

# Turcon® Double Delta®



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Double-acting

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Rubber-energized plastic-faced seal

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For O-Ring Grooves

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**Material:**

Turcon®, Zurcon® and Elastomer

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## Turcon® Double Delta®



### Description

Turcon® Double Delta® is a rubber energized plastic faced seal, designed to expand and significantly improve the service parameters of O-Rings. Double Delta® can be installed in existing O-Ring grooves.

Double Delta® combines the flexibility and responsiveness of O-Rings with the wear and friction characteristics of the Turcon® materials in dynamic applications.

The double-acting performance of the seal follows from the symmetrical cross section which allows the seal to respond to pressure in both directions - Figure 86.

Initial contact pressure is provided by radial compression of the O-Ring. When the system pressure is increased the O-Ring transforms this into additional contact pressure, the contact pressure of the seal is thereby automatically adjusted so sealing is ensured under all service conditions.

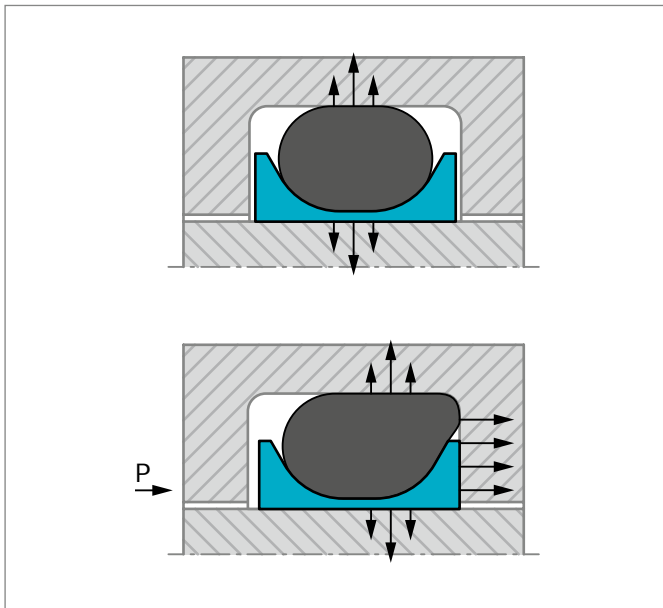


Figure 86: Turcon® Double Delta® without and with pressure

### ADVANTAGES

- Compact groove dimensions and simple installation
- Low friction without stick-slip
- Resistance against wear and extrusion
- Rod seals available for all diameters from 2 to 999.9 mm
- Standard cross sections cover AS 568A and important metric O-Rings, other cross sections available on request.
- Fits also groove dimensions per ISO 6194 and AS 4716

### APPLICATION EXAMPLES

Turcon® Double Delta® is used as double-acting seal for hydraulic and pneumatic components in applications such as:

- Machine tools
- Handling devices
- Valves
- Chemical processing equipment

It is particular recommended for light duty and small diameter applications.

### OPERATING CONDITIONS

|                     |                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pressure:</b>    | Up to 35 MPa                                                                                                                                                                                                                                   |
| <b>Speed:</b>       | Up to 15 m/s                                                                                                                                                                                                                                   |
| <b>Temperature:</b> | -45 °C to +200 °C<br>according to O-Ring material                                                                                                                                                                                              |
| <b>Media:</b>       | Mineral oil-based hydraulic fluids, flame retardant hydraulic fluids, environmentally friendly hydraulic fluids (bio-oils), phosphate ester, water and others, depending on temperature, seal and O-Ring material compatibility - see Table 71 |
| <b>Clearance:</b>   | The maximum permissible radial clearance $S_{max}$ is shown in Table 72, as a function of the operating pressure and functional diameter.                                                                                                      |

### IMPORTANT NOTE

The above data are maximum values and cannot be used at the same time, e.g. the maximum operating speed depends on material type, pressure, temperature and gap value. Temperature range also depends on media.



## NOTCH

Double Delta® is as standard supplied without radial notches, as the thin radial section of the seal gives good response to pressure variations.

