

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Butterfly Valves**

with type designation(s)  
**ARITA-D71X-10; D71X-16; D71X-25**

Issued to

**Arita Valve (Tianjin) Co., Ltd.**  
**Tianjin, China**

is found to comply with  
**DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**  
**DNV GL class programme DNVGL-CP-0186 – Type approval – Valves**

## Application :

**Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**

**Temperature range:** 0 °C to 100 °C  
**Max. working press.:** 10 bar, 16 bar, 25 bar; depending on type  
**Sizes:** DN 50 -DN 600; depending on type, see page 2

This Certificate is valid until **2021-09-18**.

Issued at **Hamburg** on **2016-09-19**

DNV GL local station: **Tianjin**

Approval Engineer: **Christian Kaemmer**

for **DNV GL**

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**Olaf Drews**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.  
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id:  
Certificate No: **TAP00000JS**

## Product description

Wafer type butterfly valves.

## Materials

| Part | Material                          |
|------|-----------------------------------|
| Body | EN-GJS-400-15 (GGG40); EN-GJL-200 |
| Disc | C95400, CF8, CF8M                 |
| Seat | EPDM                              |
| Stem | 0Cr17Ni12Mo2                      |

## Maximum working pressure, type and sizes

| Type    | Sizes          | Working pressure |
|---------|----------------|------------------|
| D71X-10 | DN250 to DN600 | 10 bar           |
| D71X-16 | DN50 to DN600  | 16 bar           |
| D71X-25 | DN50 to DN200  | 25 bar           |

## Application/Limitation

Butterfly valves covered by this certificate are approved to be used in ship piping, machinery piping and cargo piping. Limitation concerning material-resistance of body, disc and seat are to be observed according to manufacturers' specification.

Butterfly valves of grey cast iron shall not be used for class I and II piping.

Valves of grey cast iron may be used for class III piping, with the following exceptions:

- pipes and valves fitted on ship sides and bottom and on sea chests
- valves fitted on collision bulkhead

Valves of nodular cast iron are not permitted for class I piping systems.

The valves may not be used for services where "fire safe" application is required and as shut off or quick closing valve.

These valves can be used for bilge suction when fitted in connection with a non-return valve.

Butterfly valves of wafer type are not permitted to be installed on the shipside, bottom, seachest or on the collision bulkhead.

The approval does not include any operating gear for remote control of the valves.

This certificate does not cover valves to be installed in LNG/LPG applications.

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## Type Approval documentation

