

# **MFLWT**





### **Features**

- For unstepped shafts
- Single Seal
- Balanced
- Independent of direction of rotation
- Metal bellows rotating

## **Advantages**

- For extreme high temperature ranges
- No dynamically loaded O-Ring
- Self cleaning effect
- Short installation length possible
- Pumping screw for highly viscous media available (dependent on direction of rotation).

# **Operating range**

Shaft diameter:

d1 = 16 ... 150 mm (0.63" ... 6")

Externally pressurized:

p1 = ... 25 bar (363 PSI)

Internally pressurized:

p1 <120 °C (248 °F) 10 bar (145 PSI)

p1 <220 °C (428 °F) 5 bar (73 PSI)

p1 <400 °C (752 °F) 3 bar (44 PSI)

Stationary seat lock necessary

Temperature:

t = -40 °C ... +400 °C

(-148 °F ... +752 °F)

Sliding velocity: vg = 20 m/s (66 ft/s)

## **Materials**

Seal face: Carbon graphite antimony impregnated (A), Silicon carbide (Q12)

Seat: Silicon carbide (Q1)

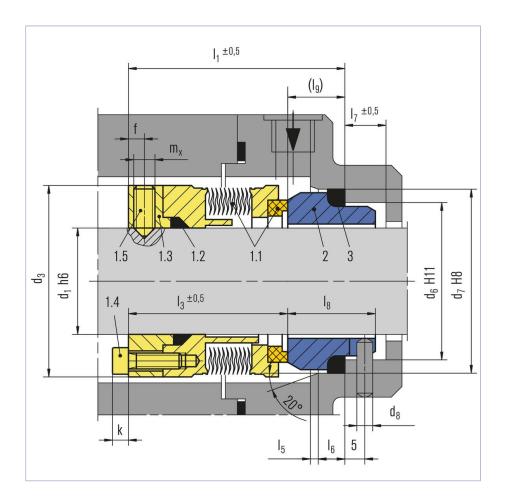
Bellows: Inconel® 718 hardened (M6),

Hastelloy® C-276 (M5)

Metal parts: CrNiMo steel (G), Duplex (G1), Carpenter® 42 (T4), Hastelloy® C-4 (M)

## **Recommended applications**

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Pulp and paper industry
- Hot media
- Highly viscous media
- Pumps
- Special rotating equipment



Item	Part no. to DIN 24250	Description
1.1	472/481	Seal face with bellows unit
1.2	410	Sealing ring
1.3	474	Drive collar
1.4		Socket head screw
1.5	904	Set screw
2	475	Seat
3	412	Sealing ring

## **Product variants**

#### MFLWT90

Shaft diameter:

d1 = 16 ... 150 mm (0.64" ... 6")

Internally pressurized:

p1 = ... 16 bar (232 PSI)

Externally pressurized:

p1 = 10 bar (145 PSI)

Temperature:

t = -20 °C ... +400 °C

(-4 °F ... +752 °F),

stationary seat lock necessary.

Sliding velocity: vg = 20 m/s (66 ft/s)

