SWING CHECK VALVES FOR PIPELINE APPLICATIONS
1. MODELS

ATV Spa manufactures a full range of swing check valves for production, processing and transmission applications.

Swing check valves are typically full bore with optimized design of body cavity and disk for piggability, including the capability to handle intelligent pigs.

Reduced bore check valves can be supplied on request for specific applications in pumping stations.

Check valves can be supplied with dampening system to increase the closing time and avoid shocks and with clapper lifting device operated manually and by remote controlled actuators.

Lost motion devices can be supplied to reduce the wear on the shaft seals and sensors for remote indication of clapper position are also available.

ATV Spa Through Conduit Gate Valves comply with following industry standards:

- API 6D ISO 14316
- API 6A ISO 10423
- ANSI B16.34
- API 6FA
- PED
- NORSOK

### Swing check valve subsea (SSIV)
18" ANSI 1500 Carbon steel fully cladded
StatoilHydro Gjoa

<table>
<thead>
<tr>
<th>MODEL</th>
<th>STANDARD</th>
<th>VALVE TYPE</th>
<th>VALVE CONSTRUCTION</th>
<th>SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATV-SC-D</td>
<td>API 6D</td>
<td>Swing check</td>
<td>Bolted bonnet</td>
<td>2” and larger</td>
</tr>
<tr>
<td>ATV-SC-A</td>
<td>API 6A</td>
<td>Swing check</td>
<td>Bolted bonnet</td>
<td>2” and larger</td>
</tr>
</tbody>
</table>
2. DESIGN AND QUALIFICATIONS

ATV Spa has implemented state of the art design and qualification processes.

Design is carried out using advanced parametric design tools and solid modelling programs.

Structural design is optimized and verified with FEA analysis and in compliance with recognized design standards, including ASME Sect. VIII Div. 1 and 2 and PD5500.

ATV Spa performs also CFD analysis to predict the pressure drop, the position of the clapper disk thru the full range of flow rates and the dynamic response of the clapper in case of slam shut events. Such analysis are required to verify that the valve will perform adequately in service.

Extensive qualification programs include the following tests:

- Bending test
- Slam shut test
- Sand slurry test
- Fire testing to API 6FA / API 607 / BS
- Low temperature test
- Fugitive emission testing according to ISO 15848-1
- Complete qualification according to API 6A PR2 Appendix F
- Complete qualification according to ABNT 15827

Tests are carried out in a state of the art test facility equipped with data acquisition system and all relevant instruments.
3. SWING CHECK VALVES API 6D

Features
- Full bore
- Piggable
- Cast body construction
- Bubble tight
- Bolted bonnet
- Welded-in or removeable seat
- Soft or metal seated
- Fire-safe
- Fugitive emission

Applicable standards
- API 6D ISO 14316
- ANSI B16.34
- ANSI B16.10
- API 6FA
- IEC 61508 and 61511 (HIPPS systems)
- NACE MR0175 / ISO 150156

Range
- 2" to 70" Class 150
- 2" to 60" Class 300
- 2" to 60" Class 600
- 2" to 48" Class 900
- 2" to 42" Class 1500
- 2" to 24" Class 2500

Ends
- Flanged to ANSI B16.5 - B16.47 - MSS SP-44
- Compact flange NORSOK L005
- Hub connectors
- Butt weld ends to ANSI B16.25

Materials
- Carbon steel
- Low temperature carbon steel
- Stainless austenitic am superaustenitic
- Stainless duplex and superduplex (NORSOK)
- Nickel superalloys (Monel, Inconel 625, Hastelloy)
- Titanium

Options
- Conduit clapper
- Hydraulic dampener
- Lock open lever / clapper position indicator
- Clapper position switches and transmitter

Swing check valve subsea
24" 600 w/ clapper lock-open device
Cuu Long Su Tu Vang
4. SWING CHECK VALVES API 6A

Features
- Full bore
- Piggable
- Cast body construction
- Bubble tight
- Bolted bonnet
- Welded-in or removeable seat
- Soft or metal seated
- Fire-safe
- Fugitive emission
- Qualification to API 6A PR2 Appendix F

Applicable standards
- API 6A ISO 10423
- API 6FA
- IEC 61508 and 61511 (HIPPS systems)
- NACE MR0175 / ISO 150156

Range
- 1-13/16” to 13” Class 3000
- 1-13/16” to 13” Class 5000
- 1-13/16” to 13” Class 10000
- 1-13/16” to 13” Class 15000
- 1-13/16” to 9” Class 20000

Ends
- Flanged to API 6A ISO 10423
- Hub connectors
- Butt weld ends to ANSI B16.25

Materials
- High strength low carbon steel
- Low temperature low alloy steel
- Stainless duplex and superduplex (NORSOK)
- Nickel superalloys (Inconel 625, Incoloy 925)

Options
- Conduit clapper
- Hydraulic dampener
- Lock open lever / clapper position indicator
- Clapper position switches and transmitter

Swing check valve subsea
4-1/16” 10ksi
Jubilee project - KosmosOil
5. SPECIAL APPLICATIONS

Lock open device
- Clapper lifted to fully open position and secured
- Manual operated or remotely operated with actuator
- Local position indicator
- Remote position indicator
- Lock pad

Counterweight assembly
- Clapper counterweight to reduce pressure drop across valve
- Clapper counterweight to reduce closing time
- Protecting enclosure

Hydraulic slam retarder
- Allows quick opening of the check valves but prevents slamming
- Hydraulic piston with adjustable flow control needle
- Pressure relief valve to avoid overpressurization
- Protecting enclosure

Hydraulic rotary slam retarder
- Allows quick opening of the check valves but prevents slamming
- Rotary vane device with adjustable flow control needle
- Pressure relief valve to avoid overpressurization

Spring return clapper device
- Provides a closing moment on the clapper shaft to achieve positive closure
- Protecting enclosure

Minimum flow port
- Allows flow in the reverse direction thru the closed valve

Position switches
- Provides remote indication of clapper position

Position transmitter
- Provides remote indication of clapper position
6. CERTIFICATIONS

ATV Spa holds the following accreditations:

- ISO 9001:2000 cert. n° 197407
- PED cert. n° CE-PED-H-ATV001-06-BVI
- API 6A cert. n° 6A-0880
- API 6D cert. n° 6D-0778
- API 6DSS cert. n° 6DSS-0004
- API 17D cert. n° 17D-0053
7. CONTACTS

Office and plant address

Advanced Technology Valve Spa  
Via Ombriano 2  
23823 Colico (LC)  
ITALY

Phone:  +(39) 0341 932111 ( operator )  
        +(39) 0341 932123 ( sales dept)  
Fax:    +(39) 0341 930785

E-mail: info@atvspa.com

Contact sales dept. - Antonella De Giorgi – adegiorgi@atvspa.com