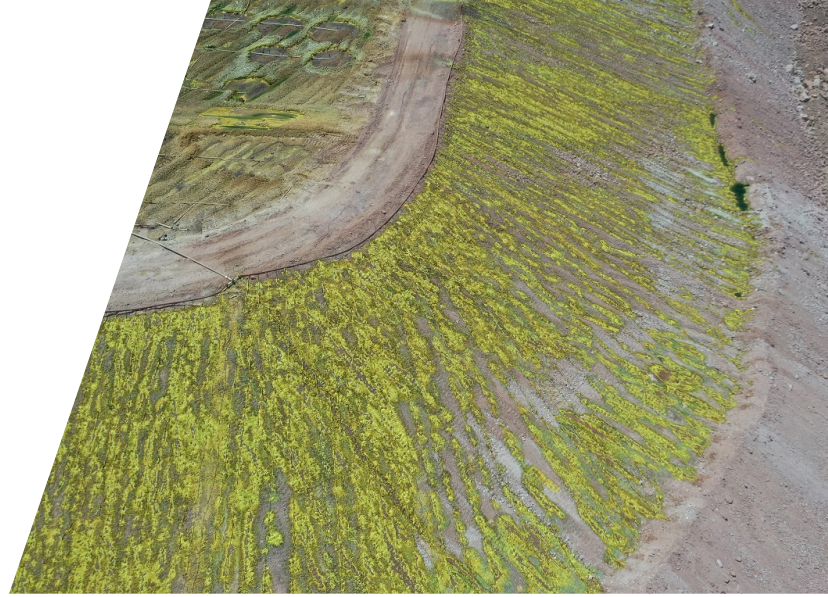


Leach Line™ D

Heap leaching dripline, mainly for slopes in gold and silver mine leaching. Integral pressure-compensated. Superior uniform flow in slopes.

→ 16009 - 16010 - 16012 - 20010 - 20012



Pressure-compensated



Self-flushing mechanism



Wide filtration area

/ Benefits & Features

- **Pressure-compensated** Precise and equal amounts of solution delivered over a broad pressure range, ensuring 100% uniformity of water and chemicals distribution along the laterals.
- **Continuously self-flushing** Flushes debris throughout operation, while ensuring constant dripper operation even in challenging water quality.
- **Wide filtration area** Ensures optimal performance even under harsh solution conditions, preventing the entrance of sediment into the labyrinths.
- **Wide water passages** TurboNet™ labyrinth ensures wide solution passages, large deep and wide cross-section that improves clogging resistance. The solution is drawn into the dripper from the stream center, preventing the entrance of sediment into the drippers.
- **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

- ✓ Pressure-compensated range according to table below.
- ✓ Recommended filtration: depending on dripper flow rate. 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.
- ✓ TurboNet™ labyrinth with large water passage.
- ✓ Weldable into thick wall driplines (0.90, 1.00, 1.20 mm).
- ✓ Injected dripper, very low CV with injected silicon diaphragm.
- ✓ High UV resistant. Resistant to chemicals used in heap leaching gold and silver mines.
- ✓ Meets ISO 9261 Standards with Israel.

→ Drippers technical data

Flow rate* (l/h)	Working pressure range (bar)	Water passages dimensions width-depth-length (mm)	Filtration area (mm ²)	Constant K	Exponent* X	Recommended filtration (micron)/(mesh)
1.00	0.40 - 3.0	0.61 x 0.60 x 8	39	1.0	0	130/120
1.60	0.40 - 3.0	0.76 x 0.73 x 8	39	1.6	0	200/80
2.00	0.40 - 3.5	0.76 x 0.88 x 8	39	2.0	0	200/80
3.00	0.40 - 3.5	1.02 x 0.88 x 8	39	3.0	0	200/80
3.50	0.60 - 3.5	1.02 x 0.88 x 8	39	3.5	0	200/80
3.80	0.60 - 3.5	1.02 x 0.88 x 8	39	3.8	0	200/80

* Within working pressure range

→ 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	2.5/3.0/3.5*	3.9	0.72
16010	14.20	1.00	16.20	2.5/3.0/3.5*	4.6	0.72
16012	14.20	1.20	16.60	2.5/3.0/3.5*	5.2	0.72
20010	17.50	1.00	19.50	2.5/3.0/3.5*	4.6	0.25
20012	17.50	1.20	19.90	2.5/3.0/3.5*	5.2	0.25