## **Dimensions**

16     38     29.0     35.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       18     40     31.0     37.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       20     42     34.0     40.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       22     44     37.0     43.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       24     46     37.0     43.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       25     47     39.0     45.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       28     50     42.0     48.0     3     58.0     46.5     2.0     6	$d_1$	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	I <sub>1</sub>	l <sub>3</sub>	l <sub>5</sub>	16	17	l <sub>8</sub>	l <sub>9</sub>	f	k	m <sub>X</sub>
20     42     34.0     40.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       22     44     37.0     43.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       24     46     37.0     43.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       25     47     39.0     45.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       28     50     42.0     48.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       30     52     44.0     50.0     3     58.0     46.5     2.0     6     9     22.0     14.0     5     5       33     55     49.0     56.0     4     60.5     46.5     2.0     6	16	38	29.0	35.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
22   44   37.0   43.0   3   58.0   46.5   2.0   5   9   19.5   11.5   5   5     24   46   37.0   43.0   3   58.0   46.5   2.0   5   9   19.5   11.5   5   5     25   47   39.0   45.0   3   58.0   46.5   2.0   5   9   19.5   11.5   5   5     28   50   42.0   48.0   3   58.0   46.5   2.0   5   9   19.5   11.5   5   5     30   52   44.0   50.0   3   58.0   46.5   2.0   6   9   22.0   14.0   5   5     32   54   49.0   56.0   4   60.5   46.5   2.0   6   9   22.0   14.0   5   5     33   55   49.0   56.0   4   60.5   46.5   2.0   6   9   22.0   14.0   5   5     38   60   54.0   61.0 </td <td>18</td> <td>40</td> <td>31.0</td> <td>37.0</td> <td>3</td> <td>58.0</td> <td>46.5</td> <td>2.0</td> <td>5</td> <td>9</td> <td>19.5</td> <td>11.5</td> <td>5</td> <td>5</td> <td>M5</td>	18	40	31.0	37.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
24     46     37.0     43.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       25     47     39.0     45.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       28     50     42.0     48.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       30     52     44.0     50.0     3     58.0     46.5     2.0     6     9     22.0     14.0     5     5       32     54     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       33     55     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       35     57     51.0     58.0     4     60.5     46.5     2.0     6	20	42	34.0	40.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
25     47     39.0     45.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       28     50     42.0     48.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       30     52     44.0     50.0     3     58.0     46.5     2.0     6     9     22.0     14.0     5     5       32     54     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       33     55     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       38     60     54.0     61.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       40     66     56.0     63.0     4     61.5     47.5     2.0     6	22	44	37.0	43.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
28     50     42.0     48.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       30     52     44.0     50.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       32     54     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       33     55     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       38     60     54.0     61.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       40     66     56.0     63.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       43     69     59.0     66.0     4     61.5     47.5     2.0     6	24	46	37.0	43.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
30     52     44.0     50.0     3     58.0     46.5     2.0     5     9     19.5     11.5     5     5       32     54     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       33     55     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       38     60     54.0     61.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       40     66     56.0     63.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       43     69     59.0     66.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       45     71     62.0     70.0     4     62.5     47.5     2.5     6	25	47	39.0	45.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
32     54     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       33     55     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       35     57     51.0     58.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       38     60     54.0     61.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       40     66     56.0     63.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       43     69     59.0     66.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       45     71     62.0     70.0     4     62.5     47.5     2.5     6	28	50	42.0	48.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M6
