

Leach Line™ A

Heap leaching dripline.
Integral non-pressure-compensated.
High clogging resistance.

→ 16009 - 16010 - 16012 - 20010 - 20012



High clogging
resistance



Self-cleaning
labyrinth



Anti-migration
mechanism (optional)

/ Benefits & Features

- **High clogging resistance** Even with challenging solution quality, with self-cleaning labyrinth that flushes debris throughout operation.
- **Wide filtration area** Ensures optimal performance even under harsh solution conditions, preventing the entrance of sediments into the drippers.
- **Wide water passages** TurbuNext™ labyrinth ensures wide solution passages, large deep and wide cross-section that improves clogging resistance.
- **Anti-migration clip (smart clip)** Prevents solution migration on uneven surfaces and slopes.
Economical - saves labor. Pre-installed on the dripline during production (optional).

/ Specifications

- ✓ Maximum operating pressure according to driplines diameters and wall thickness. See tables below.
- ✓ Recommended filtration: 200 micron / 80 mesh. Filtration method selected based on the kind and concentration of dirt particles contained in the solution. Wherever sand exceeding 2 ppm exists in the solution, 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.
- ✓ TurbuNext™ labyrinth with superior performance.
- ✓ Weldable into thick wall driplines (0.90, 1.00, 1.20 mm).
- ✓ Injected dripper, very low CV.
- ✓ High UV resistance. Resistant to chemicals used in heap leaching mines.
- ✓ Meets ISO 9261 Standards.

→ Drippers technical data

16009, 16010, 20010 - 0.9, 1.0 mm wall thickness driplines

Flow rate* (l/h)	Max. working pressure (bar)**	Water passages dimensions width-depth-length (mm)	Filtration area (mm ²)	Constant K	Exponent X	Recommended filtration (micron)/(mesh)
1.00	3.0 / 3.5	0.60 x 0.74 x 65	49	0.347	0.46	200 / 80
1.50		0.71 x 0.85 x 65	53	0.520	0.46	200 / 80
2.00		0.76 x 1.03 x 65	54	0.693	0.46	200 / 80
3.00		0.90 x 1.20 x 65	54	1.040	0.46	200 / 80
4.00		0.94 x 1.28 x 33	54	1.387	0.46	200 / 80
8.00		1.52 x 1.28 x 28	50	2.773	0.46	200 / 80

* Flow rate at 1.0 bar pressure ** According to dripline wall thickness

16012, 20012 - 1.2 mm wall thickness driplines

Flow rate* (l/h)	Max. working pressure (bar)	Water passages dimensions width-depth-length (mm)	Filtration area (mm ²)	Constant K	Exponent X	Recommended filtration (micron)/(mesh)
1.05	4.0	0.60 x 0.74 x 65	49	0.364	0.46	200 / 80
1.60		0.71 x 0.85 x 65	53	0.554	0.46	200 / 80
2.10		0.76 x 1.03 x 65	54	0.728	0.46	200 / 80
3.15		0.90 x 1.20 x 65	54	1.092	0.46	200 / 80
4.20		0.94 x 1.28 x 33	54	1.455	0.46	200 / 80
8.40		1.52 x 1.28 x 28	50	2.912	0.46	200 / 80

* Flow rate at 1.0 bar pressure

→ Driplines technical data

Model	Inside diameter (mm)	Wall thickness (mm)	Outside diameter (mm)	Max. working pressure (bar)	Max. flushing pressure (bar)	KD
16009	14.20	0.90	16.00	3.0	3.9	0.40
16010	14.20	1.00	16.20	3.5	4.6	0.40
16012	14.20	1.20	16.60	4.0	5.2	0.40
20010	17.50	1.00	19.50	3.5	4.6	0.10
20012	17.50	1.20	19.90	4.0	5.2	0.10

→ Driplines packaging data (on bundles coils)

Model	Wall thickness (mm)	Distance between drippers (m)	Coil length (m)	Average* coil weight (kg)	Coils in a 40 feet container (units)	Total in a 40 feet container (m)
16009	0.90	0.15 to 1.00	500	20.7	330	165000
16010	1.00	0.15 to 1.00	500	23.0	330	165000
16012	1.20	0.15 to 1.00	400	22.3	352	140800
20010	1.00	0.15 to 1.00	300	16.7	330	99000
20012	1.20	0.15 to 1.00	300	20.2	330	99000

* Calculated weight average. For further details see "Average Coil Weight Disclaimer".

