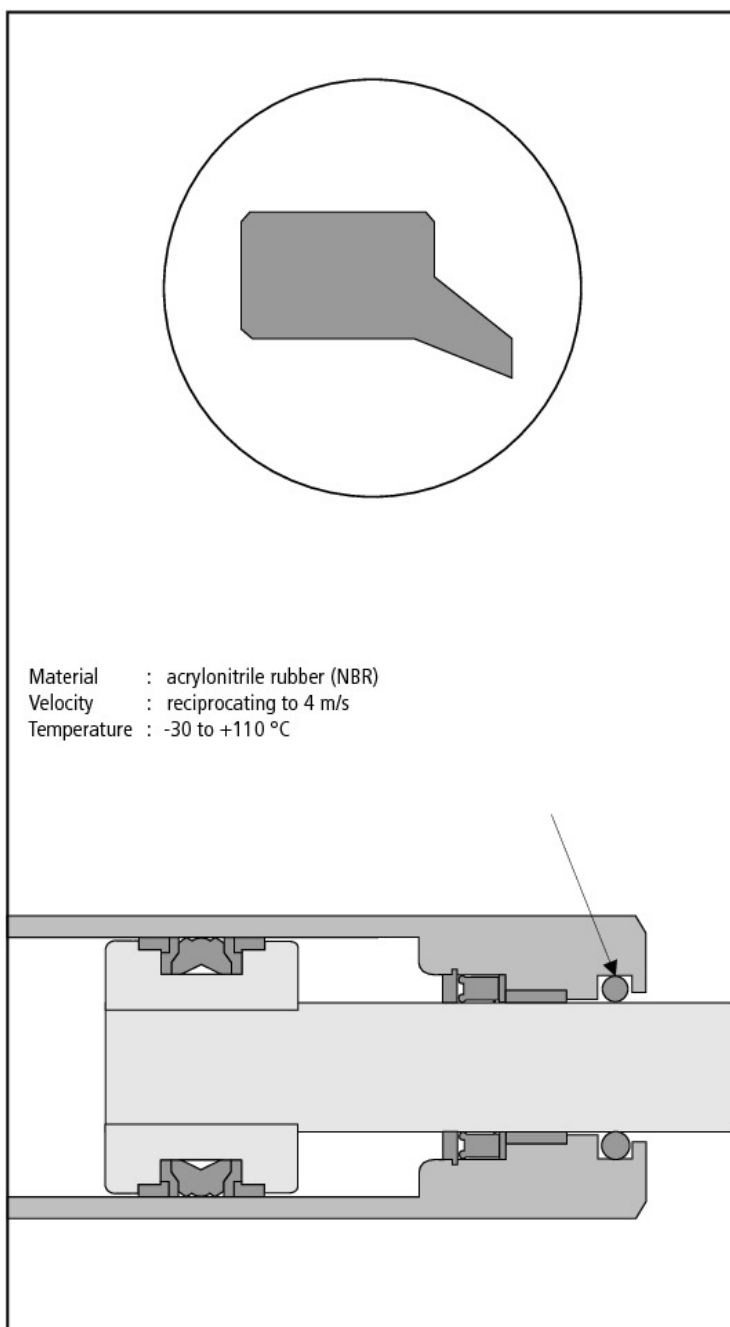
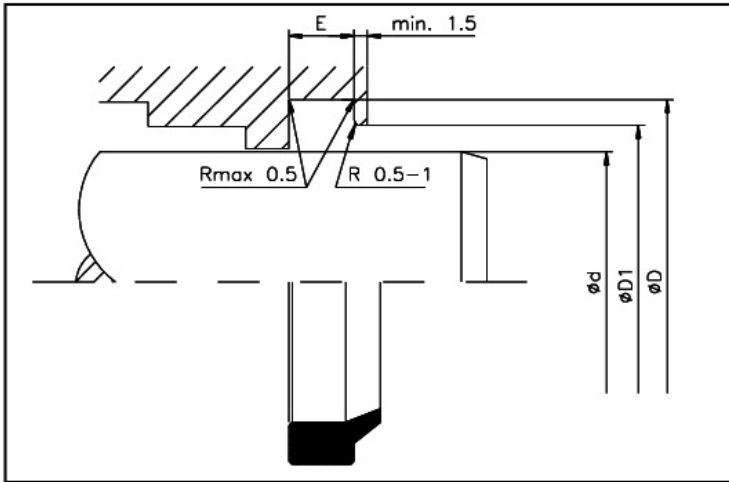
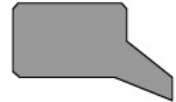


Single acting wiper HA 310 reliably blocks entry of dirt-particles and water into the hydraulic cylinder. Usable in hydraulics and also pneumatics.