For diameters from 2 mm, notches on both sides are optional. These ensure direct pressurizing of the seal under all operating conditions.

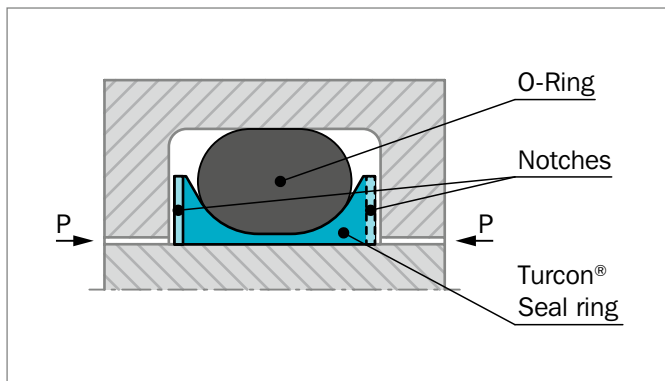


Figure 87: Turcon® Double Delta® with notches

## INSTALLATION INSTRUCTIONS

Double Delta® is installed according to information on page 42.

## RECOMMENDED MATERIALS

The following material combinations have proven effective for hydraulic applications:

### Turcon® Double Delta® in Turcon® M12

All round material for light to medium hydraulic applications with linear or helical movements in mineral oils, flame retardant hydraulic fluids, phosphate ester, bio-oils or fluids having low lubricating properties:

|         |                 |   |
|---------|-----------------|---|
| O-Ring: | NBR 70 Shore A  | N |
|         | FKM 70 Shore A  | V |
|         | EPDM 70 Shore A | E |

Set code: M12N, M12V or M12E

### Turcon® Double Delta® in Turcon® T46

For light to medium applications with linear movements in mineral oils and other media with good lubrication:

|         |                |   |
|---------|----------------|---|
| O-Ring: | NBR 70 Shore A | N |
|         | FKM 70 Shore A | V |

Set code: T46N or T46V

For specific applications, all Turcon® materials are available.

Other material combinations are listed in Table 70.

**Table 70: Turcon® and Zurcon® Materials for Turcon® Double Delta®**

| Material,<br>Applications,<br>Properties                                                                                                                                                                                                                                                                                                                                                                                                                                             | Code | O-Ring Material<br>Shore A | Code | O-Ring<br>Operating Temp.*<br>°C | Mating Surface<br>Material                                     | MPa<br>max.<br>Dyna-<br>mic |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------|------|----------------------------------|----------------------------------------------------------------|-----------------------------|
| <b>Turcon® M12</b><br>First material choice for seals in linear motion<br>Overall improved properties<br>For new constructions and updating<br>For all commonly applied hydraulic fluids including fluids with low lubrication performance<br>Lowest friction and best sliding properties<br>Lowest wear on seals<br>Improved absorption of abrasive contaminants<br>Low wear or abrasion of counter surface<br>BAM tested<br>Mineral fiber and Additives filled<br>Color: Dark gray | M12  | NBR 70                     | N    | -30 to +100                      | Steel                                                          | 35                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | NBR 70<br>Low temp.        | T    | -45 to +80                       | Steel hardened<br>Steel chrome plated (rod)                    |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | FKM 70                     | V    | -10 to +200                      | Steel plated (rod)<br>Cast iron<br>Stainless Steel<br>Titanium |                             |
| <b>Turcon® T05</b><br>For lubricating fluids<br>Also for gas service<br>Very low friction<br>Very good sliding and sealing properties<br>Color: Turquoise                                                                                                                                                                                                                                                                                                                            | T05  | NBR 70                     | N    | -30 to +100                      | Steel                                                          | 20                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | NBR 70<br>Low temp.        | T    | -45 to +80                       | Steel hardened<br>Steel chrome plated (rod)                    |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | FKM 70                     | V    | -10 to +200                      |                                                                |                             |
| <b>Turcon® T24</b><br>For lubricating and non-lubricating hydraulic fluids<br>Good sealing function<br>Moderate extrusion resistance<br>Carbon filled<br>Color: Black                                                                                                                                                                                                                                                                                                                | T24  | NBR 70                     | N    | -30 to +100                      | Steel                                                          | 25                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | NBR 70<br>Low temp.        | T    | -45 to +80                       | Steel hardened<br>Steel chrome plated (rod)                    |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | FKM 70                     | V    | -10 to +200                      | Cast iron                                                      |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | EPDM 70                    | E**  | -45 to +145                      | Stainless steel<br>Aluminum                                    |                             |
| <b>Turcon® T46</b><br>For lubricated hydraulics in linear motion<br>High compressive strength<br>High extrusion resistance<br>Very good sliding and wear properties<br>BAM tested<br>Bronze filled<br>Color: Light to dark brown, which may have variations in shading                                                                                                                                                                                                               | T46  | NBR 70                     | N    | -30 to +100                      | Steel hardened                                                 | 35                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | NBR-70<br>Low temp.        | T    | -45 to +80                       | Steel chrome plated (rod)                                      |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | FKM 70                     | V    | -10 to +200                      | Cast iron                                                      |                             |