→ Driplines packaging data (on bundles coils) with assembly anti-migration clips

Model	Wall thickness (mm)	Distance between drippers (m)	Coil length (m)	Average* coil weight (kg)	Coils in a 40 feet container (units)	Total in a 40 feet container (m)
16009	0.90	0.15 to 1.00	300	12.5	330	999000
16010	1.00	0.15 to 1.00	300	14.0	330	999000
16012	1.20	0.15 to 1.00	300	16.9	330	999000
20010	1.00	0.15 to 1.00	300	17.0	330	999000
20012	1.20	0.15 to 1.00	300	20.5	330	999000

* Calculated weight average. For further details see "Average Coil Weight Disclaimer".

/ 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

Non-pressure-compensated drippers provide flow adequate to the pressure it is exposed to, according to the formula presented above. In order to simplify the calculations and understandings of the linkage between the flow and the pressure, a table with the flow rates at different working pressures is presented here for each of the drippers presented in this document.

Flow rate (l/h) vs pressure (bar)

16009/16010/20010 - 0.9 and 1.0 mm wall thickness driplines

Flow rate* (l/h)	Pressure (bar)								
	0.2	0.4	0.6	0.8	1.0	1.5	2.0	2.5	3.0
1.00	0.48	0.66	0.79	0.90	1.00	1.21	1.38	1.53	1.66
1.50	0.72	0.98	1.19	1.35	1.50	1.81	2.06	2.29	2.49
2.00	0.95	1.31	1.58	1.80	2.00	2.41	2.75	3.05	3.31
3.00	1.43	1.97	2.37	2.71	3.00	3.61	4.13	4.57	4.97
4.00	1.91	2.62	3.16	3.61	4.00	4.82	5.50	6.10	6.63
8.00	3.81	5.25	6.32	7.22	8.00	9.64	11.00	12.19	13.26

*Flow rate at 1.0 bar pressure

Flow rate (l/h) vs pressure (bar)

16012/20012 - 1.2 mm wall thickness driplines

fFlow rate* (l/h)	Pressure (bar)								
	0.2	0.4	0.6	0.8	1.0	1.5	2.0	2.5	3.0
1.05	0.50	0.69	0.83	0.95	1.05	1.27	1.44	1.60	1.74
1.60	0.76	1.05	1.26	1.44	1.60	1.93	2.20	2.44	2.65
2.10	1.00	1.38	1.66	1.89	2.10	2.53	2.89	3.20	3.48
3.15	1.50	2.07	2.49	2.84	3.15	3.80	4.33	4.80	5.22
4.20	2.00	2.75	3.32	3.79	4.20	5.06	5.77	6.40	6.96
8.40	4.01	5.51	6.64	7.58	8.40	10.12	11.55	12.80	13.92

*Flow rate at 1.0 bar pressure

/ 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.

Non-pressure-compensated drippers of Netafim™ will provide different flow according to the real working pressure, therefore, the influencing factors will be: the pressure that each dripper in the dripline is exposed to, and the allowed flow variation the dripline is designed to, which in most cases is defined as 10% difference in flow, according to the international standards, and / or any other limitation that the customer / planner will prefer to design while considering the crop needs and area topography.

The following tables are only displayed at one inlet pressure for each dripline, since in non-pressure-compensated drippers the flow varies according to the pressure. There might be differences in run lengths with different inlet pressures; however for an initial estimate of the dripline length, the data that is presented in this document (within the tables shown) is sufficiently accurate.

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16009/16010 • ID 14.2 mm • Kd 0.40 • Flow rate 1.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	65	83	97	107	115	122	127	131	135
	1%	71	95	114	131	145	158	170	179	188
Flat terrain	0	78	108	134	159	181	203	222	241	260
Downhill	-1%	83	118	151	183	212	242	270	299	326
	-2%	89	130	169	208	247	285	324	362	401

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16009/16010 • ID 14.2 mm • Kd 0.40 • Flow rate 1.50 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	52	68	80	91	99	106	112	117	121
	1%	56	75	92	106	118	130	139	149	157
Flat terrain	0	60	83	104	123	140	156	171	186	201
Downhill	-1%	63	89	113	136	158	179	200	220	240
	-2%	66	96	124	151	178	204	230	257	282

