BUTTERFLY VALVES
Isolation valves
The optimal solution for the easy and safe isolation of transformer piping components

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3 Operating features

3.1 Tightness of spindle
The tightness to oil leakage from the spindle on the butterfly valve, is guaranteed by a set of o/rings on the spindle and on the gland obtaining an excellent tightness and at the same time allowing an easy replacement of the gasket.

No leakage is tolerated from the spindle in any case.

3.2 Tightness of butterfly
3.2.1 Metal to metal sealing (thin blade throttle)
The oil tightness of the butterfly is obtained by contact metal to metal, thus assuring a constant performance even after a long use.

Leakage at the butterfly is checked during assembly, testing with oil at 20°C, 1 bar and viscosity of 30,5 cSt.

Following values of max admitted leakage:

<table>
<thead>
<tr>
<th>Nominal diameter of valve in mm</th>
<th>≤ 100</th>
<th>100 &lt; &gt; 175</th>
<th>≥ 175</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admitted leakage in dm³/h measured in 1 hour</td>
<td>≤ 0.5</td>
<td>≤ 1.0</td>
<td>≤ 2.0</td>
</tr>
</tbody>
</table>

3.2.2 Full tightening sealing (TW80 with o-ring blade)
The oil tightness of the butterfly is obtained by contact of an o/ring (mounted on the throttle) and the metal body, thus assuring full sealing between throttle and body.

No leakage is present between throttle and body in closed position.

3.3 Operating Torque
The operating torque measured by dynamometric spanner are the following:

<table>
<thead>
<tr>
<th>Nominal diameter of valve in mm</th>
<th>≤ 100</th>
<th>100 &lt; &gt; 150</th>
<th>≥ 150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating torque inNm.</td>
<td>≤ 10</td>
<td>≤ 30</td>
<td>≤ 30</td>
</tr>
<tr>
<td>Closing torque inNm.</td>
<td>≤ 70</td>
<td>≤ 100</td>
<td>≤ 150</td>
</tr>
<tr>
<td>Opening torque inNm.</td>
<td>≤ 40</td>
<td>≤ 50</td>
<td>≤ 50</td>
</tr>
</tbody>
</table>

**Operating torque:** Torque necessary to turn the shaft from the open to the closed position;

**Closing torque:** Torque necessary to obtain the complete closure of the valve;

**Opening torque:** Torque necessary to open the valve, after complete closure.
4 Admitted operating conditions

4.1 Standard execution (N) – Nitrile rubber gaskets

- Ambient conditions:
  - Ambient temperature: -20°C to +50°C
  - Relative humidity: 95% to 20°C - 80% to 40°C - 50% to 50°C

- Insulating liquid and it's temperature:
  - Mineral oil: -20°C to +110°C
  - Silicone oil: -20°C to +110°C

4.2 Execution H – H-NBR rubber gaskets

- Ambient conditions:
  - Ambient temperature: -40°C to +50°C
  - Relative humidity: 95% to 20°C - 80% to 40°C - 50% to 50°C

- Insulating liquid and it's temperature:
  - Mineral oil: -40°C to +140°C
  - Silicone oil: not admitted

4.3 Execution V – Fluor-rubber gaskets (Viton V)

- Ambient conditions:
  - Ambient temperature: -15°C to +50°C
  - Relative humidity: 95% to 20°C - 80% to 40°C - 50% to 50°C

- Insulating liquid and it's temperature:
  - Mineral oil: -15°C to +160°C
  - Silicone oil: -15°C to +160°C

5 Mounting, Adjustment and Maintenance

5.1 Mounting

The throttle valve has to be mounted as shown on reference drawings or at page 5.86. Valve has to be mounted using screws or rods, washers and nuts and putting the o/ring on the groove for flange tightening.