Table continues on next page



| Material,<br>Applications,<br>Properties                                                                                                                                                                                                                                                                                                                                                         | Code | O-Ring Material<br>Shore A | Code | O-Ring<br>Operating Temp.*<br>°C | Mating Surface<br>Material                     | MPa<br>max.<br>Dyna-<br>mic |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------|------|----------------------------------|------------------------------------------------|-----------------------------|
| <b>Zurcon® Z80</b><br>For lubricating and non-lubricating fluids<br>Water based fluids, air and gases<br>Dry air pneumatics<br>High abrasion and extrusion resistance<br>For service in abrasive conditions and media<br>with particles<br>Good chemical resistance<br>Limited temperature capability<br>(-60 to +80 °C)<br>UHMWPE (Ultra High Molecular Weight PE)<br>Color: White to off-white | Z80  | NBR 70                     | N    | -30 to (+100)                    | Steel                                          | 30                          |
|                                                                                                                                                                                                                                                                                                                                                                                                  |      | NBR 70<br>Low temp.        | T    | -45 to +80                       | Steel hardened<br>Steel chrome<br>plated (rod) |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                  |      | EPDM 70                    | E**  | -45 to(+145)                     | Stainless steel<br>Aluminum<br>Ceramic coating |                             |

\* The O-Ring Operation Temperature is only valid in mineral hydraulic oil (except EPDM).

\*\* Material not suitable for mineral oils.

BAM: Tested by "Bundesanstalt Materialprüfung, Germany"

 Highlighted materials are recommended.