33     55     49.0     56.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       35     57     51.0     58.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       38     60     54.0     61.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       40     66     56.0     63.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       43     69     59.0     66.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       43     69     59.0     66.0     4     61.5     47.5     2.5     6     9     23.0     15.0     5     6       48     74     65.0     73.0     4     62.5     47.5     2.5     6	30	52	44.0	50.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M6
35     57     51.0     58.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       38     60     54.0     61.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       40     66     56.0     63.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       43     69     59.0     66.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       45     71     62.0     70.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       48     74     65.0     73.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       50     76     67.0     75.0     4     62.5     47.5     2.5     6	32	54	49.0	56.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
38     60     54.0     61.0     4     60.5     46.5     2.0     6     9     22.0     14.0     5     5       40     66     56.0     63.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       43     69     59.0     66.0     4     61.5     47.5     2.0     6     9     22.0     14.0     5     6       45     71     62.0     70.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       48     74     65.0     73.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       50     76     67.0     75.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       53     79     70.0     78.0     4     62.5     47.5     2.5     6	33	55	49.0	56.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
40   66   56.0   63.0   4   61.5   47.5   2.0   6   9   22.0   14.0   5   6     43   69   59.0   66.0   4   61.5   47.5   2.0   6   9   22.0   14.0   5   6     45   71   62.0   70.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     48   74   65.0   73.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     50   76   67.0   75.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     53   79   70.0   78.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     55   81   72.0   80.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     58   85   75.0   83.0 </td <td>35</td> <td>57</td> <td>51.0</td> <td>58.0</td> <td>4</td> <td>60.5</td> <td>46.5</td> <td>2.0</td> <td>6</td> <td>9</td> <td>22.0</td> <td>14.0</td> <td>5</td> <td>5</td> <td>M6</td>	35	57	51.0	58.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
43   69   59.0   66.0   4   61.5   47.5   2.0   6   9   22.0   14.0   5   6     45   71   62.0   70.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     48   74   65.0   73.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     50   76   67.0   75.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     53   79   70.0   78.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     55   81   72.0   80.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     58   85   75.0   83.0   4   68.0   53.0   2.5   6   9   23.0   15.0   5   6     60   87   77.0   85.0 </td <td>38</td> <td>60</td> <td>54.0</td> <td>61.0</td> <td>4</td> <td>60.5</td> <td>46.5</td> <td>2.0</td> <td>6</td> <td>9</td> <td>22.0</td> <td>14.0</td> <td>5</td> <td>5</td> <td>M6</td>	38	60	54.0	61.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
45     71     62.0     70.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       48     74     65.0     73.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       50     76     67.0     75.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       53     79     70.0     78.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       55     81     72.0     80.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       58     85     75.0     83.0     4     68.0     53.0     2.5     6     9     23.0     15.0     5     6       60     87     77.0     85.0     4     68.0     53.0     2.5     7	40	66	56.0	63.0	4	61.5	47.5	2.0	6	9	22.0	14.0	5	6	M6
48   74   65.0   73.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     50   76   67.0   75.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     53   79   70.0   78.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     55   81   72.0   80.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     58   85   75.0   83.0   4   68.0   53.0   2.5   6   9   23.0   15.0   5   6     60   87   77.0   85.0   4   68.0   53.0   2.5   6   9   23.0   15.0   5   6     63   90   81.0   90.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     65   92   83.0   97.0 </td <td>43</td> <td>69</td> <td>59.0</td> <td>66.0</td> <td>4</td> <td>61.5</td> <td>47.5</td> <td>2.0</td> <td>6</td> <td>9</td> <td>22.0</td> <td>14.0</td> <td>5</td> <td>6</td> <td>M6</td>	43	69	59.0	66.0	4	61.5	47.5	2.0	6	9	22.0	14.0	5	6	M6
