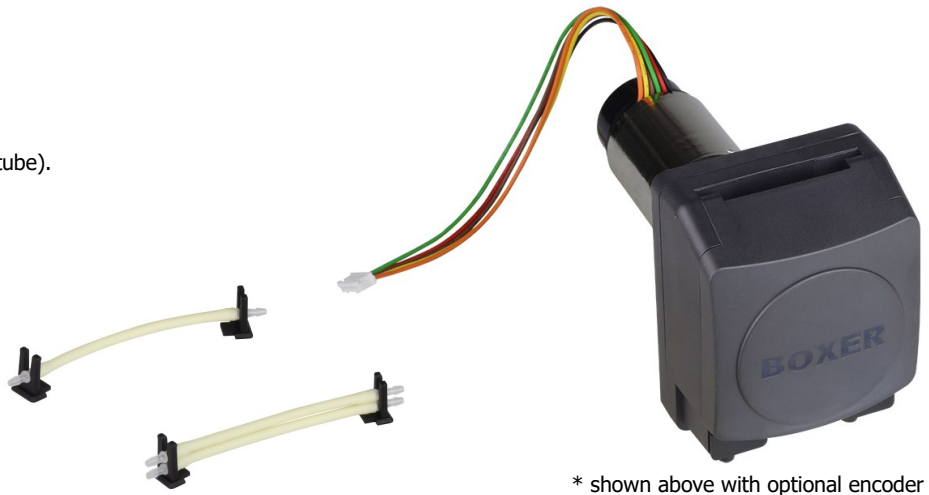


Boxer Pumps > Products > Peristaltic Pump

15KU peristaltic pump with DC / Gear motor.

Single or double channel tube sets (for Ø 1.6 and 2.4 mm tube).

## Technical Data



\* shown above with optional encoder

Tube Size, ID	Flow per	
	Revolution (ml)	
	3 / 4 / 6 roller	
Ø 1.6 - single tube	0.20	<b>0.17</b> / 0.12
Ø 1.6 - double tube	0.40	<b>0.35</b> / 0.25
Ø 2.4 - single tube	0.41	<b>0.37</b> / 0.26
Ø 2.4 - double tube	0.82	<b>0.75</b> / 0.52
Ø 3.2 - single tube	0.62	<b>0.57</b> / 0.39
Ø 4.8 - single tube	1.25	<b>1.02</b> / 0.54

Motor / Speed	Minimum Flow	Maximum Flow	Power (W)	Motor Terminal Resistance (Ω)
	(ml/min) <sup>1</sup>	(ml/min) <sup>2</sup>		
12 V 40 rpm	2.0	43.8	0.4 to 2.0	9.5
12 V 312 rpm	16.0	331.0	1.3 to 7.4	4.9
12 V 437 rpm	20.0	438.0	1.8 to 10.4	4.9
24 V 80 rpm	4.2	93.8	1.1 to 8.0	9.5
24 V 312 rpm	17.0	338.9	1.6 to 11.5	14.8
24 V 420 rpm	23.0	488.0	2.1 to 10.1	9.5

<sup>1</sup> Minimum Flow: 1.6 mm ID tube, 50% nominal voltage, 6 roller

<sup>2</sup> Maximum Flow: 4.8 mm ID tube, 100% nominal voltage, 3 roller

Additional Flow / Speed / Power data on pages 2, 3 and 4

<b>Motor Type</b>	Brushed DC with planetary gear box
<b>Motor Terminal</b>	Solder / Crimp Tags (encoder version with leads, see page 5)
<b>Motor Insulation</b>	B
<b>Tube Materials</b>	Innovaprene / Silicone / Lagoprene / ED-
<b>Optional Encoder</b>	High resolution motor shaft encoder (see page X for full details)

General Data	
Max pressure	2.0 bar
Max suction height	9 m H <sub>2</sub> O
Motor life	>1000 hour
Weight	455 / 430 g (40 & 80 / >200 rpm)

All data measured with 'run-in' Innovaprene tubing, H<sub>2</sub>O and 60 cm suction height