**Special Features:**

- Very good wiper action
- Anti-wear NBR material
- Form closing, secure fit
- Easy snap assembly in groove
- Also available in FPM for special application.





Limitations on Use	
Velocity	: reciprocating to 4 m/s
Temperature	: -30 bis +110 °C

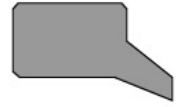
Media for Use	
Mineral oil based hydraulic oil, flame resistant pressure media and emulsions (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils).	

Surface Finish			
Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

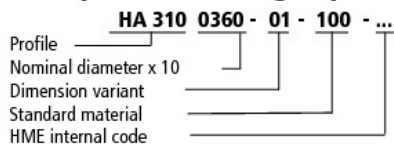
d f8/h9	D H11	E +0,2	D1 +0,2	Part N°.
<b>12,00</b>	<b>18,60</b>	<b>3,80</b>	<b>15,00</b>	<b>HA310 0120-01-100</b>
13,00	19,60	3,80	16,00	HA310 0130-01-100
15,00	21,60	3,80	18,00	HA310 0150-01-100
<b>16,00</b>	<b>22,60</b>	<b>3,50</b>	<b>19,00</b>	<b>HA310 0160-01-100</b>
<b>16,00</b>	<b>24,00</b>	<b>5,00</b>	<b>19,00</b>	<b>HA310 0160-02-100</b>
17,00	23,60	3,80	20,00	HA310 0170-01-100
<b>18,00</b>	<b>24,60</b>	<b>3,80</b>	<b>21,00</b>	<b>HA310 0180-01-100</b>
19,00	28,60	5,30	22,00	HA310 0190-01-100
<b>20,00</b>	<b>28,60</b>	<b>5,30</b>	<b>23,00</b>	<b>HA310 0200-01-100</b>
<b>22,00</b>	<b>30,60</b>	<b>5,30</b>	<b>25,00</b>	<b>HA310 0220-01-100</b>
24,00	32,60	5,30	27,00	HA310 0240-01-100
<b>25,00</b>	<b>33,60</b>	<b>5,30</b>	<b>28,00</b>	<b>HA310 0250-01-100</b>
26,00	34,60	5,30	29,00	HA310 0260-01-100
<b>28,00</b>	<b>36,60</b>	<b>5,30</b>	<b>31,00</b>	<b>HA310 0280-01-100</b>
30,00	38,60	5,30	33,00	HA310 0300-01-100
<b>32,00</b>	<b>40,60</b>	<b>5,30</b>	<b>35,00</b>	<b>HA310 0320-01-100</b>
35,00	43,60	5,30	38,00	HA310 0350-01-100
<b>36,00</b>	<b>44,60</b>	<b>5,30</b>	<b>39,00</b>	<b>HA310 0360-01-100</b>
38,00	46,60	5,30	41,00	HA310 0380-01-100
<b>40,00</b>	<b>48,60</b>	<b>5,30</b>	<b>43,00</b>	<b>HA310 0400-01-100</b>
42,00	50,60	5,30	45,00	HA310 0420-01-100
<b>45,00</b>	<b>53,60</b>	<b>5,30</b>	<b>48,00</b>	<b>HA310 0450-01-100</b>
<b>45,00</b>	<b>55,60</b>	<b>5,30</b>	<b>48,00</b>	<b>HA310 0450-02-100</b>
46,00	54,60	5,30	49,00	HA310 0460-01-100
48,00	56,60	5,30	51,00	HA310 0480-01-100
<b>50,00</b>	<b>58,60</b>	<b>5,30</b>	<b>53,00</b>	<b>HA310 0500-01-100</b>
<b>50,00</b>	<b>60,60</b>	<b>5,30</b>	<b>53,00</b>	<b>HA310 0500-02-100</b>
53,00	61,60	5,30	56,00	HA310 0530-01-100
55,00	63,60	5,30	58,00	HA310 0550-01-100
55,00	65,60	5,30	58,00	HA310 0550-02-100
<b>56,00</b>	<b>66,60</b>	<b>5,30</b>	<b>59,00</b>	<b>HA310 0560-01-100</b>
60,00	68,60	5,30	63,00	HA310 0600-01-100
60,00	70,60	5,30	63,00	HA310 0600-02-100
<b>63,00</b>	<b>71,60</b>	<b>5,30</b>	<b>66,00</b>	<b>HA310 0630-01-100</b>
<b>63,00</b>	<b>73,60</b>	<b>5,30</b>	<b>66,00</b>	<b>HA310 0630-02-100</b>
65,00	73,60	5,30	68,00	HA310 0650-01-100