## ■ Installation Recommendation

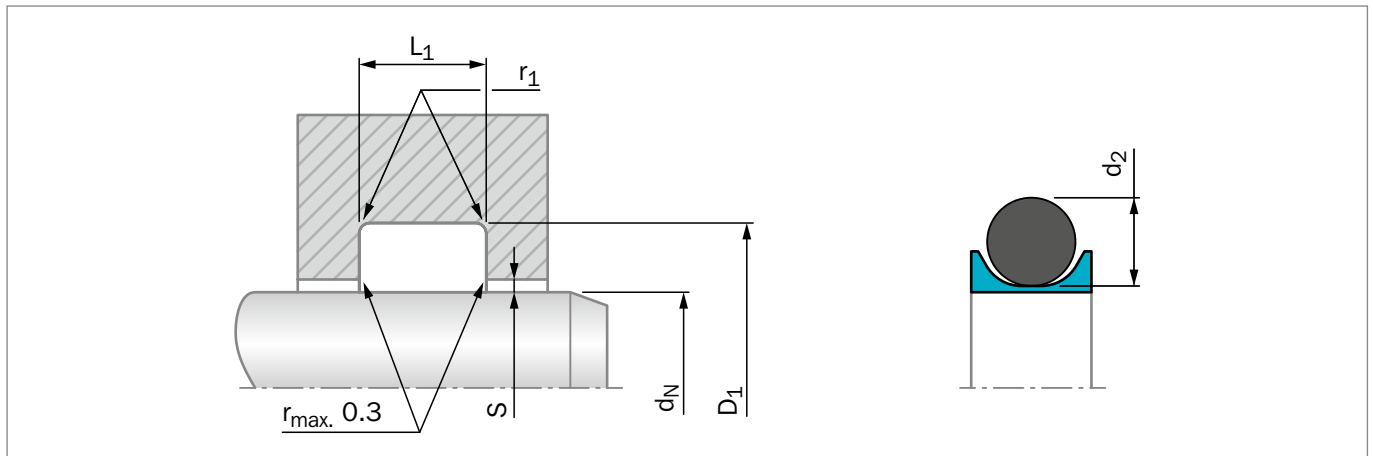


Figure 88: Installation Drawing

**Table 71: Installation Dimensions**

| Series No. | Rod Diameter<br>$d_N$ f8/h9 |                 | Groove Diameter | Groove Width | Radius    | Radial Clearance<br>$S_{max}^*$ |        |        |        | O-Ring Cross Section |
|------------|-----------------------------|-----------------|-----------------|--------------|-----------|---------------------------------|--------|--------|--------|----------------------|
|            | Standard Application        | Available Range | $D_1$ H9        | $L_1$ +0.2   | $r_1$ max | 2 MPa                           | 10 MPa | 20 MPa | 35 MPa | $d_2$                |
| RDD0       | 4 - 9.9                     | 2 - 129.9       | $d_N + 2.9$     | 2.4          | 0.4       | 0.10                            | 0.10   | 0.08   | 0.05   | 1.78                 |
| RDD1       | 10 - 19.9                   | 5 - 249.9       | $d_N + 4.5$     | 3.6          | 0.4       | 0.15                            | 0.15   | 0.10   | 0.07   | 2.62                 |
| RDD2       | 20 - 39.9                   | 5 - 449.9       | $d_N + 6.2$     | 4.8          | 0.6       | 0.25                            | 0.20   | 0.15   | 0.08   | 3.53                 |
| RDD3       | 40 - 119.9                  | 12 - 649.9      | $d_N + 9.4$     | 7.1          | 0.8       | 0.35                            | 0.25   | 0.20   | 0.10   | 5.33                 |
| RDD4       | 120 - 649.9                 | 60 - 999.9      | $d_N + 12.2$    | 9.5          | 0.8       | 0.50                            | 0.30   | 0.25   | 0.15   | 7.00                 |
| RDD5       | 650 - 999.9                 | 110 - 999.9     | $d_N + 15.0$    | 10.0         | 1.0       | 0.60                            | 0.40   | 0.30   | 0.20   | 8.40                 |

\*Slydring® / Wear Rings are not applicable at very small radial clearances please consult the Slydring® section in this catalog.

## ORDERING EXAMPLE

Double Delta® complete with O-Ring, standard application:

|                      |                         |
|----------------------|-------------------------|
| <b>Series:</b>       | RDD3 from Table 71      |
| <b>Rod diameter:</b> | $d_N = 80.0$ mm         |
| <b>TSS Part No.:</b> | RDD300800 from Table 72 |

Select the material from Table 70. The corresponding code numbers are appended to the Part No. Together these form the TSS Article Number.

For seals for other groove widths/dimensions please refer to Table 78.

The TSS Article Number for all intermediate sizes can be determined by following the example:

**TSS Article No.** **RDD3 0 0800 - T05 N**

TSS Series No. \_\_\_\_\_

Type (Standard)\*\* \_\_\_\_\_

Rod Diameter x 10 \_\_\_\_\_

Quality Index (Standard) \_\_\_\_\_

Material Code (Seal Ring) \_\_\_\_\_

Material Code (O-Ring) \_\_\_\_\_

\*\* "N" for seals with notches. Available at diameters from 2.0 mm.