## Flow Data 12V 40 rpm RPM

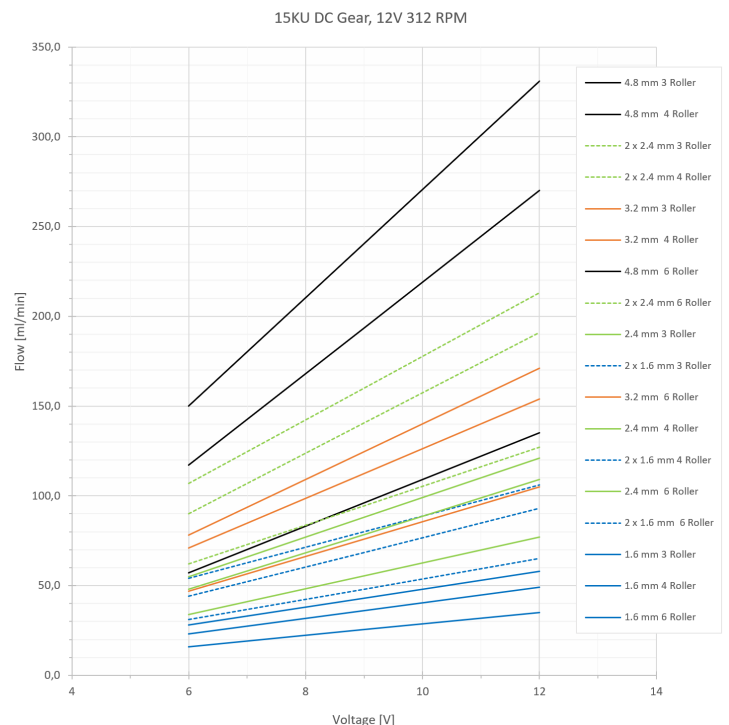
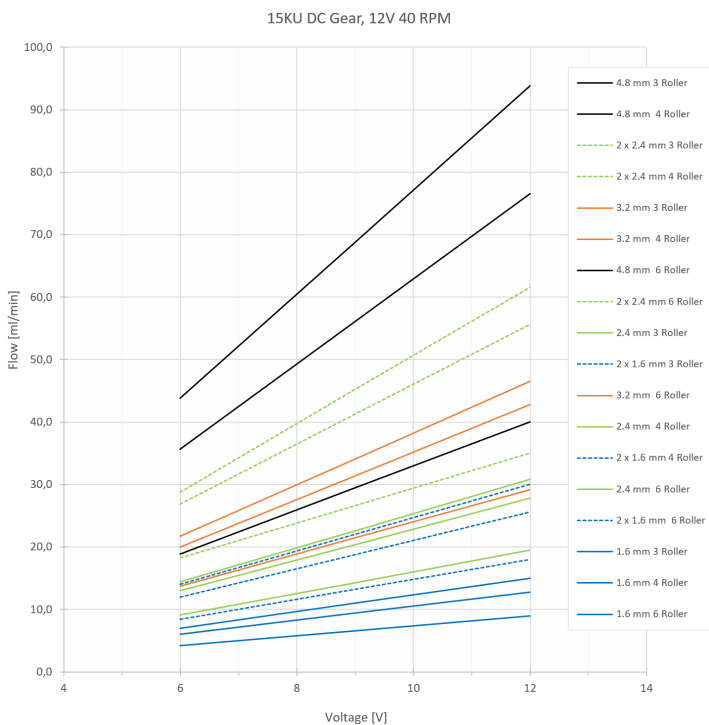
Tube Size (ID)	Performance at 6.0 V			Performance at 12.0 V		
	Flow (ml/min)	Speed (RPM)	Power (W)	Flow (ml/min)	Speed (RPM)	Power (W)
	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller
Ø 1.6 mm - single tube	3.4 / <b>2.9</b> / 2.0	17 / <b>17</b> / 17	0.4 / <b>0.4</b> / 0.5	7.0 / <b>6.0</b> / 4.2	35 / <b>35</b> / 35	1.1 / <b>1.1</b> / 1.2
Ø 1.6 mm - double tube	6.8 / <b>5.8</b> / 4.1	17 / <b>17</b> / 17	0.6 / <b>0.6</b> / 0.7	14.0 / <b>12.0</b> / 8.4	35 / <b>35</b> / 35	1.4 / <b>1.5</b> / 1.5
Ø 2.4 mm - single tube	7.0 / <b>6.3</b> / 4.4	17 / <b>17</b> / 17	0.5 / <b>0.5</b> / 0.5	14.4 / <b>13.0</b> / 9.1	35 / <b>35</b> / 35	1.2 / <b>1.2</b> / 1.2
Ø 2.4 mm - double tube	14.0 / <b>12.6</b> / 8.9	17 / <b>17</b> / 17	0.6 / <b>0.7</b> / 0.8	28.8 / <b>26.9</b> / 18.2	35 / <b>35</b> / 35	1.5 / <b>1.7</b> / 1.7
Ø 3.2 mm - single tube	10.5 / <b>9.7</b> / 6.6	17 / <b>17</b> / 17	0.5 / <b>0.5</b> / 0.6	21.7 / <b>20.0</b> / 13.7	35 / <b>35</b> / 35	1.3 / <b>1.3</b> / 1.4
Ø 4.8 mm - single tube	21.2 / <b>17.3</b> / 9.2	17 / <b>17</b> / 17	0.6 / <b>0.7</b> / 0.8	43.8 / <b>35.7</b> / 18.9	35 / <b>35</b> / 35	1.6 / <b>1.8</b> / 2.0

All data measured with 'run-in' Innovaprene tubing, H<sub>2</sub>O and 60 cm suction height

## Flow Data 12V 312 rpm RPM

Tube Size (ID)	Performance at 6.0 V			Performance at 12.0 V		
	Flow (ml/min)	Speed (RPM)	Power (W)	Flow (ml/min)	Speed (RPM)	Power (W)
	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller
Ø 1.6 mm - single tube	28 / <b>23</b> / 16	140 / <b>135</b> / 135	1.3 / <b>1.5</b> / 1.6	58 / 49 / 35	290 / <b>290</b> / 290	2.8 / <b>3.4</b> / 3.4
Ø 1.6 mm - double tube	54 / <b>44</b> / 31	135 / <b>125</b> / 125	2.1 / <b>2.7</b> / 2.9	106 / 93 / 65	265 / <b>265</b> / 260	4.3 / <b>5.6</b> / 6.1
Ø 2.4 mm - single tube	55 / <b>48</b> / 34	135 / <b>130</b> / 130	1.5 / <b>1.8</b> / 1.9	121 / 109 / 77	295 / <b>295</b> / 295	3.3 / <b>3.9</b> / 4.0
Ø 2.4 mm - double tube	107 / <b>90</b> / 62	130 / <b>120</b> / 120	2.7 / <b>3.1</b> / 3.6	213 / 191 / 127	260 / <b>255</b> / 245	5.6 / <b>6.4</b> / 7.5
Ø 3.2 mm - single tube	78 / <b>71</b> / 47	125 / <b>125</b> / 120	2.1 / <b>2.2</b> / 2.5	171 / 154 / 105	275 / <b>270</b> / 270	4.4 / <b>4.8</b> / 5.3
Ø 4.8 mm - single tube	150 / <b>117</b> / 57	120 / <b>115</b> / 105	2.5 / <b>3.8</b> / 3.2	331 / 270 / 135	265 / <b>265</b> / 250	5.3 / <b>6.0</b> / 7.4