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16009/16010 • ID 14.2 mm • Kd 0.40 • Flow rate 2.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	44	59	70	80	88	95	101	106	110
	1%	47	64	78	90	101	111	121	130	136
Flat terrain	0	50	69	86	102	116	130	143	155	167
Downhill	-1%	52	73	93	111	128	146	162	178	194
	-2%	54	78	100	122	142	163	183	203	223

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16009/16010 • ID 14.2 mm • Kd 0.40 • Flow rate 3.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	35	47	56	65	72	78	85	90	94
	1%	37	50	61	72	81	89	97	104	111
Flat terrain	0	38	53	66	79	90	100	110	121	129
Downhill	-1%	39	56	70	84	97	109	122	133	144
	-2%	41	58	74	90	105	119	134	148	161

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16009/16010 • ID 14.2 mm • Kd 0.40 • Flow rate 4.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	30	40	48	56	63	69	74	78	83
	1%	31	42	52	61	68	76	82	88	94
Flat terrain	0	32	44	55	66	75	84	91	100	107
Downhill	-1%	32	46	58	69	79	90	99	109	118
	-2%	33	47	60	73	85	97	108	119	129

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16009/16010 • ID 14.2 mm • Kd 0.40 • Flow rate 8.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	19	26	33	38	43	48	52	56	59
	1%	20	27	34	40	46	51	55	60	64
Flat terrain	0	20	28	36	42	48	54	59	65	70
Downhill	-1%	21	29	36	43	50	56	62	68	73
	-2%	21	29	38	45	52	59	66	72	78

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16012 • ID 14.2 mm • Kd 0.40 • Flow rate 1.05 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	63	81	94	105	113	120	126	130	134
	1%	69	93	112	128	142	155	166	176	185
Flat terrain	0	76	105	130	154	176	196	215	234	252
Downhill	-1%	81	114	146	176	205	233	261	288	314
	-2%	86	125	163	201	237	274	310	347	384

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16012 • ID 14.2 mm • Kd 0.40 • Flow rate 1.60 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	50	66	78	89	97	103	110	114	119
	1%	54	73	88	103	114	125	135	144	153
Flat terrain	0	58	80	100	118	134	150	165	179	193
Downhill	-1%	60	85	108	130	151	171	190	210	228
	-2%	64	92	118	144	169	194	219	243	268

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16012 • ID 14.2 mm • Kd 0.40 • Flow rate 2.10 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	43	57	68	78	86	92	99	104	108
	1%	46	62	76	88	99	109	118	125	133
Flat terrain	0	48	67	84	99	113	126	138	150	162
Downhill	-1%	50	71	90	108	124	141	156	172	187
	-2%	52	75	96	117	137	157	176	195	214

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16012 • ID 14.2 mm • Kd 0.40 • Flow rate 3.15 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	34	46	55	64	71	77	82	88	93
	1%	36	48	60	70	79	87	94	102	108
Flat terrain	0	37	51	64	76	87	97	107	117	126
Downhill	-1%	38	54	68	81	94	106	118	129	139
	-2%	39	56	72	87	101	115	129	142	155

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16012 • ID 14.2 mm • Kd 0.40 • Flow rate 4.20 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	29	39	47	55	61	67	72	77	81
	1%	30	41	50	59	67	74	80	86	92
Flat terrain	0	31	43	54	64	73	81	89	96	104
Downhill	-1%	31	44	56	67	77	87	96	105	114
	-2%	32	46	58	71	82	93	104	114	125

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 16012 • ID 14.2 mm • Kd 0.40 • Flow rate 8.40 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	19	26	32	37	42	46	50	54	58
	1%	19	27	33	39	44	49	54	59	63
Flat terrain	0	20	27	34	41	47	53	58	63	68
Downhill	-1%	20	28	35	42	48	54	60	66	71
	-2%	20	29	36	44	50	57	63	69	75

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20010 • ID 17.5 mm • Kd 0.10 • Flow rate 1.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	93	111	123	132	137	141	146	148	150
	1%	110	139	161	180	195	207	219	229	236
Flat terrain	0	128	171	209	243	275	304	333	360	385
Downhill	-1%	143	199	251	302	350	398	445	491	538
	-2%	160	230	298	367	435	505	575	644	712