### Drawings

| Drawing                         | Rev. | Drawing                     | Rev. | Drawing                           | Rev. |
|---------------------------------|------|-----------------------------|------|-----------------------------------|------|
| 250D7 <sub>A</sub> 1X-10-01     | 1    | 600D7 <sub>A</sub> 1X-10-06 | 1    | 65D7 <sub>A</sub> 1X-16-01        | 1    |
| 250D7 <sub>A</sub> 1X-16-02     | 1    | 600D7 <sub>A</sub> 1X-10-07 | 1    | 65D7 <sub>A</sub> 1X-16-04        | 1    |
| 250D7 <sub>A</sub> 1X-16-03     | 1    | 600D7 <sub>A</sub> 1X-10-08 | 1    | 80D7 <sub>A</sub> 1X-16-01        | 1    |
| 250D7 <sub>A</sub> 1X-16-04     | 1    | 600D7 <sub>A</sub> 1X-10-09 | 1    | 80D7 <sub>A</sub> 1X-16-04        | 1    |
| 250D7 <sub>A</sub> 1X-16-05     | 1    | 600D7 <sub>A</sub> 1X-10-10 | 1    | 100D7 <sub>A</sub> 1X-16-01       | 1    |
| 250D7 <sub>A</sub> 1X-16-06     | 1    | 50D7 <sub>A</sub> 1X-25-01  | 1    | 100D7 <sub>A</sub> 1X-16-04       | 1    |
| 250D7 <sub>A</sub> 1X-16-07     | 1    | 50D7 <sub>A</sub> 1X-16-02  | 1    | 100D7 <sub>A</sub> 1X-16-08       | 1    |
| 250D7 <sub>A</sub> 1X-16-08     | 1    | 50D7 <sub>A</sub> 1X-16-03  | 1    | 125D7 <sub>A</sub> 1X-16-01       | 1    |
| 250D7 <sub>A</sub> 1X-16-09     | 1    | 50D7 <sub>A</sub> 1X-25-04  | 1    | 125D7 <sub>A</sub> 1X-16-04       | 1    |
| 300D7 <sub>A</sub> 1X-10-01     | 1    | 50D7 <sub>A</sub> 1X-16-05  | 1    | 125D7 <sub>A</sub> 1X-16-08       | 1    |
| 300D7 <sub>A</sub> 1X-16-02     | 1    | 50D7 <sub>A</sub> 1X-16-06  | 1    | 150D7 <sub>A</sub> 1X-16-01       | 1    |
| 300D7 <sub>A</sub> 1X-16-03     | 1    | 50D7 <sub>A</sub> 1X-16-07  | 1    | 150D7 <sub>A</sub> 1X-16-04       | 1    |
| 300D7 <sub>A</sub> 1X-16-04     | 1    | 50D7 <sub>A</sub> 1X-25-08  | 1    | 200D7 <sub>A</sub> 1X-16-01       | 1    |
| 300D7 <sub>A</sub> 1X-16-05     | 1    | 50D7 <sub>A</sub> 1X-16-09  | 1    | 200D7 <sub>A</sub> 1X-16-02       | 1    |
| 300D7 <sub>A</sub> 1X-16-06     | 1    | 65D7 <sub>A</sub> 1X-25-01  | 1    | 200D7 <sub>A</sub> 1X-16-04       | 1    |
| 300D7 <sub>A</sub> 1X-16-07     | 1    | 65D7 <sub>A</sub> 1X-16-02  | 1    | 200D7 <sub>A</sub> 1X-16-08       | 1    |
| 300D7 <sub>A</sub> 1X-16-08     | 1    | 65D7 <sub>A</sub> 1X-16-03  | 1    | 250D7 <sub>A</sub> 1X-16-01       | 1    |
| 300D7 <sub>A</sub> 1X-16-09     | 1    | 65D7 <sub>A</sub> 1X-25-04  | 1    | 300D7 <sub>A</sub> 1X-16-01       | 1    |
| 350D7 <sub>A</sub> 1X-10-01     | 1    | 80D7 <sub>A</sub> 1X-25-01  | 1    | 350D7 <sub>A</sub> 1X-16-01       | 1    |
| 350D7 <sub>A</sub> 1X-16-02     | 1    | 80D7 <sub>A</sub> 1X-16-02  | 1    | (400-500)D7 <sub>A</sub> 1X-16-00 | 1    |
| 350D7 <sub>A</sub> 1X-16-03     | 1    | 80D7 <sub>A</sub> 1X-16-03  | 1    | 400D7 <sub>A</sub> 1X-16-01       | 1    |
| 350D7 <sub>A</sub> 1X-16-04     | 1    | 80D7 <sub>A</sub> 1X-25-04  | 1    | 400D7 <sub>A</sub> 1X-16-02       | 1    |
| 350D7 <sub>A</sub> 1X-16-05     | 1    | 100D7 <sub>A</sub> 1X-25-01 | 1    | 400D7 <sub>A</sub> 1X-16-03       | 1    |
| 400-500D7 <sub>A</sub> 1X-10-00 | 1    | 100D7 <sub>A</sub> 1X-25-04 | 1    | 400D7 <sub>A</sub> 1X-16-04       | 1    |
| 400D7 <sub>A</sub> 1X-10-01     | 1    | 100D7 <sub>A</sub> 1X-25-08 | 1    | 400D7 <sub>A</sub> 1X-16-06       | 1    |