50     76     67.0     75.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       53     79     70.0     78.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       55     81     72.0     80.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       58     85     75.0     83.0     4     68.0     53.0     2.5     6     9     23.0     15.0     5     6       60     87     77.0     85.0     4     68.0     53.0     2.5     6     9     23.0     15.0     5     6       63     90     81.0     90.0     4     71.0     53.0     2.5     7     9     26.0     18.0     6     6       65     92     83.0     92.0     4     71.0     53.0     2.5     7	45	71	62.0	70.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
53     79     70.0     78.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       55     81     72.0     80.0     4     62.5     47.5     2.5     6     9     23.0     15.0     5     6       58     85     75.0     83.0     4     68.0     53.0     2.5     6     9     23.0     15.0     5     6       60     87     77.0     85.0     4     68.0     53.0     2.5     6     9     23.0     15.0     6     6       63     90     81.0     90.0     4     71.0     53.0     2.5     7     9     26.0     18.0     6     6       65     92     83.0     92.0     4     71.0     53.0     2.5     7     9     26.0     18.0     6     6       68     95     88.0     97.0     4     71.0     53.0     2.5     7	48	74	65.0	73.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
55   81   72.0   80.0   4   62.5   47.5   2.5   6   9   23.0   15.0   5   6     58   85   75.0   83.0   4   68.0   53.0   2.5   6   9   23.0   15.0   5   6     60   87   77.0   85.0   4   68.0   53.0   2.5   6   9   23.0   15.0   6   6     63   90   81.0   90.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     65   92   83.0   92.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     68   95   88.0   97.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     70   97   88.0   97.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     75   102   95.0   105.0	50	76	67.0	75.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
58   85   75.0   83.0   4   68.0   53.0   2.5   6   9   23.0   15.0   5   6     60   87   77.0   85.0   4   68.0   53.0   2.5   6   9   23.0   15.0   6   6     63   90   81.0   90.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     65   92   83.0   92.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     68   95   88.0   97.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     70   97   88.0   97.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     75   102   95.0   105.0   4   71.0   52.8   3.0   7   9   26.2   18.2   6   6	53	79	70.0	78.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
60   87   77.0   85.0   4   68.0   53.0   2.5   6   9   23.0   15.0   6   6     63   90   81.0   90.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     65   92   83.0   92.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     68   95   88.0   97.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     70   97   88.0   97.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     75   102   95.0   105.0   4   71.0   52.8   3.0   7   9   26.2   18.2   6   6	55	81	72.0	80.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
63   90   81.0   90.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     65   92   83.0   92.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     68   95   88.0   97.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     70   97   88.0   97.0   4   71.0   53.0   2.5   7   9   26.0   18.0   6   6     75   102   95.0   105.0   4   71.0   52.8   3.0   7   9   26.2   18.2   6   6	58	85	75.0	83.0	4	68.0	53.0	2.5	6	9	23.0	15.0	5	6	M6
65 92 83.0 92.0 4 71.0 53.0 2.5 7 9 26.0 18.0 6 6   68 95 88.0 97.0 4 71.0 53.0 2.5 7 9 26.0 18.0 6 6   70 97 88.0 97.0 4 71.0 53.0 2.5 7 9 26.0 18.0 6 6   75 102 95.0 105.0 4 71.0 52.8 3.0 7 9 26.2 18.2 6 6	60	87	77.0	85.0	4	68.0	53.0	2.5	6	9	23.0	15.0	6	6	M8
68 95 88.0 97.0 4 71.0 53.0 2.5 7 9 26.0 18.0 6 6   70 97 88.0 97.0 4 71.0 53.0 2.5 7 9 26.0 18.0 6 6   75 102 95.0 105.0 4 71.0 52.8 3.0 7 9 26.2 18.2 6 6	63	90	81.0	90.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
70 97 88.0 97.0 4 71.0 53.0 2.5 7 9 26.0 18.0 6 6   75 102 95.0 105.0 4 71.0 52.8 3.0 7 9 26.2 18.2 6 6	65	92	83.0	92.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
75 102 95.0 105.0 4 71.0 52.8 3.0 7 9 26.2 18.2 6 6	68	95	88.0	97.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
	70	97	88.0	97.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
	75	102	95.0	105.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
80 107 100.0 110.0 4 71.0 52.8 3.0 7 9 26.2 18.2 6 6	80	107	100.0	110.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
85 112 105.0 115.0 4 71.0 52.8 3.0 7 9 26.2 18.2 6 6	85	112	105.0	115.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
90 117 110.0 120.0 4 71.0 53.8 3.0 7 9 25.2 17.2 6 6	90	117	110.0	120.0	4	71.0	53.8	3.0	7	9	25.2	17.2	6	6	M8
95 122 115.0 125.0 4 71.0 53.8 3.0 7 9 25.2 17.2 6 6	95	122	115.0	125.0	4	71.0	53.8	3.0	7	9	25.2	17.2	6	6	M8
100 127 122.2 134.3 5 74.0 54.0 3.0 9 11 30.0 20.0 6 6	100	127	122.2	134.3	5	74.0	54.0	3.0	9	11	30.0	20.0	6	6	M8

Dimensions in millimeter