Table 72: Installation Dimensions / TSS Part No.

| Rod Dia.       | Groove Dia.  | Groove Width  | TSS Part No.     | O-Ring Size          | Rod Dia.                                                                                                                                                                                                                                                                                                   | Groove Dia.  | Groove Width  | TSS Part No.     | O-Ring Size          |
|----------------|--------------|---------------|------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|------------------|----------------------|
| $d_N$<br>f8/h9 | $D_1$<br>H9  | $L_1$<br>+0.2 |                  |                      | $d_N$<br>f8/h9                                                                                                                                                                                                                                                                                             | $D_1$<br>H9  | $L_1$<br>+0.2 |                  |                      |
| 3.0            | 5.9          | 2.4           | RDD000030        | 2.90 x 1.78          | 120.0                                                                                                                                                                                                                                                                                                      | 132.2        | 9.5           | RDD401200        | 120.02 x 7.00        |
| <b>4.0</b>     | <b>6.9</b>   | <b>2.4</b>    | <b>RDD000040</b> | <b>3.68 x 1.78</b>   | <b>125.0</b>                                                                                                                                                                                                                                                                                               | <b>137.2</b> | <b>9.5</b>    | <b>RDD401250</b> | <b>126.37 x 7.00</b> |
| <b>5.0</b>     | <b>7.9</b>   | <b>2.4</b>    | <b>RDD000050</b> | <b>4.80 x 1.80</b>   | 130.0                                                                                                                                                                                                                                                                                                      | 142.2        | 9.5           | RDD401300        | 129.54 x 7.00        |
| <b>6.0</b>     | <b>8.9</b>   | <b>2.4</b>    | <b>RDD000060</b> | <b>5.60 x 1.80</b>   | 135.0                                                                                                                                                                                                                                                                                                      | 147.2        | 9.5           | RDD401350        | 135.89 x 7.00        |
| <b>8.0</b>     | <b>10.9</b>  | <b>2.4</b>    | <b>RDD000080</b> | <b>7.65 x 1.78</b>   | <b>140.0</b>                                                                                                                                                                                                                                                                                               | <b>152.2</b> | <b>9.5</b>    | <b>RDD401400</b> | <b>139.07 x 7.00</b> |
| <b>9.9</b>     | <b>12.8</b>  | <b>2.4</b>    | <b>RDD000099</b> | <b>9.50 x 1.80</b>   | 150.0                                                                                                                                                                                                                                                                                                      | 162.2        | 9.5           | RDD401500        | 148.59 x 7.00        |
| <b>10.0</b>    | <b>14.5</b>  | <b>3.6</b>    | <b>RDD100100</b> | <b>10.77 x 2.62</b>  | <b>160.0</b>                                                                                                                                                                                                                                                                                               | <b>172.2</b> | <b>9.5</b>    | <b>RDD401600</b> | <b>164.47 x 7.00</b> |
| <b>12.0</b>    | <b>16.5</b>  | <b>3.6</b>    | <b>RDD100120</b> | <b>12.37 x 2.62</b>  | 170.0                                                                                                                                                                                                                                                                                                      | 182.2        | 9.5           | RDD401700        | 170.82 x 7.00        |
| <b>14.0</b>    | <b>18.5</b>  | <b>3.6</b>    | <b>RDD100140</b> | <b>13.94 x 2.62</b>  | <b>180.0</b>                                                                                                                                                                                                                                                                                               | <b>192.2</b> | <b>9.5</b>    | <b>RDD401800</b> | <b>183.52 x 7.00</b> |
| 15.0           | 19.5         | 3.6           | RDD100150        | 14.50 x 2.65         | 190.0                                                                                                                                                                                                                                                                                                      | 202.2        | 9.5           | RDD401900        | 189.87 x 7.00        |