Job Id:  
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| Drawing                     | Rev. | Drawing                     | Rev. | Drawing                     | Rev. |
|-----------------------------|------|-----------------------------|------|-----------------------------|------|
| 400D7 <sub>A</sub> 1X-10-02 | 1    | 100D7 <sub>A</sub> 1X-16-02 | 1    | 400D7 <sub>A</sub> 1X-16-05 | 1    |
| 400D7 <sub>A</sub> 1X-10-03 | 1    | 100D7 <sub>A</sub> 1X-16-03 | 1    | 400D7 <sub>A</sub> 1X-16-09 | 1    |
| 400D7 <sub>A</sub> 1X-10-04 | 1    | 100D7 <sub>A</sub> 1X-16-05 | 1    | 450D7 <sub>A</sub> 1X-16-01 | 1    |
| 400D7 <sub>A</sub> 1X-10-05 | 1    | 100D7 <sub>A</sub> 1X-16-06 | 1    | 450D7 <sub>A</sub> 1X-16-02 | 1    |
| 400D7 <sub>A</sub> 1X-10-06 | 1    | 100D7 <sub>A</sub> 1X-16-09 | 1    | 450D7 <sub>A</sub> 1X-16-04 | 1    |
| 400D7 <sub>A</sub> 1X-10-07 | 1    | 100D7 <sub>A</sub> 1X-16-07 | 1    | 450D7 <sub>A</sub> 1X-16-03 | 1    |
| 400D7 <sub>A</sub> 1X-10-08 | 1    | 125D7 <sub>A</sub> 1X-25-01 | 1    | 450D7 <sub>A</sub> 1X-16-10 | 1    |
| 400D7 <sub>A</sub> 1X-10-09 | 1    | 125D7 <sub>A</sub> 1X-25-04 | 1    | 450D7 <sub>A</sub> 1X-16-05 | 1    |
| 400D7 <sub>A</sub> 1X-10-10 | 1    | 125D7 <sub>A</sub> 1X-25-08 | 1    | 450D7 <sub>A</sub> 1X-16-09 | 1    |
| 450D7 <sub>A</sub> 1X-10-01 | 1    | 125D7 <sub>A</sub> 1X-16-03 | 1    | 450D7 <sub>A</sub> 1X-16-06 | 1    |
| 450D7 <sub>A</sub> 1X-10-02 | 1    | 125D7 <sub>A</sub> 1X-16-02 | 1    | 450D7 <sub>A</sub> 1X-16-07 | 1    |
| 450D7 <sub>A</sub> 1X-10-03 | 1    | 125D7 <sub>A</sub> 1X-16-09 | 1    | 450D7 <sub>A</sub> 1X-16-08 | 1    |
| 450D7 <sub>A</sub> 1X-10-04 | 1    | 125D7 <sub>A</sub> 1X-16-05 | 1    | 500D7 <sub>A</sub> 1X-16-01 | 1    |
| 450D7 <sub>A</sub> 1X-10-05 | 1    | 125D7 <sub>A</sub> 1X-16-07 | 1    | 500D7 <sub>A</sub> 1X-16-02 | 1    |
| 450D7 <sub>A</sub> 1X-10-06 | 1    | 125D7 <sub>A</sub> 1X-16-06 | 1    | 500D7 <sub>A</sub> 1X-16-03 | 1    |
| 450D7 <sub>A</sub> 1X-10-07 | 1    | 150D7 <sub>A</sub> 1X-25-01 | 1    | 500D7 <sub>A</sub> 1X-16-04 | 1    |
| 450D7 <sub>A</sub> 1X-10-08 | 1    | 150D7 <sub>A</sub> 1X-16-02 | 1    | 500D7 <sub>A</sub> 1X-16-07 | 1    |
| 450D7 <sub>A</sub> 1X-10-09 | 1    | 150D7 <sub>A</sub> 1X-16-03 | 1    | 500D7 <sub>A</sub> 1X-16-08 | 1    |
| 500D7 <sub>A</sub> 1X-10-01 | 1    | 150D7 <sub>A</sub> 1X-25-04 | 1    | 500D7 <sub>A</sub> 1X-16-06 | 1    |
| 500D7 <sub>A</sub> 1X-10-02 | 1    |                             |      | 500D7 <sub>A</sub> 1X-16-09 | 1    |
| 500D7 <sub>A</sub> 1X-10-03 | 1    | 200D7 <sub>A</sub> 1X-25-01 | 1    | 500D7 <sub>A</sub> 1X-16-10 | 1    |
| 500D7 <sub>A</sub> 1X-10-04 | 1    | 200D7 <sub>A</sub> 1X-25-04 | 1    | 500D7 <sub>A</sub> 1X-16-05 | 1    |
| 500D7 <sub>A</sub> 1X-10-05 | 1    | 200D7 <sub>A</sub> 1X-25-08 | 1    | 600D7 <sub>A</sub> 1X-16-00 | 1    |
| 500D7 <sub>A</sub> 1X-10-06 | 1    | 200D7 <sub>A</sub> 1X-25-02 | 1    | 600D7 <sub>A</sub> 1X-16-01 | 1    |
| 500D7 <sub>A</sub> 1X-10-07 | 1    | 200D7 <sub>A</sub> 1X-16-03 | 1    | 600D7 <sub>A</sub> 1X-16-02 | 1    |
| 500D7 <sub>A</sub> 1X-10-08 | 1    | 200D7 <sub>A</sub> 1X-16-05 | 1    | 600D7 <sub>A</sub> 1X-16-10 | 1    |
| 500D7 <sub>A</sub> 1X-10-09 | 1    | 200D7 <sub>A</sub> 1X-16-06 | 1    | 600D7 <sub>A</sub> 1X-16-03 | 1    |
| 500D7 <sub>A</sub> 1X-10-10 | 1    | 200D7 <sub>A</sub> 1X-16-07 | 1    | 600D7 <sub>A</sub> 1X-16-04 | 1    |