All data measured with 'run-in' Innovaprene tubing, H<sub>2</sub>O and 60 cm suction height



## Flow Data 12V 437 rpm RPM

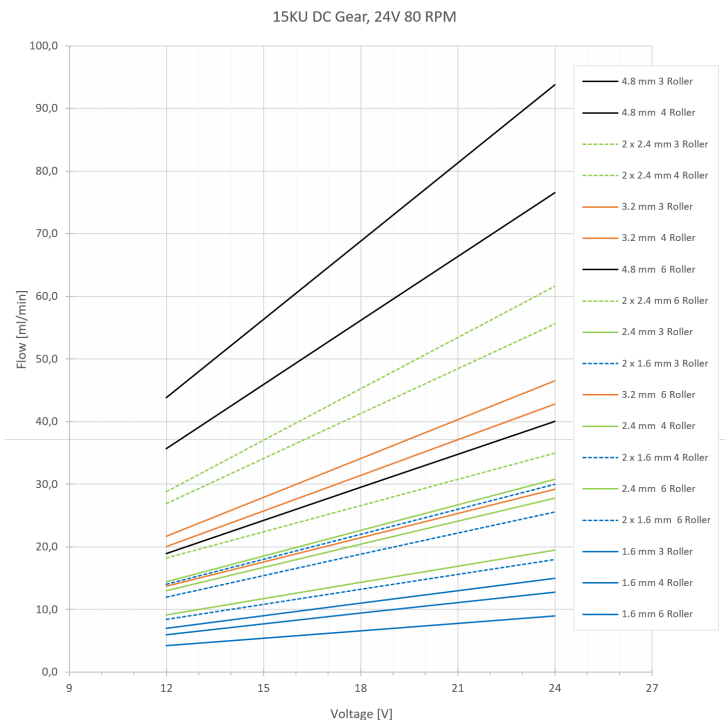
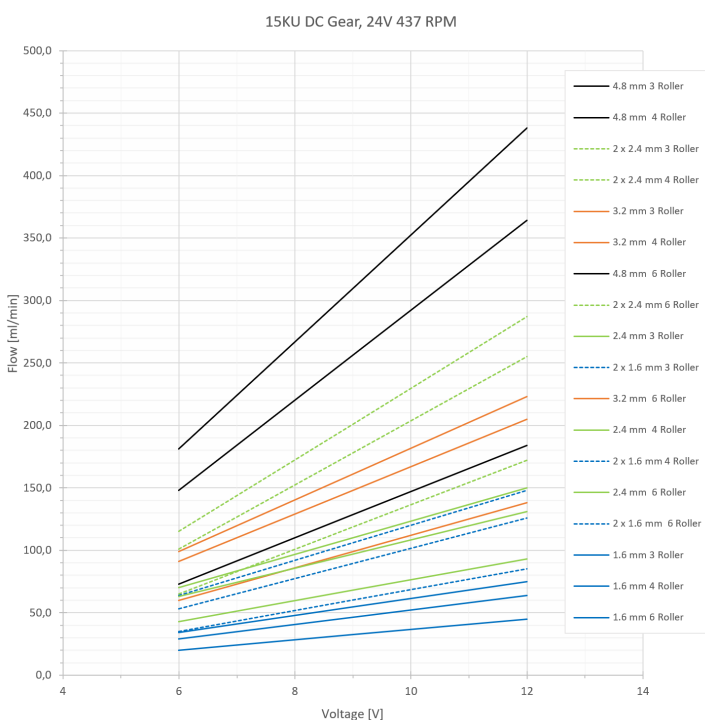
Tube Size (ID)	Performance at 6.0 V			Performance at 12.0 V		
	Flow (ml/min)	Speed (RPM)	Power (W)	Flow (ml/min)	Speed (RPM)	Power (W)
	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller
Ø 1.6 mm - single tube	34 / <b>29</b> / 20	170 / <b>170</b> / 170	1.8 / <b>2.2</b> / 2.2	75 / <b>64</b> / 45	375 / <b>375</b> / 375	4.1 / <b>4.7</b> / 4.9
Ø 1.6 mm - double tube	64 / <b>53</b> / 35	160 / <b>150</b> / 140	2.5 / <b>3.8</b> / 3.9	148 / <b>126</b> / 85	370 / <b>360</b> / 340	5.2 / <b>7.2</b> / 7.4
Ø 2.4 mm - single tube	70 / <b>63</b> / 43	170 / <b>170</b> / 165	1.9 / <b>2.3</b> / 2.5	150 / <b>131</b> / 93	375 / <b>375</b> / 370	4.3 / <b>4.5</b> / 5.3
Ø 2.4 mm - double tube	115 / <b>101</b> / 65	140 / <b>135</b> / 125	3.5 / <b>3.8</b> / 4.5	287 / <b>255</b> / 172	350 / <b>340</b> / 330	7.2 / <b>8.3</b> / 8.8
Ø 3.2 mm - single tube	99 / <b>91</b> / 60	160 / <b>160</b> / 155	2.4 / <b>2.9</b> / 3.0	223 / <b>205</b> / 138	360 / <b>360</b> / 355	5.3 / <b>6.2</b> / 6.4
Ø 4.8 mm - single tube	181 / <b>148</b> / 73	145 / <b>145</b> / 135	2.9 / <b>3.5</b> / 3.8	438 / <b>364</b> / 184	350 / <b>350</b> / 340	8.4 / <b>9.8</b> / 10.4

