

# PCJ-HF on line bubbler

On line compact pressure-compensated high flow emitter, for permanent irrigation such as landscape, trees, fruit trees with large treetops.



Pressure-compensated



Anti-Drain mechanism



Self-flushing mechanism

## / Benefits & Features

- **Pressure-compensated** Precise and equal amounts of water delivered over a broad pressure range, ensuring 100% uniformity of water and nutrient distribution along the laterals.
- **Anti-Drain (LCNL) mechanism** Eliminates drainage and refill effect, and improves efficiency in pulse irrigation even in steep topography.
- **Continuously self-flushing** Flushes debris throughout operation, while ensuring constant emitter operation even in challenging water qualities.
- **Flexible location** Emitters can be positioned exactly where required. Number of emitters can be increased to increase the water quantities applied.  
Allows the installation of "spider assembly", splitting the drip supply to a number of drip outlets.

## / Specifications

- ✓ Pressure-compensated range according to table below.
- ✓ Recommended filtration: 130 micron / 120 mesh. Filtration method selected based on the kind and concentration of dirt particles contained in the water. Wherever sand exceeding 2 ppm exists in the water, a Hydrocyclone shall be installed before the main filter. Where sand/silt/clay solids exceed 100 ppm, pre treatment shall be applied following Netafim expert instructions.
- ✓ Internal very large water passages.
- ✓ Insertable into thick wall blank PE pipes (0.90, 1.00, 1.20 mm).
- ✓ Injected bubbler, very low CV.
- ✓ High UV resistant. Resistant to standard nutrients used in agriculture.
- ✓ 4 different outlets: nipple, nipple with assembled cap, barb to 3 mm ID, barb to 4 mm ID micro-tube.

## → BUBBLER TECHNICAL DATA

PCJ-HF bubblers

FLOW RATE* (L/H)	WORKING PRESSURE RANGE (BAR)	WATER PASSAGES DIMENSIONS (MM)	FILTRATION AREA (MM <sup>2</sup> )	CONSTANT K	EXPONENT* X	BASIS CODE COLOR	CAP COLOR CODE
20	1.0 – 4.0	1.4 x 1.1	2.0	20	0	Orange	Black
25	1.0 – 4.0	1.4 x 1.1 + 0.4 x 2.1	2.0	25	0	Orange	Light grey
30	1.0 – 4.0	1.4 x 1.1 + 0.7 x 2.1	2.0	30	0	Orange	Brown
35	1.0 – 4.0	1.4 x 1.1 + 1.0 x 2.1	2.0	35	0	Orange	Light blue
40	1.3 – 4.0	1.4 x 1.1 + 1.0 x 2.6	2.0	40	0	Orange	Blue

\*Within working pressure range

## → BUBBLER TECHNICAL DATA

PCJ-HF-LCNL bubblers

FLOW RATE* (L/H)	WORKING PRESSURE RANGE (BAR)	WATER PASSAGES DIMENSIONS (MM)	FILTRATION AREA (MM <sup>2</sup> )	CONSTANT K	EXPONENT* X	SHUT OFF PRESSURE (BAR)	BASIS CODE COLOR**	CAP COLOR CODE
20	1.0 – 4.0	1.4 x 1.1	2.0	20	0	0.12	Orange	Black
25	1.0 – 4.0	1.4 x 1.1 + 0.4 x 2.1	2.0	25	0	0.12	Orange	Light grey
30	1.0 – 4.0	1.4 x 1.1 + 0.7 x 2.1	2.0	30	0	0.12	Orange	Brown
35	1.0 – 4.0	1.4 x 1.1 + 1.0 x 2.1	2.0	35	0	0.12	Orange	Light blue
40	1.3 – 4.0	1.4 x 1.1 + 1.0 x 2.6	2.0	40	0	0.12	Orange	Blue