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| Drawing                     | Rev. | Drawing                             | Rev. | Drawing                     | Rev. |
|-----------------------------|------|-------------------------------------|------|-----------------------------|------|
| 600D7 <sub>A</sub> 1X-10-00 | 1    | 200D7 <sub>A</sub> 1X-16-09         | 1    | 600D7 <sub>A</sub> 1X-16-09 | 1    |
| 600D7 <sub>A</sub> 1X-10-01 | 1    | (50-350)D7 <sub>A</sub> 1X-10/16-00 | 1    | 600D7 <sub>A</sub> 1X-16-05 | 1    |
| 600D7 <sub>A</sub> 1X-10-02 | 1    | (50-200)D7 <sub>A</sub> 1X-25-00    | 1    | 600D7 <sub>A</sub> 1X-16-06 | 1    |
| 600D7 <sub>A</sub> 1X-10-03 | 1    | 50D7 <sub>A</sub> 1X-16-01          | 1    | 600D7 <sub>A</sub> 1X-16-07 | 1    |
| 600D7 <sub>A</sub> 1X-10-04 | 1    | 50D7 <sub>A</sub> 1X-16-04          | 1    | 600D7 <sub>A</sub> 1X-16-08 | 1    |
| 600D7 <sub>A</sub> 1X-10-05 | 1    | 50D7 <sub>A</sub> 1X-16-08          | 1    |                             |      |

### Test reports / Assessment reports

- Manufacturer's test reports Annex 9 and 10 dated 2007-06-13, witnessed by DNV
- Retention survey report/checklist from DNV Tanjin, dated 2016-04-27

### Miscellaneous documentation

- Manufacturer's catalogue
- Application for renewal of type approval certificate no. P-12513 from DNV Tianjin, dated 2011-12-02

### Production Tests

All valve bodies shall be subjected to a hydrostatic pressure test equal to 1.5 times the nominal pressure. (The nominal pressure is the maximum allowable working pressure at room temperatures).

All valve assemblies shall be subjected to a seat leakage test at 1.1 times maximum working pressure at closed position.

### Certification

Valve bodies shall be delivered with material certificates in accordance with DNV GL Ship Pt.4 Ch.6 Sec.2 Table 3. Materials with VL and W certificates shall be manufactured in a foundry approved by the society.

DNV GL product certificates (PC) are required for valves with DN > 100 mm and design pressure  $\geq 16$  bar, and for ship side valves where DN > 100 mm regardless of pressure. For other valves a manufacturer's product certificate may be accepted.

Each product is to be accompanied by an instruction manual/specification sheet.

### Tests carried out

Function test, Hydrostatic test, Seat leakage test

### Marking of product

For traceability to this type approval, each valve is to be marked with:

- Manufacturer's name
- Type designation
- Size
- Design pressure



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### **Periodical assessment**

For retention of the type approval certificate periodical assessments shall be carried out at production places. The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:

- verification of the production and quality control system
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking.