b  | Float                                | Foamed Polypropylene                                              |
| 2c  | Seal Assembly                        | Stainless Steel + EPDM / VITON + Reinforced Nylon / Polypropylene |
| 2d  | O-ring                               | EPDM / VITON                                                      |
| 3   | Base Assembly                        |                                                                   |
| 3a  | O-ring                               | EPDM / VITON                                                      |
| 3b  | Base                                 | Reinforced Nylon / Polypropylene                                  |
| 4   | Optional Flange Assembly             |                                                                   |
| 4a  | O-ring                               | EPDM / VITON                                                      |
| 4b  | Flange                               | Reinforced Nylon                                                  |



NOTE: Polypropylene body for PN10 models only

## Parts List and Specifications | 1" Shell Models

| No. | Part                                | Material             |
|-----|-------------------------------------|----------------------|
| 1   | Cover Assembly                      |                      |
| 1a  | Discharge Outlet                    | Polypropylene        |
| 1b  | O-ring                              | NBR                  |
| 1c  | Pin                                 | Stainless Steel 316  |
| 1d  | O-ring                              | NBR                  |
| 1e  | Shell                               | Stainless Steel 316  |
| 1f  | O-ring                              | NBR                  |
| 1g  | Body                                | Reinforced Nylon     |
| 2   | Air Release / Air & Vacuum Assembly |                      |
| 2a  | Clamping Stem                       | Reinforced Nylon     |
| 2b  | Rolling Seal                        | EPDM                 |
| 2c  | Float                               | Foamed Polypropylene |
| 3   | Base                                |                      |
| 3a  | O-ring                              | NBR                  |
| 3b  | Base                                | Stainless Steel 316  |



## Parts List and Specifications | 2" Shell Models

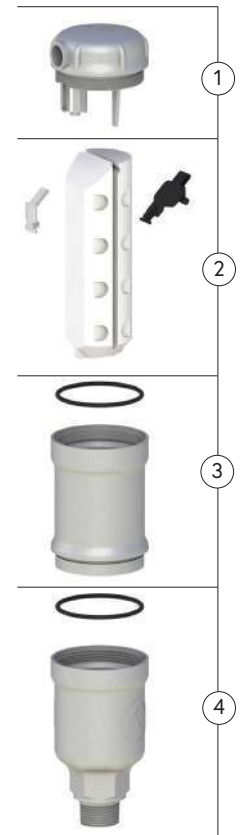
| No. | Part                                | Material                                                                                    |
|-----|-------------------------------------|---------------------------------------------------------------------------------------------|
| 1   | Cover Assembly                      |                                                                                             |
| 1a  | Discharge Outlet                    | Polypropylene                                                                               |
| 1b  | One Way / NS (Optional)             | Polypropylene                                                                               |
| 1c  | Shell                               | Stainless Steel 316                                                                         |
| 1d  | Body                                | Reinforced Nylon                                                                            |
| 2   | Air Release / Air & Vacuum Assembly |                                                                                             |
| 2a  | O-ring                              | NBR                                                                                         |
| 2b  | Clamping Stem                       | Reinforced Nylon                                                                            |
| 2c  | Rolling Seal Assembly               | Reinforced Nylon / Polypropylene + EPDM + Stainless Steel, Optional Electroless Nickel Coat |
| 2d  | Float                               | Foamed Polypropylene                                                                        |
| 3   | Base                                |                                                                                             |
| 3a  | O-ring                              | NBR                                                                                         |
| 3b  | Base                                | Stainless Steel 316                                                                         |
| 4   | Optional Flange Assembly            |                                                                                             |
| 4a  | O-ring                              | Stainless Steel 316                                                                         |
| 4b  | Flange                              | Stainless Steel 316                                                                         |





## Parts List and Specifications | 1" Metal Models

| No. | Part                                | Material                                    |
|-----|-------------------------------------|---------------------------------------------|
| 1   | Cover Assembly                      | Stainless Steel 316 / Super Duplex Grade 5A |
| 2   | Air Release / Air & Vacuum Assembly |                                             |
| 2a  | Clamping Stem                       | Reinforced Nylon / Polypropylene / PVDF     |
| 2b  | Float                               | Foamed Polypropylene                        |
| 2c  | Rolling Seal                        | EPDM / VITON                                |
| 3   | Extension Assembly                  |                                             |
| 3a  | Extension                           | Stainless Steel 316 / Super Duplex Grade 5A |
| 3b  | O-ring                              | EPDM / VITON                                |
| 4   | Base Assembly                       |                                             |
| 4a  | O-ring                              | EPDM / VITON                                |
| 4b  | Base                                | Stainless Steel 316 / Super Duplex Grade 5A |