All data measured with 'run-in' Innovaprene tubing, H<sub>2</sub>O and 60 cm suction height

## Flow Data 24V 80 rpm RPM

Tube Size (ID)	Performance at 12.0 V			Performance at 24.0 V		
	Flow (ml/min)	Speed (RPM)	Power (W)	Flow (ml/min)	Speed (RPM)	Power (W)
	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller
Ø 1.6 mm - single tube	7.0 / <b>6.0</b> / 4.2	35 / <b>35</b> / 35	1.1 / 1.1 / 1.2	15.0 / <b>12.8</b> / 9.0	75 / <b>75</b> / 75	3.2 / <b>3.6</b> / 3.6
Ø 1.6 mm - double tube	14.0 / <b>12.0</b> / 8.4	35 / <b>35</b> / 35	1.4 / 1.5 / 1.5	30.0 / <b>25.6</b> / 18.0	75 / <b>75</b> / 75	4.8 / <b>6.6</b> / 6.6
Ø 2.4 mm - single tube	14.4 / <b>13.0</b> / 9.1	35 / <b>35</b> / 35	1.2 / 1.2 / 1.2	30.8 / <b>27.8</b> / 19.5	75 / <b>75</b> / 75	3.5 / <b>4.3</b> / 4.3
Ø 2.4 mm - double tube	28.8 / <b>26.9</b> / 18.2	35 / <b>35</b> / 35	1.5 / 1.7 / 1.7	61.6 / <b>55.6</b> / 39.0	75 / <b>75</b> / 75	5.6 / <b>6.9</b> / 7.7
Ø 3.2 mm - single tube	21.7 / <b>20.0</b> / 13.7	35 / <b>35</b> / 35	1.3 / 1.3 / 1.4	46.5 / <b>42.8</b> / 29.2	75 / <b>75</b> / 75	4.3 / <b>5.7</b> / 5.7
Ø 4.8 mm - single tube	43.8 / <b>35.7</b> / 18.9	35 / <b>35</b> / 35	1.6 / 1.8 / 2.0	93.8 / <b>76.5</b> / 40.05	75 / <b>75</b> / 75	7.3 / <b>8.0</b> / 8.0

All data measured with 'run-in' Innovaprene tubing, H<sub>2</sub>O and 60 cm suction height



## Flow Data 24V 312 rpm RPM

Tube Size (ID)	Performance at 12.0 V			Performance at 24.0 V		
	Flow (ml/min)	Speed (RPM)	Power (W)	Flow (ml/min)	Speed (RPM)	Power (W)
	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller
Ø 1.6 mm - single tube	28 / <b>24</b> / 17	140 / <b>140</b> / 140	1.6 / <b>1.7</b> / 1.7	60 / <b>51</b> / 36	300 / <b>300</b> / 300	4.7 / <b>5.2</b> / 5.7
Ø 1.6 mm - double tube	54 / <b>46</b> / 31	135 / <b>125</b> / 125	2.2 / <b>3.1</b> / 3.2	112 / <b>96</b> / 69	280 / <b>275</b> / 275	6.3 / <b>8.0</b> / 8.4
Ø 2.4 mm - single tube	57 / <b>52</b> / 36	140 / <b>140</b> / 140	1.6 / <b>1.9</b> / 1.9	121 / <b>109</b> / 77	295 / <b>295</b> / 295	5.2 / <b>6.3</b> / 6.5
Ø 2.4 mm - double tube	107 / <b>90</b> / 62	130 / <b>120</b> / 120	2.6 / <b>3.3</b> / 3.6	230 / <b>206</b> / 143	280 / <b>275</b> / 275	8.4 / <b>9.9</b> / 10.2
Ø 3.2 mm - single tube	83 / <b>77</b> / 53	135 / <b>135</b> / 135	2.0 / <b>2.5</b> / 2.5	180 / <b>165</b> / 113	290 / <b>290</b> / 290	6.3 / <b>7.4</b> / 7.7
Ø 4.8 mm - single tube	150 / <b>122</b> / 65	120 / <b>120</b> / 120	3.2 / <b>3.2</b> / 3.6	338 / <b>275</b> / 146	270 / <b>270</b> / 270	8.2 / <b>10.1</b> / 11.5

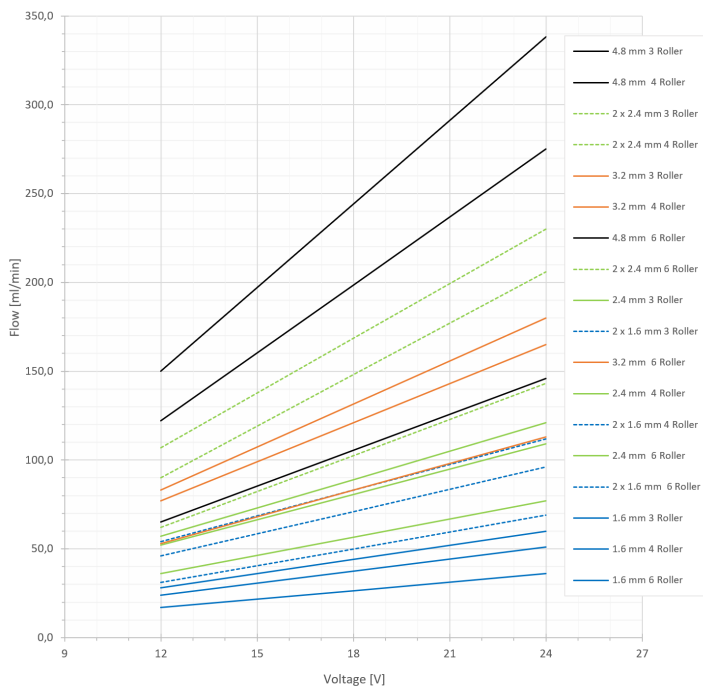
All data measured with 'run-in' Innovaprene tubing, H<sub>2</sub>O and 60 cm suction height

## Flow Data 24V 420 rpm RPM

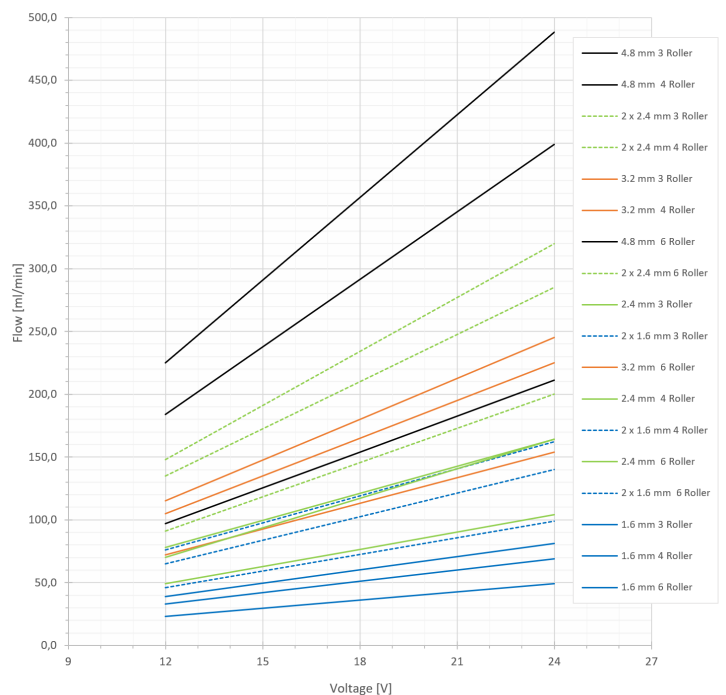
Tube Size (ID)	Performance at 12.0 V			Performance at 24.0 V		
	Flow (ml/min)	Speed (RPM)	Power (W)	Flow (ml/min)	Speed (RPM)	Power (W)
	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller	3 / 4 / 6 roller
Ø 1.6 mm - single tube	39 / <b>33</b> / 23	195 / <b>195</b> / 195	2.1 / <b>2.3</b> / 2.6	81 / <b>69</b> / 49	405 / <b>405</b> / 405	4.7 / <b>5.2</b> / 5.7
Ø 1.6 mm - double tube	76 / <b>65</b> / 46	190 / <b>185</b> / 185	2.9 / <b>3.8</b> / 4.1	162 / <b>140</b> / 99	400 / <b>400</b> / 395	6.3 / <b>8.2</b> / 8.8
Ø 2.4 mm - single tube	78 / <b>70</b> / 49	190 / <b>190</b> / 190	2.4 / <b>2.8</b> / 3.1	164 / <b>148</b> / 104	400 / <b>400</b> / 400	5.2 / <b>6.3</b> / 6.5
Ø 2.4 mm - double tube	148 / <b>135</b> / 91	180 / <b>180</b> / 175	4.0 / <b>4.5</b> / 4.9	320 / <b>285</b> / 200	390 / <b>380</b> / 385	8.4 / <b>9.9</b> / 10.2
Ø 3.2 mm - single tube	115 / <b>105</b> / 72	185 / <b>185</b> / 185	3.0 / <b>3.5</b> / 3.7	245 / <b>225</b> / 154	395 / <b>395</b> / 395	6.3 / <b>7.4</b> / 7.7
Ø 4.8 mm - single tube	225 / 184 / 97	180 / <b>180</b> / 180	3.8 / <b>4.4</b> / 4.6	488 / <b>399</b> / 211	390 / <b>390</b> / 390	8.2 / <b>9.6</b> / 10.1

All data measured with 'run-in' Innovaprene tubing, H<sub>2</sub>O and 60 cm suction height

15KU DC Gear, 24V 312 RPM



15KU DC Gear, 24V 420 RPM



## Encoder

The 15KUperistaltic pump with DC / Gear is available with a dual channel encoder mounted on the rear of the motor. Each channel is switched by a hall effect sensor triggered by a 12 pole rotating magnet. Speed is provided by the frequency of either channel and direction of rotation is determined by the phase shift between the 2 channels.