| <b>16.0</b>    | <b>20.5</b>  | <b>3.6</b>    | <b>RDD100160</b> | <b>15.54 x 2.62</b>  | <b>200.0</b>                                                                                                                                                                                                                                                                                               | <b>212.2</b> | <b>9.5</b>    | <b>RDD402000</b> | <b>202.57 x 7.00</b> |
| <b>18.0</b>    | <b>22.5</b>  | <b>3.6</b>    | <b>RDD100180</b> | <b>18.00 x 2.65</b>  | 210.0                                                                                                                                                                                                                                                                                                      | 222.2        | 9.5           | RDD402100        | 208.90 x 7.00        |
| <b>20.0</b>    | <b>26.2</b>  | <b>4.8</b>    | <b>RDD200200</b> | <b>20.22 x 3.53</b>  | <b>220.0</b>                                                                                                                                                                                                                                                                                               | <b>232.2</b> | <b>9.5</b>    | <b>RDD402200</b> | <b>227.97 x 7.00</b> |
| <b>22.0</b>    | <b>28.2</b>  | <b>4.8</b>    | <b>RDD200220</b> | <b>21.82 x 3.53</b>  | 230.0                                                                                                                                                                                                                                                                                                      | 242.2        | 9.5           | RDD402300        | 240.67 x 7.00        |
| <b>25.0</b>    | <b>31.2</b>  | <b>4.8</b>    | <b>RDD200250</b> | <b>25.00 x 3.53</b>  | 240.0                                                                                                                                                                                                                                                                                                      | 252.2        | 9.5           | RDD402400        | 240.67 x 7.00        |
| <b>28.0</b>    | <b>34.2</b>  | <b>4.8</b>    | <b>RDD200280</b> | <b>28.17 x 3.53</b>  | <b>250.0</b>                                                                                                                                                                                                                                                                                               | <b>262.2</b> | <b>9.5</b>    | <b>RDD402500</b> | <b>253.37 x 7.00</b> |
| 30.0           | 36.2         | 4.8           | RDD200300        | 29.75 x 3.53         | <b>280.0</b>                                                                                                                                                                                                                                                                                               | <b>292.2</b> | <b>9.5</b>    | <b>RDD402800</b> | <b>278.77 x 7.00</b> |
| <b>32.0</b>    | <b>38.2</b>  | <b>4.8</b>    | <b>RDD200320</b> | <b>31.35 x 3.53</b>  | 300.0                                                                                                                                                                                                                                                                                                      | 312.2        | 9.5           | RDD403000        | 304.17 x 7.00        |
| 35.0           | 41.2         | 4.8           | RDD200350        | 34.52 x 3.53         | <b>320.0</b>                                                                                                                                                                                                                                                                                               | <b>332.2</b> | <b>9.5</b>    | <b>RDD403200</b> | <b>329.57 x 7.00</b> |
| <b>36.0</b>    | <b>42.2</b>  | <b>4.8</b>    | <b>RDD200360</b> | <b>36.09 x 3.53</b>  | 350.0                                                                                                                                                                                                                                                                                                      | 362.2        | 9.5           | RDD403500        | 354.97 x 7.00        |
| <b>40.0</b>    | <b>49.4</b>  | <b>7.1</b>    | <b>RDD300400</b> | <b>40.64 x 5.33</b>  | <b>360.0</b>                                                                                                                                                                                                                                                                                               | <b>372.2</b> | <b>9.5</b>    | <b>RDD403600</b> | <b>367.67 x 7.00</b> |
| 42.0           | 51.4         | 7.1           | RDD300420        | 43.82 x 5.33         | 400.0                                                                                                                                                                                                                                                                                                      | 412.2        | 9.5           | RDD404000        | 405.26 x 7.00        |