## Parts List and Specifications | 1" Composite Materials Models

| No. | Part                                | Material                                |
|-----|-------------------------------------|-----------------------------------------|
| 1   | Cover Assembly                      |                                         |
| 1a  | Discharge Outlet                    | Polypropylene                           |
| 1b  | Body                                | Reinforced Nylon / Polypropylene / PVDF |
| 2   | Air Release / Air & Vacuum Assembly |                                         |
| 2a  | Clamping Stem                       | Reinforced Nylon / Polypropylene        |
| 2b  | Float                               | Foamed Polypropylene                    |
| 2c  | Rolling Seal                        | EPDM / VITON                            |
| 3   | Extension Assembly                  |                                         |
| 3a  | Extension                           | Reinforced Nylon / Polypropylene / PVDF |
| 3b  | O-ring                              | NBR / VITON                             |
| 4   | Base Assembly                       |                                         |
| 4a  | O-ring                              | EPDM / VITON                            |
| 4b  | Base                                | Reinforced Nylon / Polypropylene / PVDF |

NOTE: Polypropylene body for PN10 models only



## Parts List and Specifications | 2" Metal Shell Model

| No. | Part                                | Material                                                                                       |
|-----|-------------------------------------|------------------------------------------------------------------------------------------------|
| 1   | Cover Assembly                      |                                                                                                |
| 1a  | Discharge Outlet                    | Polypropylene                                                                                  |
| 1b  | One Way / NS (Optional)             | Polypropylene                                                                                  |
| 1c  | Shell                               | Stainless Steel 316                                                                            |
| 1d  | Body                                | Reinforced Nylon                                                                               |
| 2   | Air Release / Air & Vacuum Assembly |                                                                                                |
| 2a  | Clamping Stem                       | Reinforced Nylon / Polypropylene                                                               |
| 2b  | Float                               | Foamed Polypropylene                                                                           |
| 2c  | Rolling Seal Assembly               | Reinforced Nylon / Polypropylene + EPDM<br>+ Stainless Steel, Optional Electroless Nickel coat |
| 3   | Extension Assembly                  |                                                                                                |
| 3a  | Extension                           | Stainless Steel 316 / Super Duplex Grade 5A                                                    |
| 3b  | O-ring                              | EPDM / VITON                                                                                   |
| 4   | Base Assembly                       |                                                                                                |
| 4a  | O-ring                              | EPDM / VITON                                                                                   |
| 4b  | Base                                | Stainless Steel 316 / Super Duplex Grade 5A                                                    |
| 5   | Optional Flange Assembly            |                                                                                                |
| 5a  | O-ring                              | Stainless Steel 316                                                                            |
| 5b  | Flange                              | Stainless Steel 316                                                                            |



## Parts List and Specifications | 2" Composite Materials Model

| No. | Part                                 | Material                                                                                       |
|-----|--------------------------------------|------------------------------------------------------------------------------------------------|
| 1   | Cover Assembly                       |                                                                                                |
| 1a  | Discharge Outlet                     | Polypropylene                                                                                  |
| 1b  | One-way or NS Check Valve (Optional) | Polypropylene                                                                                  |
| 1b  | One-way or NS Check Valve (Optional) | Polypropylene                                                                                  |
| 1c  | Body                                 | Reinforced Nylon / Polypropylene / PVDF                                                        |
| 2   | Air Release / Air & Vacuum Assembly  |                                                                                                |
| 2a  | Clamping Stem                        | Reinforced Nylon / Polypropylene                                                               |
| 2b  | Float                                | Foamed Polypropylene                                                                           |
| 2c  | Rolling Seal Assembly                | Reinforced Nylon / Polypropylene + EPDM<br>+ Stainless Steel, Optional Electroless Nickel coat |
| 3   | Extension Assembly                   |                                                                                                |
| 3a  | Extension                            | Reinforced Nylon / Polypropylene / PVDF                                                        |
| 3b  | O-ring                               | EPDM / VITON                                                                                   |
| 4   | Base Assembly                        |                                                                                                |
| 4a  | O-ring                               | EPDM / VITON                                                                                   |
| 4b  | Base                                 | Reinforced Nylon / Polypropylene                                                               |
| 5   | Optional Flange Assembly             |                                                                                                |
| 5a  | O-ring                               | EPDM / VITON                                                                                   |
| 5b  | Flange                               | Reinforced Nylon / Polypropylene / PVDF                                                        |

NOTE: Polypropylene body for PN10 models only