d f8/h9	D H11	E +0,2	D1 +0,2	Part N°.
65,00	75,60	5,30	68,00	HA310 0650-02-100
<b>70,00</b>	<b>78,60</b>	<b>5,30</b>	<b>73,00</b>	<b>HA310 0700-01-100</b>
<b>70,00</b>	<b>80,60</b>	<b>5,30</b>	<b>73,00</b>	<b>HA310 0700-02-100</b>
<b>70,00</b>	<b>82,60</b>	<b>7,10</b>	<b>76,00</b>	<b>HA310 0700-03-100</b>
75,00	83,60	5,30	78,00	HA310 0750-01-100
75,00	87,20	7,10	81,00	HA310 0750-02-100
<b>80,00</b>	<b>88,60</b>	<b>5,30</b>	<b>83,00</b>	<b>Ha310 0800-01-100</b>
<b>80,00</b>	<b>92,20</b>	<b>7,10</b>	<b>86,00</b>	<b>HA310 0800-02-100</b>
85,00	93,60	5,30	88,00	HA310 0850-01-100
85,00	97,20	7,10	91,00	HA310 0850-02-100
<b>90,00</b>	<b>98,60</b>	<b>5,30</b>	<b>93,00</b>	<b>HA310 0900-01-100</b>
<b>90,00</b>	<b>102,20</b>	<b>7,10</b>	<b>96,00</b>	<b>HA310 0900-02-100</b>
95,00	107,20	7,10	101,00	HA310 0950-01-100
<b>100,00</b>	<b>112,20</b>	<b>7,10</b>	<b>106,00</b>	<b>HA310 1000-01-100</b>
105,00	117,20	7,10	111,00	HA310 1050-01-100
<b>110,00</b>	<b>122,20</b>	<b>7,10</b>	<b>116,00</b>	<b>HA310 1100-01-100</b>
115,00	127,20	7,10	121,00	HA310 1150-01-100
120,00	132,20	7,10	126,00	HA310 1200-01-100
<b>125,00</b>	<b>137,20</b>	<b>7,10</b>	<b>131,00</b>	<b>HA310 1250-01-100</b>
<b>125,00</b>	<b>140,00</b>	<b>10,10</b>	<b>132,60</b>	<b>HA310 1250-02-100</b>
130,00	142,20	7,10	136,00	HA310 1300-01-100
135,00	147,20	7,10	141,00	HA310 1350-01-100
<b>140,00</b>	<b>152,20</b>	<b>7,10</b>	<b>146,00</b>	<b>HA310 1400-01-100</b>
<b>140,00</b>	<b>155,20</b>	<b>10,10</b>	<b>147,60</b>	<b>HA310 1400-02-100</b>
145,00	157,20	7,10	151,00	HA310 1450-01-100
150,00	162,20	7,10	156,00	HA310 1500-01-100
150,00	165,00	10,10	157,60	HA310 1500-02-100
<b>160,00</b>	<b>175,00</b>	<b>10,10</b>	<b>167,60</b>	<b>HA310 1600-01-100</b>
170,00	185,20	10,10	178,00	HA310 1700-01-100
<b>180,00</b>	<b>195,20</b>	<b>10,10</b>	<b>188,00</b>	<b>HA310 1800-01-100</b>
<b>180,00</b>	<b>200,00</b>	<b>10,20</b>	<b>190,00</b>	<b>HA310 1800-02-100</b>
<b>200,00</b>	<b>220,00</b>	<b>10,20</b>	<b>210,00</b>	<b>HA310 2000-01-100</b>
230,00	250,00	10,20	240,00	HA310 2300-01-100
<b>280,00</b>	<b>300,00</b>	<b>10,20</b>	<b>290,00</b>	<b>HA310 2800-01-100</b>
300,00	320,00	10,20	310,00	HA310 3000-01-100
310,00	330,00	10,20	320,00	HA310 3100-01-100

Sizes also available in FPM. Extensive range of inch measurement diagrams available on request.  
Bold figures correspond to rod diameters as per ISO 3320.



### Example for ordering Wipers:



### Material Key:

- 100 - NBR
- 120 - FPM

Issue

01	05
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**WARNING:** Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simultaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.