Specification		
<b>Number of Channels</b>	2	
<b>Number of Poles</b>	12 (= 12 pulses per motor revolution)	
<b>Pump Voltage / Speed</b>	<b>Gear Ratio / Pulses per Pump Revolution</b>	
12 V / 40 RPM	100:1 / 1200	
12 V / 312 RPM	19:1 / 228	
12 V / 437 RPM	14:1 / 168	
24 V / 80 RPM	100:1 / 1200	
24 V / 298 RPM	19:1 / 228	
24 V / 420 RPM	19:1 / 228	
<b>Phase Shift</b>		
A leads B	Clockwise (CW) <sup>1</sup>	
A lags B	Counter-clockwise (CCW)	
<sup>1</sup> example diagram below		
<b>Lead Length</b>	185 mm	
<b>Lead Termination</b>	PHR-6 2.0 mm pitch JST housing	
<b>Encoder Supply Voltage</b>	2.4 to 26.0 V (separate to motor supply voltage)	
<b>Supply Current</b>	5 mA	
<b>Output Signals</b>	Open collector (10 kΩ resistor to Vcc recommended)	
<b>Pin / Wire Allocation:</b>		
Pin	Wire Colour	Description
1	Black	Motor Supply GND
2	Red	Motor Supply +V (depends in motor)
3	Green	Encoder GND
4	Brown	Channel B Output
5	Yellow	Channel A Output
6	Orange	Encoder +Vcc (2.4 to 26.0 V)

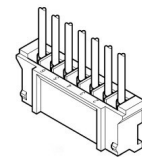
Encoder (without cover):



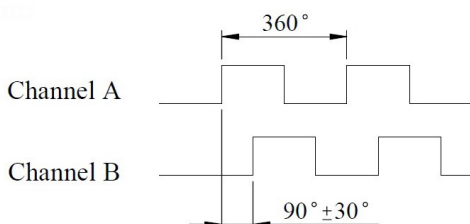
Encoder (with cover as supplied):



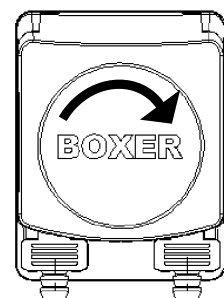
PHR-6 termination:



The phase shift between channel A and B determines the direction of rotation:



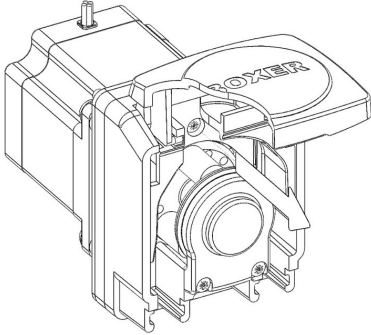
In this example, Channel A leads Channel B. This indicates rotation in clockwise direction.



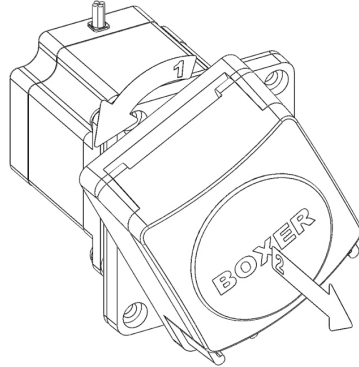
## Assembly and Tube Loading

Images show stepper motor version. DC / Gear follows the same procedure. Only panel cut-out differs.

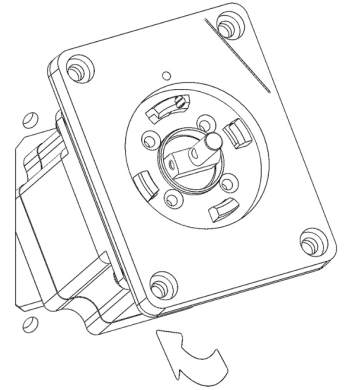
- 1 Open the lid completely. Remove the M3x12mm securing screw.



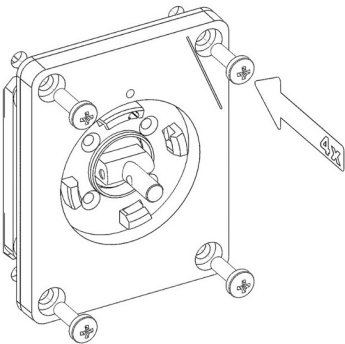
- 2 Turn head counter clockwise. Pull head away from the motor.



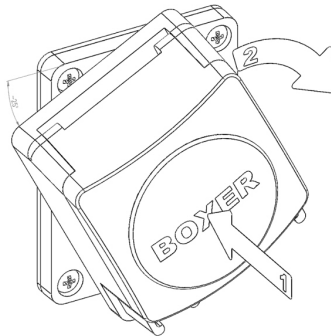
- 3 Check the mounting gasket is in position. Insert motor through panel cut-out.



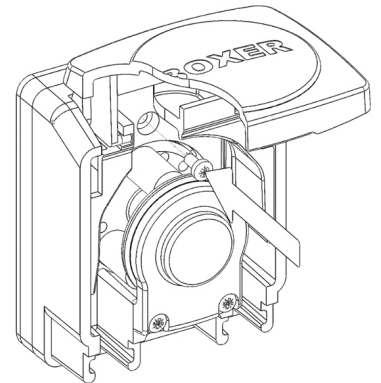
- 4 Secure with 4 x M4 bolts



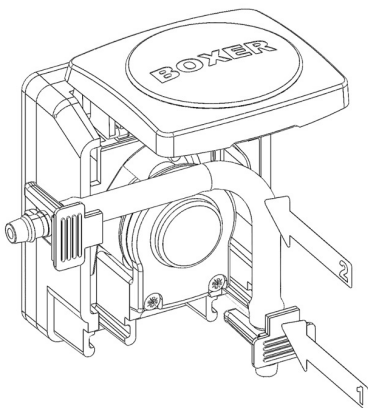
- 5 Aligning head with marker, push head onto motor shaft. Turn head clockwise into position.



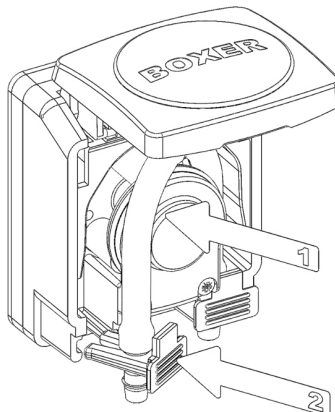
- 6 Secure head with M3x12mm screw.



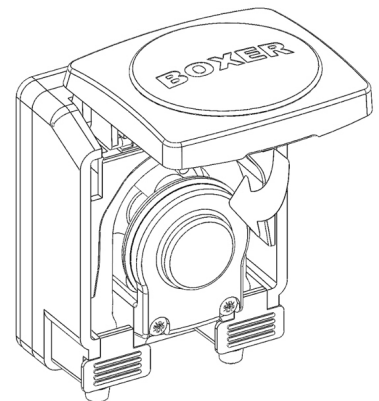
- 7 Push tube clip into the mating recess of pump head (left or right side). Push tube around rotor assembly.



- 8 Continue placing tube around rotor assembly. Push tube clip into place.



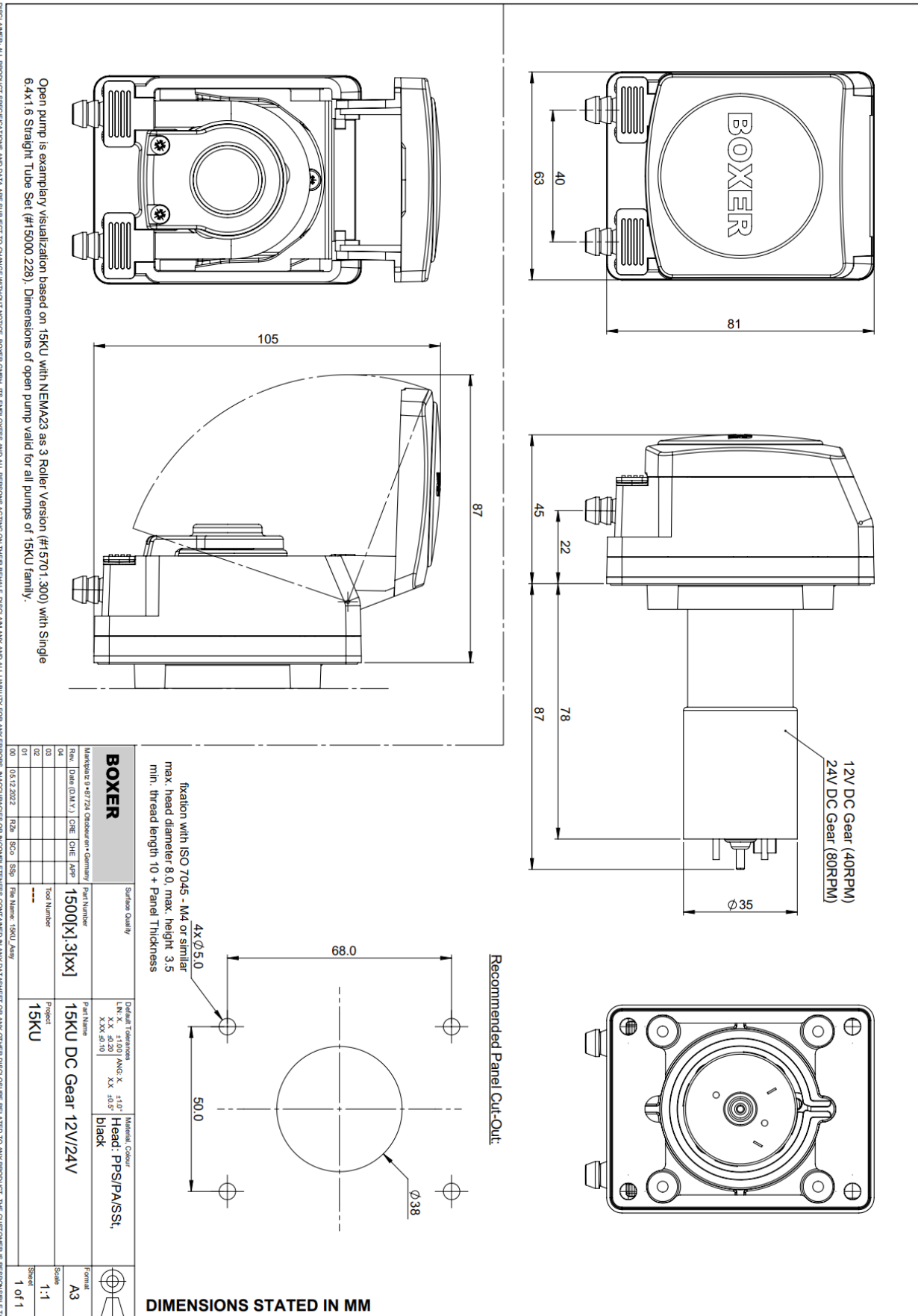
- 9 Close pump lid.