\*Within working pressure range

\*\*CNL bubblers is distinguished by the rings around the inlet barb connector

## → BUBBLERS PACKAGE DATA

	QUANTITY P/BOX UNITS	BOX DIMENSIONS (CM X CM X CM)	AVERAGE BOX WEIGHT (KG)
PCJ-HF bubblers	9500	57 x 28 x 27	14.0

## / Drippers flow rate vs. working pressure

In order to calculate the right flow rate of each dripper, under different working pressures, we use the following formula:

$$Q = K * P^X$$

Where:

Q = Dripper flow rate (liters/hour)

K = Constant (each dripper has his singular constant and must be defined by the dripper producer)

P = Real working pressure (meter)

X = Exponent (each dripper has its singular exponent and must be declared and defined by the dripper producer)

\*ISO 9261 require from the manufacturer to declare the constant K and dripper exponent

In all Netafim pressure compensated emitters- including PCJ-HF bubbler (shown in this document) – the dripper exponent X is equal to 0 [zero] (within the pressure range defined for each of the drippers), so the right flow rate of the dripper will be always equal (+/- 7% as defined by the international standard: ISO 9261).

Each dripper has a compensation range which includes minimum and maximum pressure; under the minimum pressure defined, the dripper will perform as non-regulated dripper and provide flow that increases with the pressure increase until reaching the minimum defined limit working pressure.

If the compensated drippers are exposed to a higher pressure than the defined maximum pressure, the drippers will continue to regulate the flow rate, but become more sensitive to clogging, usually the maximum working pressure of the drippers are determined by the driplines limitations (diameter and wall thickness) and most importantly the pipe and its associated connections.

## / Max. Lateral length

Flow Variation (FV) expresses the flow variation between the dripper “sensing” the highest pressure and the one “sensing” the lowest pressure in an irrigation block (zone).

These drippers will not always be the first and last drippers on the dripline.

$$FV \% = (Q_{max} - Q_{min}) / Q_{max} * 100$$

\*International standards define 10% flow variation to be considered as uniform irrigation.

In order to calculate the maximum run lengths that can be planned for specific dripline (considering all the hydraulic factors influencing the flow within the same dripline), we use a calculation software that was developed by Netafim™ based on Darcy-Waisbach formulas + years of design experience and cooperation with academic institutes.

All the tables presented in this document are for initial reference only; the exact run length of the driplines is obtained from design software that considers various hydraulic factors in the entire system.

There might be small variance between the different software's in the market due to the calculation method and assumptions each software is using. For an initial estimate of the dripline length, the data that is presented in this document (within the tables shown) is sufficiently accurate.

As we have already seen, regulated drippers of Netafim™ will provide equal flow irrespective of the working pressure, therefore, the factors that are affecting the dripline run lengths will be: the dripline inlet pressure, the minimum working pressure set for the dripper and the slope.

### Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 16/4 • ID 13.2 mm • Kd 0.39 • Flow rate 20 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	12	21	28	34	40	62	78	92	105	114	126
	2.5	16	27	37	45	52	82	105	128	145	162	175
	3.0	18	31	43	52	61	96	126	148	170	192	210
	3.5	20	35	47	58	68	108	141	168	190	216	238
	4.0	22	38	51	62	73	118	153	184	210	234	259
FLAT TERRAIN	2.0	12	22	29	36	43	68	90	108	125	144	161
	2.5	16	28	38	46	54	88	114	140	160	180	203
	3.0	18	32	43	54	63	102	132	160	185	210	231
	3.5	20	35	48	59	69	112	147	180	205	234	259
	4.0	22	38	52	64	75	122	159	192	225	252	280
DOWNHILL 2%	2.0	13	22	31	38	45	76	102	128	150	174	196
	2.5	16	28	38	48	56	94	126	152	180	204	231
	3.0	18	32	44	54	64	106	141	172	205	234	259
	3.5	20	36	49	60	71	116	156	188	220	252	280
	4.0	22	38	52	65	77	126	165	204	240	270	301

Minimum considered pressure 1.5 bar

### Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 16/4 • ID 13.2 mm • Kd 0.39 • Flow rate 25 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	11	18	25	30	35	56	72	84	95	102	112
	2.5	14	24	32	39	46	72	93	112	130	144	154
	3.0	16	27	37	46	53	84	111	132	150	168	182
	3.5	17	30	41	50	59	94	123	148	170	186	210
	4.0	19	33	44	54	64	102	132	160	185	204	224
FLAT TERRAIN	2.0	11	19	26	32	37	60	78	96	110	126	140
	2.5	14	24	32	40	47	76	99	120	140	162	175
	3.0	16	28	38	46	54	88	117	140	165	186	203
	3.5	17	30	41	51	60	98	129	156	180	204	224
	4.0	19	33	45	55	65	106	138	168	195	222	245
DOWNHILL 2%	2.0	11	19	26	33	39	64	87	108	130	144	168
	2.5	14	24	34	42	49	80	108	132	155	174	196
	3.0	16	28	38	47	56	92	123	148	175	198	224
	3.5	17	31	42	52	61	100	135	164	190	216	245
	4.0	19	33	46	56	66	108	144	176	205	234	259

Minimum considered pressure 1.5 bar

### Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 16/4 • ID 13.2 mm • Kd 0.39 • Flow rate 30 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	10	16	22	27	32	50	63	76	85	96	105
	2.5	12	21	28	35	41	64	84	100	115	126	140
	3.0	14	24	33	41	47	76	99	120	135	150	168
	3.5	15	27	37	45	53	84	111	132	150	168	189
	4.0	17	29	40	49	57	92	120	144	165	186	203
FLAT TERRAIN	2.0	10	17	23	28	33	54	72	84	100	114	126
	2.5	12	21	29	36	42	68	90	108	125	144	161
	3.0	14	24	34	42	48	78	102	124	145	162	182
	3.5	15	27	37	46	54	86	114	140	160	180	203
	4.0	17	29	40	50	58	94	123	148	175	198	217
DOWNHILL 2%	2.0	10	17	23	30	35	58	78	96	115	132	147
	2.5	12	22	29	37	43	72	96	116	135	156	175
	3.0	14	25	34	42	50	82	108	132	155	174	196
	3.5	16	27	37	46	55	90	120	144	170	192	217
	4.0	17	30	40	50	59	96	129	156	180	204	231

Minimum considered pressure 1.5 bar

### Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 16/4 • ID 13.2 mm • Kd 0.39 • Flow rate 35 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	9	15	20	25	29	46	60	68	80	90	98
	2.5	11	19	26	32	37	60	78	92	105	120	133
	3.0	13	22	30	37	43	70	90	108	125	138	154
	3.5	14	24	33	41	48	76	99	120	140	156	168
	4.0	15	26	36	44	52	84	108	132	150	168	189
FLAT TERRAIN	2.0	9	15	21	26	30	48	63	76	90	102	112
	2.5	11	19	26	33	38	62	81	100	115	132	147
	3.0	13	22	31	38	44	72	93	112	130	150	168
	3.5	14	24	34	42	49	78	105	124	145	162	182
	4.0	15	26	36	45	53	86	111	136	160	180	196
DOWNHILL 2%	2.0	9	16	22	26	31	52	69	88	100	114	133
	2.5	11	20	27	34	39	64	87	104	125	144	161
	3.0	13	22	31	38	45	74	99	120	140	162	175
	3.5	14	25	34	42	49	82	108	132	155	174	196
	4.0	15	27	37	46	53	88	117	140	165	186	210

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 16/4 • ID 13.2 mm • Kd 0.39 • Flow rate 40 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	8	14	19	23	27	42	54	64	75	84	91
	2.5	10	18	24	30	34	54	72	84	100	108	119
	3.0	12	20	28	34	40	64	84	100	115	126	140
	3.5	13	22	31	38	44	70	93	112	130	144	161
	4.0	14	24	33	41	48	76	99	120	140	156	175
FLAT TERRAIN	2.0	8	14	19	23	28	44	60	72	85	96	105
	2.5	10	18	24	30	35	58	75	92	105	120	133
	3.0	12	20	28	34	40	66	87	104	120	138	154
	3.5	13	22	31	38	45	72	96	116	135	150	168
	4.0	14	24	33	41	48	78	102	124	145	162	182
DOWNHILL 2%	2.0	8	14	20	24	29	48	63	80	95	108	119
	2.5	10	18	25	30	36	60	78	96	115	132	147
	3.0	12	21	28	35	41	68	90	108	130	144	161
	3.5	13	23	31	38	45	74	99	120	140	162	175
	4.0	14	24	34	42	49	80	105	128	150	174	189

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 20/4 • ID 17.0 mm • Kd 0.13 • Flow rate 20 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	21	34	44	54	61	92	114	132	145	156	168
	2.5	27	44	58	70	81	124	156	184	205	228	245
	3.0	31	52	68	82	95	146	186	220	250	276	301
	3.5	35	57	76	92	106	164	210	248	285	312	343
	4.0	37	62	82	100	116	180	231	272	310	348	378
FLAT TERRAIN	2.0	22	36	47	58	68	108	141	168	195	222	245
	2.5	27	46	61	74	86	138	180	216	250	282	308
	3.0	32	53	70	86	100	158	207	248	290	324	357
	3.5	35	58	78	95	111	176	228	276	320	360	399
	4.0	38	63	85	103	120	190	249	300	345	390	427
DOWNHILL 2%	2.0	22	38	51	63	74	124	168	208	250	288	329
	2.5	28	47	64	78	92	150	201	248	295	336	378
	3.0	32	54	73	90	105	170	228	280	330	372	420
	3.5	35	60	80	98	115	186	249	304	355	408	455
	4.0	38	64	86	106	124	200	264	324	380	432	483

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 20/4 • ID 17.0 mm • Kd 0.13 • Flow rate 25 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	18	30	39	47	54	82	102	120	130	144	154
	2.5	23	39	51	62	71	110	138	164	185	204	224
	3.0	27	45	59	72	83	128	165	196	220	246	266
	3.5	30	50	66	80	93	144	186	220	250	276	301
	4.0	32	54	71	87	101	158	201	240	275	306	336
FLAT TERRAIN	2.0	19	31	41	50	59	94	123	148	170	192	210
	2.5	24	40	53	65	75	120	156	188	215	246	273
	3.0	27	46	61	74	87	138	180	216	250	282	315
	3.5	30	51	68	82	96	152	198	240	275	312	343
	4.0	33	55	73	90	104	164	216	260	300	336	371
DOWNHILL 2%	2.0	19	32	44	54	64	106	141	176	210	240	273
	2.5	24	41	55	67	79	130	174	212	250	288	322
	3.0	28	47	63	77	90	146	195	240	280	318	357
	3.5	31	52	69	85	99	160	213	260	305	348	385
	4.0	33	56	75	91	107	172	228	280	325	372	413

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 20/4 • ID 17.0 mm • Kd 0.13 • Flow rate 30 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	16	27	35	42	49	74	93	108	120	132	140
	2.5	21	34	46	55	64	98	126	148	170	186	203
	3.0	24	40	53	64	74	116	147	176	200	222	245
	3.5	27	44	59	71	83	130	165	200	225	252	273
	4.0	29	48	64	78	90	140	183	216	250	276	301
FLAT TERRAIN	2.0	17	28	37	45	52	84	108	132	150	174	189
	2.5	21	35	47	58	67	106	138	168	195	216	238
	3.0	24	41	55	66	77	122	159	192	225	252	280
	3.5	27	45	60	74	86	136	177	216	250	276	308
	4.0	29	49	65	79	93	148	192	232	270	300	336
DOWNHILL 2%	2.0	17	29	39	48	56	92	126	156	185	210	238
	2.5	21	36	49	60	70	114	153	188	220	252	280
	3.0	25	42	56	69	80	130	171	212	245	282	315
	3.5	27	46	62	75	88	142	189	232	270	306	343
	4.0	29	50	67	82	95	154	201	248	290	330	364

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 20/4 • ID 17.0 mm • Kd 0.13 • Flow rate 35 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	15	24	32	38	44	68	87	100	115	126	133
	2.5	19	31	41	50	58	90	114	136	155	174	189
	3.0	22	36	48	58	68	106	135	160	185	204	224
	3.5	24	40	53	65	75	118	153	180	205	234	252
	4.0	26	44	58	70	82	128	165	196	225	252	280
FLAT TERRAIN	2.0	15	25	34	41	48	76	99	120	140	156	175
	2.5	19	32	43	52	61	96	126	152	175	198	217
	3.0	22	37	49	60	70	112	144	176	205	228	252
	3.5	24	41	55	66	78	124	162	196	225	252	280
	4.0	26	44	59	72	84	134	174	212	245	276	301
DOWNHILL 2%	2.0	15	26	35	43	51	84	111	140	165	192	210
	2.5	19	33	44	54	63	102	138	168	200	228	252
	3.0	22	38	50	62	72	118	156	188	220	252	280
	3.5	25	42	56	68	80	128	171	208	245	276	308
	4.0	27	45	60	74	86	138	183	224	260	294	329

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 20/4 • ID 17.0 mm • Kd 0.13 • Flow rate 40 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	14	22	29	35	41	62	81	92	105	114	126
	2.5	17	29	38	46	54	84	108	128	145	162	175
	3.0	20	34	44	54	62	98	126	148	170	192	210
	3.5	22	37	49	60	70	108	141	168	190	216	238
	4.0	24	40	53	65	75	118	153	184	210	234	259
FLAT TERRAIN	2.0	14	23	31	38	44	70	90	108	125	144	161
	2.5	18	30	39	48	56	88	117	140	160	180	203
	3.0	20	34	46	55	64	102	135	160	185	210	231
	3.5	22	38	50	62	71	114	147	180	205	234	259
	4.0	24	41	54	66	77	122	159	192	225	252	280
DOWNHILL 2%	2.0	14	24	32	39	46	76	102	128	150	174	196
	2.5	18	30	40	50	58	94	126	152	180	204	231
	3.0	20	34	46	57	66	108	141	172	205	234	259
	3.5	23	38	51	62	73	118	156	192	220	252	280
	4.0	24	41	55	67	79	126	168	204	240	270	301

Minimum considered pressure 1.5 bar



## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 25/4 • ID 21.2 mm • Kd 0.10 • Flow rate 20l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	30	48	63	74	85	122	147	168	180	192	203
	2.5	39	64	83	100	115	172	213	248	275	300	315
	3.0	45	74	98	118	136	206	258	304	340	372	399
	3.5	50	83	109	132	152	232	294	344	390	426	462
	4.0	54	90	119	144	166	256	324	384	435	480	518
FLAT TERRAIN	2.0	31	52	70	85	98	156	204	244	285	318	350
	2.5	40	67	89	108	126	200	261	312	365	408	448
	3.0	46	77	103	125	146	230	300	364	420	474	518
	3.5	51	86	114	138	161	256	333	404	465	522	581
	4.0	55	92	123	150	175	278	360	436	505	564	623
DOWNHILL 2%	2.0	33	56	76	95	112	190	261	332	395	462	525
	2.5	41	70	95	117	137	228	309	384	455	528	595
	3.0	47	80	108	133	156	256	345	424	505	576	651
	3.5	52	88	118	146	171	280	375	460	545	624	700
	4.0	56	95	128	157	184	300	399	492	575	660	742

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 25/4 • ID 21.2 mm • Kd 0.10 • Flow rate 25 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	26	42	55	66	75	110	135	152	170	180	189
	2.5	34	56	73	88	101	152	192	220	250	270	287
	3.0	39	65	85	103	119	182	231	268	305	336	357
	3.5	44	72	95	115	133	204	261	308	345	384	413
	4.0	47	78	104	126	145	224	285	340	385	426	462
FLAT TERRAIN	2.0	27	45	61	74	85	136	177	212	245	276	308
	2.5	35	58	77	94	109	174	225	272	315	354	392
	3.0	40	67	89	109	126	200	261	316	365	408	455
	3.5	44	74	99	120	140	222	291	348	405	456	504
	4.0	48	80	107	130	152	240	315	380	435	492	546
DOWNHILL 2%	2.0	28	48	65	81	96	162	222	276	330	384	441
	2.5	36	60	82	100	118	194	264	324	385	444	504
	3.0	41	69	93	114	134	220	294	364	430	492	553
	3.5	45	76	102	126	147	240	321	392	460	528	595
	4.0	48	82	110	135	158	258	342	420	490	564	630

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 25/4 • ID 21.2 mm • Kd 0.10 • Flow rate 30 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	23	38	50	59	68	100	123	144	155	168	182
	2.5	30	50	65	79	91	138	174	204	225	252	266
	3.0	35	58	76	92	107	164	207	244	275	306	329
	3.5	39	64	85	103	119	184	234	276	315	348	378
	4.0	42	70	92	112	130	202	258	304	345	384	420
FLAT TERRAIN	2.0	24	40	54	66	76	120	159	192	220	246	273
	2.5	31	52	68	84	97	154	201	244	280	318	350
	3.0	36	60	79	97	113	178	234	280	325	366	406
	3.5	39	66	88	107	125	198	258	312	360	408	448
	4.0	43	71	95	116	135	214	279	336	390	438	483
DOWNHILL 2%	2.0	25	43	58	71	84	142	192	240	290	336	378
	2.5	32	54	72	89	104	172	231	284	340	390	434
	3.0	36	61	82	101	119	194	258	320	375	432	483
	3.5	40	68	91	111	130	212	282	348	405	462	518
	4.0	43	73	98	120	140	228	303	368	435	492	553

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 25/4 • ID 21.2 mm • Kd 0.10 • Flow rate 35 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	21	35	46	54	62	94	114	132	145	162	168
	2.5	27	45	59	72	83	126	159	188	210	234	252
	3.0	32	53	70	84	97	150	192	224	255	282	308
	3.5	35	58	77	94	109	168	216	256	290	318	350
	4.0	38	64	84	102	118	184	237	280	320	354	385
FLAT TERRAIN	2.0	22	37	49	59	69	110	144	172	200	228	252
	2.5	28	47	62	76	88	140	183	220	255	288	315
	3.0	32	54	72	88	102	162	210	256	295	330	364
	3.5	36	60	80	97	113	180	234	284	325	366	406
	4.0	38	65	86	105	122	194	255	304	355	396	441
DOWNHILL 2%	2.0	23	38	52	64	76	126	171	216	255	294	336
	2.5	28	48	65	80	94	154	207	256	300	348	392
	3.0	33	55	74	91	107	174	234	284	335	384	434
	3.5	36	61	82	101	118	190	255	312	365	414	462
	4.0	39	66	88	108	127	206	273	332	390	444	497

Minimum considered pressure 1.5 bar

## Max. Lateral length (meter) at different inlet pressure and different slopes

PCJ HF Bubblers • On PE pipe 25/4 • ID 21.2 mm • Kd 0.10 • Flow rate 40 l/h

	DISTANCE BETWEEN DRIPPERS (METER)											
	INLET PRESSURE (BAR)	0.2	0.4	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	7.0
UPHILL 2%	2.0	20	32	42	50	58	86	108	124	140	150	161
	2.5	25	42	55	66	77	118	150	176	195	216	238
	3.0	29	48	64	78	90	138	177	208	235	264	287
	3.5	32	54	71	86	100	156	198	236	270	300	329
	4.0	35	58	77	94	109	170	219	260	295	330	357
FLAT TERRAIN	2.0	20	34	45	54	63	100	132	160	185	210	231
	2.5	26	43	57	70	81	128	168	204	235	264	294
	3.0	30	50	66	81	94	148	195	236	270	306	336
	3.5	33	55	73	90	104	164	216	260	300	336	371
	4.0	35	59	79	97	112	178	234	280	325	366	406
DOWNHILL 2%	2.0	21	35	47	58	69	116	156	196	230	270	301
	2.5	26	44	59	74	86	140	189	232	275	312	350
	3.0	30	51	68	84	98	160	213	260	305	348	392
	3.5	33	56	75	92	108	174	231	284	335	378	420
	4.0	36	60	81	99	116	188	249	304	355	402	448

Minimum considered pressure 1.5 bar