| <b>45.0</b>    | <b>54.4</b>  | <b>7.1</b>    | <b>RDD300450</b> | <b>43.82 x 5.33</b>  | 500.0                                                                                                                                                                                                                                                                                                      | 512.2        | 9.5           | RDD405000        | 506.86 x 7.00        |
| 48.0           | 57.4         | 7.1           | RDD300480        | 46.99 x 5.33         | 600.0                                                                                                                                                                                                                                                                                                      | 612.2        | 9.5           | RDD406000        | 608.08 x 7.00        |
| <b>50.0</b>    | <b>59.4</b>  | <b>7.1</b>    | <b>RDD300500</b> | <b>50.17 x 5.33</b>  | 650.0                                                                                                                                                                                                                                                                                                      | 665.0        | 10.0          | RDD506500        | 650.00 x 8.40        |
| 52.0           | 61.4         | 7.1           | RDD300520        | 53.34 x 5.33         | 700.0                                                                                                                                                                                                                                                                                                      | 715.0        | 10.0          | RDD507000        | 700.00 x 8.40        |
| 55.0           | 64.4         | 7.1           | RDD300550        | 56.52 x 5.33         | 800.0                                                                                                                                                                                                                                                                                                      | 815.0        | 10.0          | RDD508000        | 800.00 x 8.40        |
| <b>56.0</b>    | <b>65.4</b>  | <b>7.1</b>    | <b>RDD300560</b> | <b>56.52 x 5.33</b>  | 900.0                                                                                                                                                                                                                                                                                                      | 915.0        | 10.0          | RDD509000        | 900.00 x 8.40        |
| 60.0           | 69.4         | 7.1           | RDD300600        | 59.69 x 5.33         | 950.0                                                                                                                                                                                                                                                                                                      | 965.0        | 10.0          | RDD509500        | 950.00 x 8.40        |
| <b>63.0</b>    | <b>72.4</b>  | <b>7.1</b>    | <b>RDD300630</b> | <b>62.87 x 5.33</b>  | <p>The rod diameters in <b>bold</b> type correspond to the recommendations of ISO 3320.</p> <p>TSS Part No. for other dimensions and <b>all</b> intermediate sizes up to 999.9 mm diameter including imperial (inch) sizes can be supplied.</p> <p>Larger sizes up to 2,600 mm available upon request.</p> |              |               |                  |                      |
| 65.0           | 74.4         | 7.1           | RDD300650        | 66.04 x 5.33         |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |
| <b>70.0</b>    | <b>79.4</b>  | <b>7.1</b>    | <b>RDD300700</b> | <b>69.22 x 5.33</b>  |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |
| <b>80.0</b>    | <b>89.4</b>  | <b>7.1</b>    | <b>RDD300800</b> | <b>78.74 x 5.33</b>  |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |
| 85.0           | 94.4         | 7.1           | RDD300850        | 85.09 x 5.33         |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |
| <b>90.0</b>    | <b>99.4</b>  | <b>7.1</b>    | <b>RDD300900</b> | <b>91.44 x 5.33</b>  |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |
| 95.0           | 104.4        | 7.1           | RDD300950        | 94.62 x 5.33         |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |
| <b>100.0</b>   | <b>109.4</b> | <b>7.1</b>    | <b>RDD301000</b> | <b>100.97 x 5.33</b> |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |
| 105.0          | 114.4        | 7.1           | RDD301050        | 104.14 x 5.33        |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |
| <b>110.0</b>   | <b>119.4</b> | <b>7.1</b>    | <b>RDD301100</b> | <b>110.49 x 5.33</b> |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |
| 115.0          | 124.4        | 7.1           | RDD301150        | 116.84 x 5.33        |                                                                                                                                                                                                                                                                                                            |              |               |                  |                      |