## 15KU DC / Gear - 40 / 80 rpm models

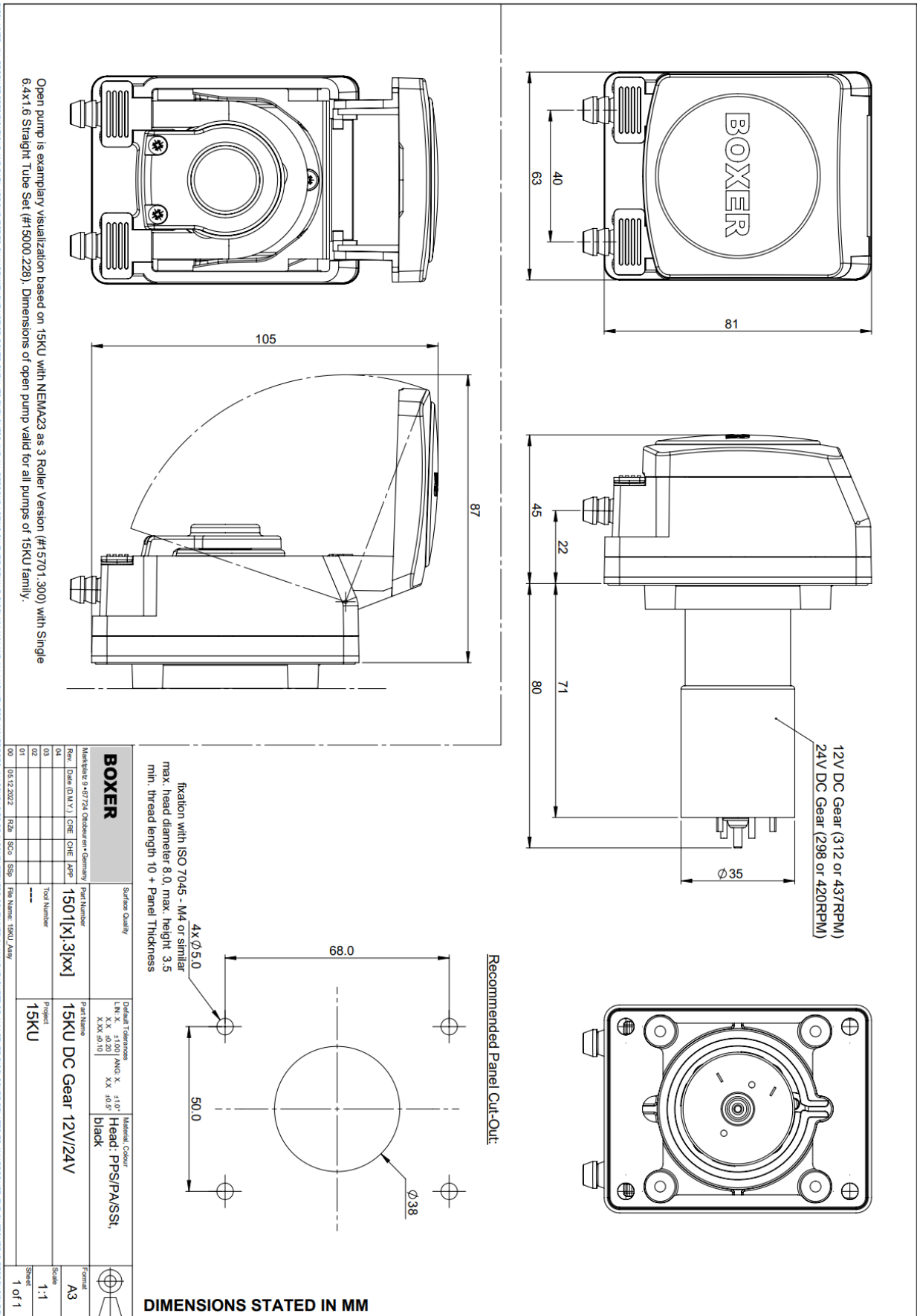
Links to Drawing and STEP file:  
 → [Drawing](#) (.pdf)  
 → [STEP](#) (.zip)



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## 15KU DC / Gear - 312 / 420 /437 rpm models

Links to Drawing and STEP file:  
 → [Drawing \(.pdf\)](#)  
 → [STEP \(.zip\)](#)



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Boxer Pumps > Products > Peristaltic Pump

## Order Information

Pump and tubing should always be ordered separately.

Pump Configuration	12 V 40 rpm	12 V 312 rpm	12 V 437 rpm	24 V 80 rpm	24 V 312 rpm	24 v 420 rpm
15KU DC / Gear / 3 Roller	15008.300	15011.300	15012.300	15009.300	15013.300	15014.300
15KU DC / Gear / 3 Roller / Encoder	15408.300	15411.300	15412.300	15409.300	15413.300	15414.300
15KU DC / Gear / 4 Roller	15008.301	15011.301	15012.301	15009.301	15013.301	15014.301
15KU DC / Gear / 4 Roller / Encoder	15408.301	15411.301	15412.301	15409.301	15413.301	15414.301
15KU DC / Gear / 6 Roller	15008.303	15011.303	15012.303	15009.303	15013.303	15014.303
15KU DC / Gear / 6 Roller / Encoder	15408.303	15411.303	15412.303	15409.303	15413.303	15414.303

## Tube Sets

Tube Material	Connector Material	ID (mm)	Single / Double	Straight / Elbow	External Connector (mm)	Part Number
Innovapure P60	PP (clear)	1.6	Single	Straight	2.4 to 3.5	15000.220
Innovapure P60	PP (clear)	1.6	Double	Straight	2.4 to 3.5	15000.221
Innovapure P60	PP (clear)	2.4	Single	Straight	2.4 to 3.5	15000.222
Innovapure P60	PP (clear)	2.4	Double	Straight	2.4 to 3.5	15000.223
Innovapure P60	PP (clear)	3.2	Single	Straight	2.4 to 3.5	15000.224
Innovapure P60	PP (black)	4.8	Single	Straight	4.0 to 5.0	15000.226
Innovapure P60	PP (black)	4.8	Single	Elbow	4.0 to 5.0	15000.227

Technical information including chemical compatibility → [Innovaprene P60](#)



## BOX-it (Webshop)

Sample quantities are available for direct online purchase:



→ [BOX-it](#)