

### Industries Served

Agriculture  
Chemical  
Food  
Marine  
Petroleum  
Pharmaceutical

### Applications

- Suitable for general application and for slightly corrosive chemical products.
- Water containing oil and slightly diluted acids and all applications that call for an elastomer bellows seal for secondary containment.

### Operating conditions

- **Temperature :**  
-40°C to +180°C  
depending on material choice.
- **Pressure :**  
Up to 26 bar (NBP).  
Up to 30 bar (NBR).
- **Speed :**  
Up to 15 m/s.
- **Diameter :**  
Ø 10 to 70mm  
Conform to DIN 24960, NFE 29991,  
ISO 3069.
- **Seats**  
Interchangeable compatible seats :  
IN Type seats.

### Benefits

#### ▪ Positive drive

The bellows is compressed onto the shaft that prevents movement, and any premature wear of the bellows.

The NBP & NBR types have their own axial abutment immobilised by a screw, including a very strong mechanical positive drive system that avoids any torsional stress on the bellows.

#### ▪ Construction

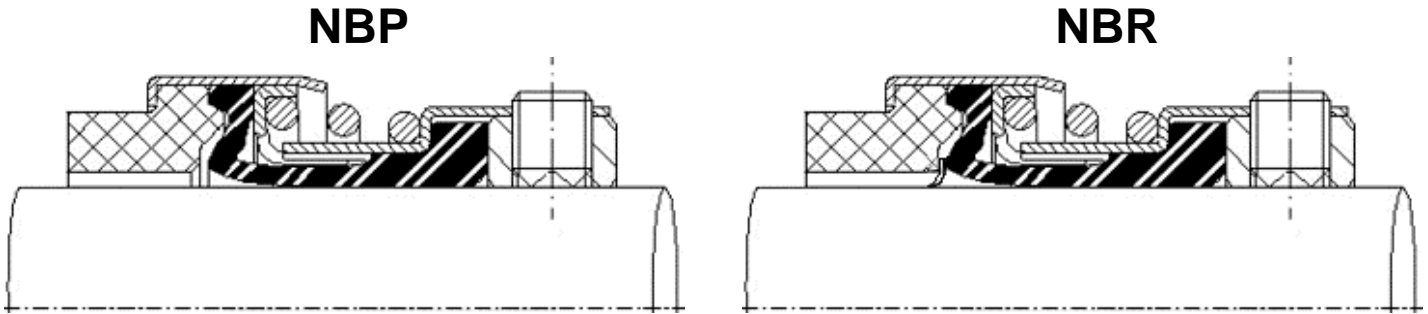
One-piece construction for rapid installation.

NBR type incorporates a bellows ring that allows operation at elevated pressure and temperature.

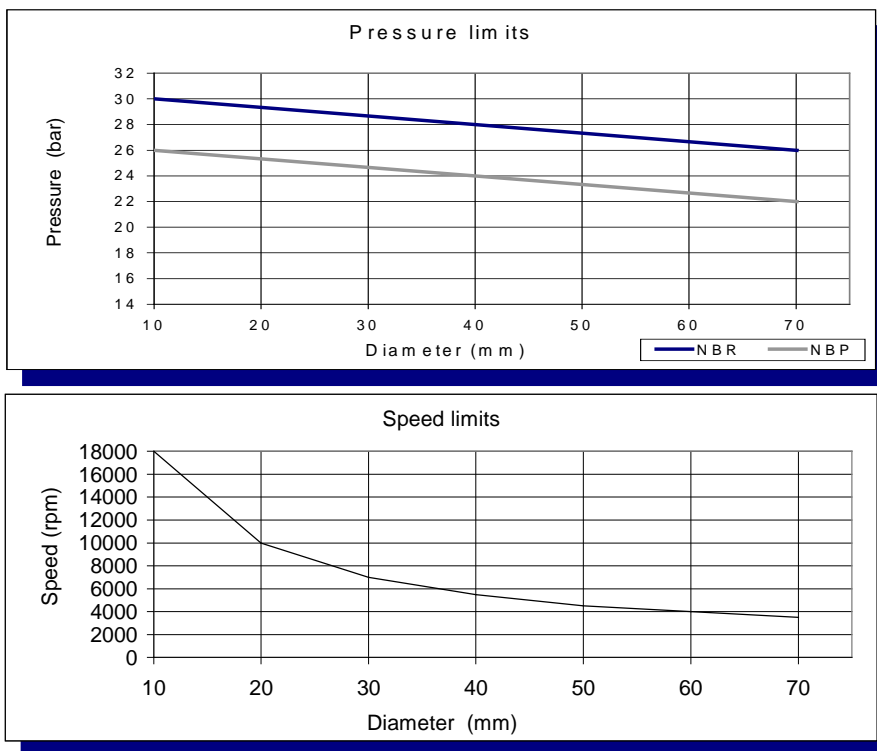
#### ▪ Reliability

Self-aligning by design :  
the flexibility of the bellows allows the seal to compensate for bearing play, vibrations or slight geometry defects of the system.