5.2 Operating instructions

The design of the operating system is common to all valves; to open and close the valve operate as follows (please refer to drawings):

- The visible symbol or inscription on plate (10) indicates the valve position;
- To close the valve first remove the seal or padlock (if present);
- With the appropriate spanner turn the drive (2) clockwise 90° to close the valve; counter clockwise 90° to open the valve
- The visible part of plate (10) indicates the actual valve position;

5.3 Maintenance

The Throttle valves do not need periodic maintenance; however it is advisable to check regularly the external tightening of valve.
6 Range of types and reference drawings

The butterfly valves have standard execution flanges according to UNI PN10 and PN6; flanges according to other standards can be supplied as special execution.
Nominal diameters (DN) are 25;50;80;100;125;150;200;250;300
Below detailed list of available types

6.1 Series SW for radiators—metal to metal sealing (square flange—thin blade)
• Nominal diameter: 80 mm
• Execution
  - A1 & A0 Welding neck
  - B1 & B0 Wafer type for mounting between two flanges
• Reference drawing: page 5.82 & page 5.83
• Mounting sketch
  - A1 & A0 Welding neck: page 5.86 fig. A or B
  - B1 & B0 Wafer type for mounting between two flanges: page 5.86 fig. C or D
• Note: A1 & B1 flanges with groove for O/R 6400 (supplied with the valve)
  A0 & B0 flat flanges for flat gasket (supplied on demand)

6.2 Series TW for radiators—full tightening valve (square flange—o/ring blade)
• Nominal diameter: 80 mm
• Execution wafer type for mounting between two flanges
• Reference drawing: page 5.81
• Mounting sketch: page 5.86 fig. C or D

6.3 Series DN—round flange
• Nominal diameter: 25; 50; 80 mm
• Execution wafer type for mounting between two flanges
  - PN6 flange size: bolt circle diameter acc to UNI2276-67
  - PN10 flange size: bolt circle diameter acc to UNI2277-67
• Reference drawing: page 5.84
• Note: this kind of valves are delivered with HNBR gaskets for flange tightening

6.4 Series JU—large round flange
• Nominal diameter: 100;125;150;200;250;300 mm
• Execution wafer type for mounting between two flanges
  - PN10 flange size: bolt circle diameter acc to UNI2277-67
• Reference drawing: page 5.85

7 Order Specifications
When ordering it is necessary to indicate
• Series (type)
• Size
• Operating conditions (if not indicated, we will consider standard N)
• Special requirements

Example:
To order nr. 1 Throttle valve type DN50 PN6 standard execution please indicate the following:

Nr 1 Throttle valve DN50 PN6
### Throttle valve

**Type:** DN25/DN50/DN80

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Steel</td>
<td>DN25</td>
</tr>
<tr>
<td>3</td>
<td>Spindle</td>
<td>Steel</td>
<td>DN50</td>
</tr>
<tr>
<td>4</td>
<td>Drive</td>
<td>Brass</td>
<td>DN80</td>
</tr>
<tr>
<td>5</td>
<td>Gland</td>
<td>Brass</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Throttle</td>
<td>Steel</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>O-ring</td>
<td>HNBR OR115 OR121 OR121</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>O-ring</td>
<td>HNBR OR108 OR2050 OR2050</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Pin</td>
<td>Stainless Steel</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Label open/closed</td>
<td>Aluminium</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Screw</td>
<td>Stainless Steel</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Rivet</td>
<td>Stainless Steel</td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>Ød</th>
<th>ØD</th>
<th>ØA</th>
<th>B</th>
<th>G</th>
<th>M</th>
<th>Z</th>
<th>C</th>
<th>ØE</th>
<th>ØF</th>
<th>Flange O-Ring</th>
<th>G.W. Kg</th>
<th>Screw DN 933 pos.7</th>
<th>Rod pos.8</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN25 PN6</td>
<td>28</td>
<td>115</td>
<td>75</td>
<td>85</td>
<td>25</td>
<td>M10</td>
<td>4</td>
<td>3.6</td>
<td>37</td>
<td>51</td>
<td>6150</td>
<td>1.5</td>
<td>M10X20</td>
<td>M10x90</td>
<td>AVPN06A025</td>
</tr>
<tr>
<td>DN25 PN10</td>
<td>28</td>
<td>115</td>
<td>85</td>
<td>85</td>
<td>25</td>
<td>M12</td>
<td>4</td>
<td>3.6</td>
<td>37</td>
<td>51</td>
<td>6150</td>
<td>1.5</td>
<td>M12X25</td>
<td>M12x90</td>
<td>AVPN10A025</td>
</tr>
<tr>
<td>DN50 PN6</td>
<td>52</td>
<td>165</td>
<td>110</td>
<td>110</td>
<td>35</td>
<td>M12</td>
<td>4</td>
<td>3.6</td>
<td>68.5</td>
<td>82.5</td>
<td>6275</td>
<td>3.5</td>
<td>M12X30</td>
<td>M12x100</td>
<td>AVPN06A050</td>
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<tr>
<td>DN50 PN10</td>
<td>52</td>
<td>165</td>
<td>125</td>
<td>110</td>
<td>35</td>
<td>M16</td>
<td>4</td>
<td>3.6</td>
<td>68.5</td>
<td>82.5</td>
<td>6275</td>
<td>3.5</td>
<td>M16X35</td>
<td>M16x110</td>
<td>AVPN10A050</td>
</tr>
<tr>
<td>DN80 PN6</td>
<td>80</td>
<td>200</td>
<td>150</td>
<td>130</td>
<td>35</td>
<td>M16</td>
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<td>3.6</td>
<td>99.5</td>
<td>113.5</td>
<td>6400</td>
<td>5.5</td>
<td>M16X35</td>
<td>M16x110</td>
<td>AVPN06A080</td>
</tr>
<tr>
<td>DN80D PN10</td>
<td>80</td>
<td>200</td>
<td>160</td>
<td>130</td>
<td>35</td>
<td>M16</td>
<td>8</td>
<td>3.6</td>
<td>99.5</td>
<td>113.5</td>
<td>6400</td>
<td>5.5</td>
<td>M16X30</td>
<td>M16x120</td>
<td>AVPN10A081</td>
</tr>
<tr>
<td>DN80U PN10</td>
<td>80</td>
<td>200</td>
<td>160</td>
<td>130</td>
<td>35</td>
<td>M16</td>
<td>8</td>
<td>3.6</td>
<td>99.5</td>
<td>113.5</td>
<td>6400</td>
<td>5.5</td>
<td>M16X30</td>
<td>M16x120</td>
<td>AVPN10A080</td>
</tr>
</tbody>
</table>

**Data:** 12/03/13

**Dis. Nr:** 3843
MOUNTING KIT

CODE: AVZT130A00

The present draw place drawing PNC.576.N

9 TUBO TUBO TUBO TUBO
8 // // TIRANTE M16 X 130 TIRANTE M16 X 90
7 VITE T.E. M16X35 // // //
6 CASSA TRASFORMATORE CASSA TRASFORMATORE // CASSA TRASFORMATORE
5 // // PRIGIONIERO M16X30 // //
4.2 // // RONDELLA CROMATA // //
4.1 ROSETTA PIANA M16 ROSETTA PIANA M15 ROSETTA PIANA M16 ROSETTA PIANA M16
3 // DADO M16 DADO M16 DADO M16
2 CONTROFLANIA CONTROFLANIA CONTROFLANIA CONTROFLANIA
1 VALVOLA VALVOLA VALVOLA VALVOLA
Pos. FIG.A FIG.B FIG.C FIG.D

9 PIPE PIPE PIPE PIPE
8 // // ROD M16 X 130 ROD M16 X 90
7 SCREW WIPES // // //
6 TRANSFORMER TANK TRANSFORMER TANK // TRANSFORMER TANK
5 // // STUD M16X30 // //
4.2 // // SPRING WASHER // //
4.1 WASHER M16 WASHER M16 WASHER M16 WASHER M16
3 // NUT M16 NUT M16 NUT M16
2 COUNTERFLANCA COUNTERFLANCA COUNTERFLANCA COUNTERFLANCA
1 VALVE VALVE VALVE VALVE
Pos. FIG.A FIG.B FIG.C FIG.D

Titolo Radiator valve - Mounting sketch -
Data 12/03/13
Scala ====
Dis. Nr 3845
Visto 1