## Turcon® Double Delta® for one Back-up Ring groove

Double Delta® is available for designs where grooves for O-Ring with one Back-up Ring are used according to Table 73.

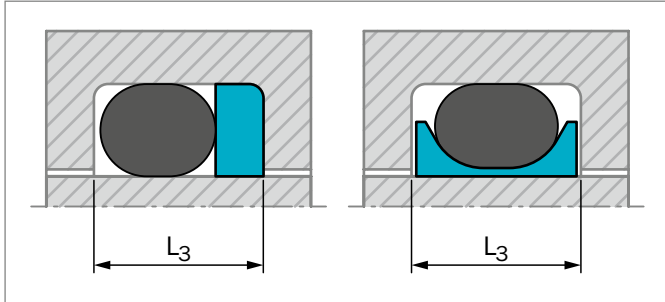


Figure 89: Groove width

**Table 73: Seals for one Back-up Ring groove**

| Series No. | Groove Width<br>$L_3$ | Execution Mark<br>5th digit |                | O-Ring<br>Cross<br>Section<br>$d_2$ |
|------------|-----------------------|-----------------------------|----------------|-------------------------------------|
|            |                       | Without<br>Notch            | With<br>Notch* |                                     |
| RDA0       | 3.80                  | 0                           | N              | 1.78                                |
| RDA1       | 4.65                  | 0                           | N              | 2.62                                |
| RDA2       | 5.70                  | 0                           | N              | 3.53                                |
| RDA3       | 8.50                  | 0                           | N              | 5.33                                |
| RDA4       | 11.20                 | 0                           | N              | 7.00                                |
| RDA5       | 12.50                 | 0                           | N              | 8.40                                |

\* Available for diameters from 8 mm

### ORDERING EXAMPLE

Double Delta® complete with O-Ring, standard application:

|                         |                 |
|-------------------------|-----------------|
| <b>Rod diameter:</b>    | $d_N = 80.0$ mm |
| <b>Groove diameter:</b> | 89.4 mm         |
| <b>Groove width:</b>    | 8.5 mm          |
| <b>TSS Article No.:</b> | RDA300800-M12N  |

**TSS Article No.**    **RDA3**    **0**    **0800**    **-**    **M12**    **N**

TSS Series No.\*\* \_\_\_\_\_

Type (Standard)\*\*\* \_\_\_\_\_

Rod Diameter x 10 \_\_\_\_\_

Quality Index (Standard) \_\_\_\_\_

Material Code (Seal Ring)\*\*\*\* \_\_\_\_\_

Material Code (O-Ring)\*\*\*\*\* \_\_\_\_\_

\*\* From Table 73 or Table 74

\*\*\* N for seals with notches, available from dia. 8 mm

\*\*\*\* From Table 70

\*\*\*\*\* From Table 70



## ■ Turcon® Double Delta® for Metric O-Rings

Double Delta® is available for installation in grooves for metric O-Rings as listed in Table 74.

**Table 74: Rod Seals for Metric O-Ring Grooves**

| O-Ring<br>Cross Section | Groove<br>Diameter | Groove<br>Width | Series<br>No. | Execution Mark<br>5th digit |        | Available Range |
|-------------------------|--------------------|-----------------|---------------|-----------------------------|--------|-----------------|
|                         |                    |                 |               | Standard                    | Notch* |                 |
| $d_2$                   | $D_1$<br>H9        | $L_1$<br>+0.2   |               |                             |        |                 |
| 2.00                    | $d_N + 3.3$        | 2.7             | RD2A          | 0                           | N      | 3.0 - 100.0     |
| 2.40                    | $d_N + 4.1$        | 3.2             | RD2E          | 0                           | N      | 5.0 - 160.0     |
| 2.50                    | $d_N + 4.3$        | 3.3             | RD2F          | 0                           | N      | 5.0 - 160.0     |
| 3.00                    | $d_N + 5.2$        | 4.0             | RD3A          | 0                           | N      | 6.0 - 200.0     |
| 4.00                    | $d_N + 7.0$        | 5.2             | RD4A          | 0                           | N      | 8.0 - 300.0     |
| 5.00                    | $d_N + 8.8$        | 6.6             | RD5A          | 0                           | N      | 12.0 - 400.0    |
| 5.70                    | $d_N + 10.0$       | 7.2             | RD5H          | 0                           | N      | 12.0 - 649.9    |

\* Available for diameters from 8 mm