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20010 • ID 17.5 mm • Kd 0.10 • Flow rate 1.50 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	78	95	108	117	124	130	134	138	141
	1%	88	113	132	149	163	176	186	196	205
Flat terrain	0	99	132	161	188	212	235	257	278	298
Downhill	-1%	108	148	186	222	256	290	322	356	387
	-2%	117	166	213	260	305	351	397	443	489

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20010 • ID 17.5 mm • Kd 0.10 • Flow rate 2.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	67	84	96	106	113	119	125	130	133
	1%	75	96	114	129	142	154	164	174	182
Flat terrain	0	82	110	134	156	177	195	214	231	248
Downhill	-1%	88	121	151	180	207	233	259	284	309
	-2%	95	133	170	205	240	274	309	343	377

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20010 • ID 17.5 mm • Kd 0.10 • Flow rate 3.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	54	69	80	90	97	104	110	114	119
	1%	59	77	91	105	116	125	135	144	152
Flat terrain	0	63	85	104	121	136	151	166	179	192
Downhill	-1%	67	91	113	134	154	173	191	210	227
	-2%	71	98	124	149	173	197	221	244	267

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20010 • ID 17.5 mm • Kd 0.10 • Flow rate 4.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	46	59	70	79	86	92	98	103	107
	1%	49	65	78	89	99	109	117	124	131
Flat terrain	0	53	71	86	101	113	126	138	149	159
Downhill	-1%	55	75	93	110	125	141	155	170	184
	-2%	58	80	100	120	139	157	175	194	211

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20010 • ID 17.5 mm • Kd 0.10 • Flow rate 8.00 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	31	41	48	56	62	67	71	76	80
	1%	32	43	52	60	67	74	80	86	91
Flat terrain	0	34	45	56	65	73	81	89	95	103
Downhill	-1%	35	47	58	68	78	87	96	104	113
	-2%	36	49	61	73	83	94	104	113	123

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20012 • ID 17.5 mm • Kd 0.10 • Flow rate 1.05 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	91	109	121	130	136	140	144	147	149
	1%	107	135	158	176	191	204	215	224	233
Flat terrain	0	124	166	202	236	266	295	322	348	373
Downhill	-1%	139	192	242	291	337	383	428	473	517
	-2%	154	221	286	352	416	482	547	611	675

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20012 • ID 17.5 mm • Kd 0.10 • Flow rate 1.60 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	75	92	105	115	122	127	133	136	139
	1%	85	109	128	145	159	171	182	192	200
Flat terrain	0	95	127	154	180	203	225	246	267	286
Downhill	-1%	103	142	178	212	244	276	307	338	368
	-2%	112	158	202	246	289	332	375	418	461

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20012 • ID 17.5 mm • Kd 0.10 • Flow rate 2.10 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	66	82	94	104	112	118	123	128	131
	1%	73	94	111	126	139	150	161	170	179
Flat terrain	0	79	107	130	152	171	190	207	224	241
Downhill	-1%	85	117	146	173	199	225	250	274	298
	-2%	91	128	163	197	230	263	296	329	361

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20012 • ID 17.5 mm • Kd 0.10 • Flow rate 3.15 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	53	67	78	88	95	102	107	113	117
	1%	57	74	89	102	112	123	132	140	148
Flat terrain	0	61	82	100	117	132	146	160	174	186
Downhill	-1%	65	88	110	130	149	167	185	203	219
	-2%	68	95	120	144	167	190	212	234	256

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20012 • ID 17.5 mm • Kd 0.10 • Flow rate 4.20 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	45	58	68	77	84	91	96	101	105
	1%	48	63	76	87	97	106	114	122	128
Flat terrain	0	51	68	84	98	110	123	134	144	155
Downhill	-1%	53	72	90	106	121	136	150	164	178
	-2%	56	77	97	116	134	151	169	186	203

Max. lateral length (meters) at different slopes - 10% flow variation

Leach Line™ A • 20012 • ID 17.5 mm • Kd 0.10 • Flow rate 8.40 l/h • Inlet pressure 1.5 Bar

	Distance between drippers (meter)									
	Slope	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Uphill	2%	30	40	47	54	60	65	70	74	78
	1%	31	42	50	59	65	71	78	83	89
Flat terrain	0	33	44	54	63	71	78	86	93	100
Downhill	-1%	33	45	56	66	75	84	93	101	109
	-2%	34	47	59	70	80	90	100	110	119