A large diameter coil spring avoids clogging.



### Pressure and speed limits



### Multiplier factors for pressure/speed curves

	Selection consideration	Multiplier factor
Sealed fluid	Petrol, kerosene	x 1
	Water, Aqueous solution	x 1
	Lighter hydrocarbons	x 0.75
Face and seat materials	Carbon on silicon carbide	x 1
	Carbon on Aluminium oxide	x 0.8
	Silicon carbide on silicon carbide	x 0.6
Sealed fluid temperature	T < 80°C	x 1
	80°C < T < 120°C	x 0.8
	120°C < T < 180°C	x 0.4
Speed	< 3000 R.P.M.	x 1
	> 3000 R.P.M.	x 0.85

To know the maximum operating conditions, look at the limit curve in the abacus and multiply by the factor corresponding to the application.

### Typical arrangement for internal fitting

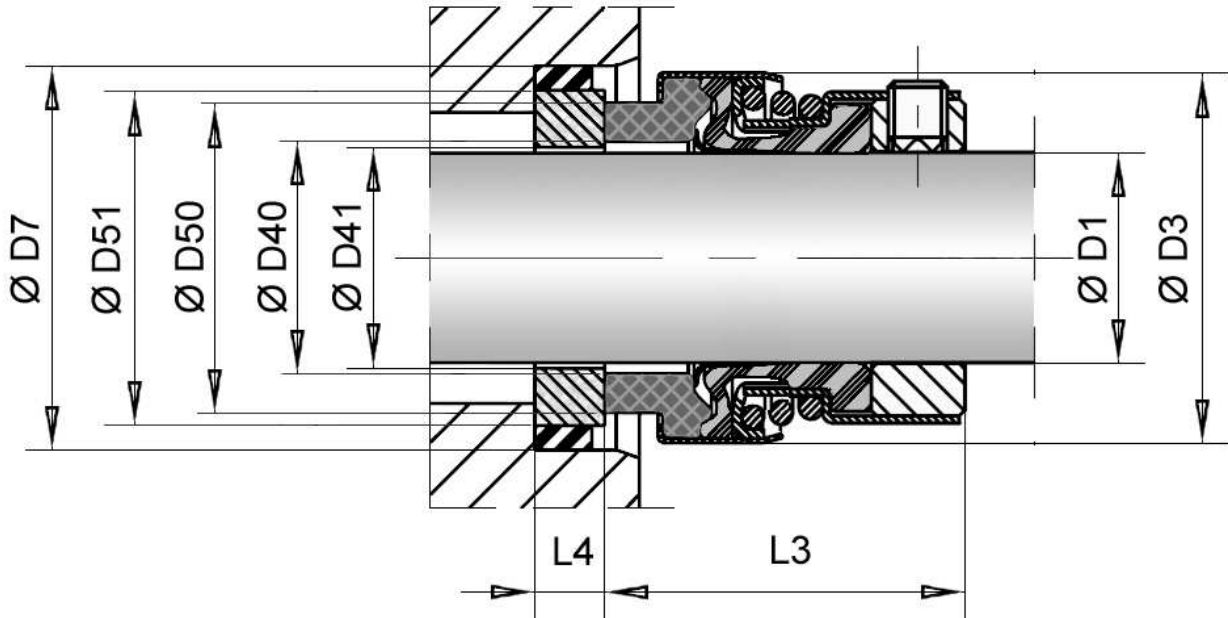
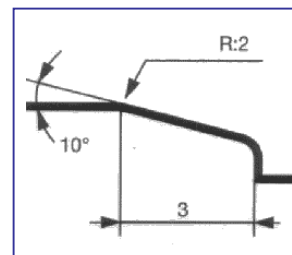
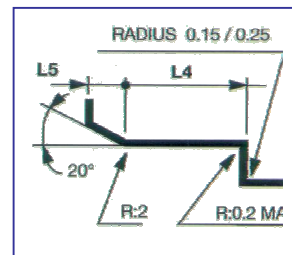


Table 1. Dimensions for NAP or NAR type seals and IN type seats (mm)

D1 shaft	Dim. Code	Seal head				Seat			
		D3	L3 ±0.5	D40	D50	D7 (H8)	L4	D41	D51
10	0100	20	26	12	16.2	21	5	12.1	17
12	<b>0120</b>	<b>22</b>	<b>28</b>	<b>13.8</b>	<b>18.2</b>	<b>23</b>	<b>6</b>	<b>13.7</b>	<b>19.3</b>
14	0140	24	28	15.8	20.2	25	6	15.7	21.3
15	<b>0150</b>	<b>26</b>	<b>28</b>	<b>17.8</b>	<b>22.2</b>	<b>27</b>	<b>6</b>	<b>17.7</b>	<b>23.3</b>
16	0160	26	28	17.8	22.2	27	6	17.7	23.3
17	<b>0170</b>	<b>32</b>	<b>31</b>	<b>19.8</b>	<b>26.6</b>	<b>33</b>	<b>6</b>	<b>19.7</b>	<b>28.1</b>
18	0180	32	31	19.8	26.6	33	6	19.7	28.1
20	<b>0200</b>	<b>34</b>	<b>31</b>	<b>21.8</b>	<b>28.8</b>	<b>35</b>	<b>6</b>	<b>21.7</b>	<b>30.1</b>
22	0220	36	31	24.3	31	37	6	23.9	32
24	<b>0240</b>	<b>38</b>	<b>33</b>	<b>25.8</b>	<b>33</b>	<b>39</b>	<b>6</b>	<b>25.7</b>	<b>34.2</b>
25	0250	39	34	26.8	34	40	6	26.7	35.3
28	<b>0280</b>	<b>42</b>	<b>34</b>	<b>29.8</b>	<b>37</b>	<b>43</b>	<b>6</b>	<b>29.7</b>	<b>38.2</b>
30	0300	44	34	32.3	39	45	7	32.2	40.1
32	<b>0320</b>	<b>46</b>	<b>37</b>	<b>34.3</b>	<b>41</b>	<b>48</b>	<b>7</b>	<b>33.9</b>	<b>43.1</b>
35	0350	49	39	37.3	44	50	8	36.9	45.1
38	<b>0380</b>	<b>54</b>	<b>43</b>	<b>40.3</b>	<b>48.1</b>	<b>56</b>	<b>8</b>	<b>39.9</b>	<b>51.1</b>
40	0400	56	43	42.3	50.1	58	8	41.9	53.2
45	<b>0410</b>	<b>61</b>	<b>45</b>	<b>47.3</b>	<b>55.1</b>	<b>63</b>	<b>8</b>	<b>46.9</b>	<b>58.1</b>
48	0420	64	46	50.5	58.5	66	10	49.9	61.2
50	<b>0420</b>	<b>66</b>	<b>47</b>	<b>52.2</b>	<b>60.2</b>	<b>70</b>	<b>10</b>	<b>51.9</b>	<b>65.1</b>
55	0430	71	48	57.2	65.2	75	10	56.9	70.2
60	<b>0440</b>	<b>80</b>	<b>54</b>	<b>62.2</b>	<b>72.2</b>	<b>80</b>	<b>12</b>	<b>61.9</b>	<b>73.3</b>
65	0450	85	54	67.2	77.4	85	12	66.9	78.3
70	<b>0460</b>	<b>90</b>	<b>61</b>	<b>72.2</b>	<b>82.4</b>	<b>92</b>	<b>12</b>	<b>71.9</b>	<b>85.3</b>



Detail of end of shaft. To facilitate the fitting of the seal to the shaft, the assembly instructions must be observed.



Detail of housing for IN type seat.

**Table 2. Material Identification codes**

COMPONENTS	MATERIAL			
	Name	Material	Cyclam Code	DIN Code
<b>Face</b>	resin carbon		26	B5
	Carbographite		52 or 54	(B)
	Resin impregnated carbon		51*	B
	Silicon carbide		67	Q1
	Tungsten carbide (option)		68	U2
	Metal impregnated carbon (option)		53	A
	Glass filled PTFE (option)		23	Y1
<b>Bellows &amp; Seat ring</b>	Nitrile		01	P
	Ethylene propylene		10	E
	Viton (heat resistant)		14	V
	Viton (acid resistant) (option)		15	V1
<b>Metal components and spring</b>	Molybdenum stainless steel		31	G
<b>Seat (counterface)</b>	Molybdenum stainless steel		31	G
	Aluminium oxide 99% (option)		41(ou42)	V
	Porous Silicon Carbide		64	Q1
	Solid Silicon Carbide (option)		67	Q1
	Tungsten carbide (option)		68	U2

\* For machined carbon, this code will become 50.