* The maximum working pressure is defined by the dripper or by the dripperline wall thickness

→ 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	18.5	330	165000
16010	1.00	0.15 to 1.00	500	20.4	330	165000
16012	1.20	0.15 to 1.00	400	22.4	352	140800
20010	1.00	0.15 to 1.00	300	16.8	330	99000
20012	1.20	0.15 to 1.00	300	20.3	330	99000

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

→ Driplines packaging data (on bundles coils) with anti-migration assembly 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	13.3	330	99000
16010	1.00	0.15 to 1.00	300	13.5	330	99000
16012	1.20	0.15 to 1.00	300	16.1	330	99000
20010	1.00	0.15 to 1.00	300	16.3	330	99000
20012	1.20	0.15 to 1.00	300	19.3	330	99000

* 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

In all Netafim™ pressure-compensated drippers - including DripNet PC™ (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-pressure-compensated dripper and provide flow that increases with the pressure increase until reaching the minimum defined limit working pressure.

If the Netafim™ pressure-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, pressure-compensated 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

Leach Line™ D 16009/16010/16012 • ID 14.2 mm • Kd 0.72 • Flow rate 1.00 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	82	111	134	153	169	183	194	204	213
	1.5	105	144	177	206	231	253	273	291	307
	2.0	122	168	208	244	275	303	329	353	374
	2.5	135	188	233	274	310	344	374	402	428
	3.0	146	204	254	299	340	377	412	444	474
FLAT TERRAIN	1.0	92	130	164	196	226	254	281	306	330
	1.5	113	161	203	243	280	314	348	380	410
	2.0	129	183	232	277	319	359	397	433	468
	2.5	136	197	255	311	369	429	493	563	647
	3.0	152	216	274	328	378	426	471	515	556
DOWNHILL 2%	1.0	102	149	196	242	291	343	399	464	540
	1.5	122	177	229	281	335	391	452	519	599
	2.0	136	197	255	311	369	429	493	563	647
	2.5	148	214	276	336	397	461	527	601	687
	3.0	159	228	294	358	422	488	558	634	722

Minimum considered pressure 0.4 bar

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

Leach Line™ D 16009/16010/16012 • ID 14.2 mm • Kd 0.72 • Flow rate 1.60 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	62	85	104	121	135	148	158	168	178
	1.5	79	109	136	159	179	198	215	231	245
	2.0	91	127	158	186	211	235	256	275	294
	2.5	101	140	176	208	236	263	288	311	333
	3.0	109	152	191	226	258	288	315	341	365
FLAT TERRAIN	1.0	68	96	121	145	167	188	207	226	244
	1.5	83	118	150	179	206	232	257	280	303
	2.0	95	134	170	204	235	265	293	320	346
	2.5	104	148	187	224	259	291	322	352	381
	3.0	112	159	202	242	279	314	348	380	411
DOWNHILL 2%	1.0	73	106	138	169	199	229	259	292	324
	1.5	88	127	164	199	233	267	301	336	371
	2.0	99	142	183	222	259	296	333	370	408
	2.5	108	155	199	241	281	320	359	399	439
	3.0	115	166	213	258	300	341	382	424	466

Minimum considered pressure 0.4 bar

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

Leach Line™ D 16009/16010//16012 • ID 14.2 mm • Kd 0.72 • Flow rate 2.00 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	55	75	92	107	121	132	142	152	161
	1.5	69	95	119	140	158	176	191	205	219
	2.0	79	110	138	163	185	207	226	244	260
	2.5	87	122	153	182	207	231	254	274	293
	3.0	94	132	166	197	226	252	277	300	321
	3.5	100	141	178	211	242	270	297	322	346

FLAT TERRAIN	1.0	58	83	105	125	144	162	179	195	211
	1.5	72	102	129	155	178	201	222	242	262
	2.0	82	116	147	177	203	229	254	277	299
	2.5	90	128	162	194	224	252	279	305	330
	3.0	97	137	174	209	241	272	301	329	355
	3.5	103	146	186	222	257	289	320	350	378

DOWNHILL 2%	1.0	62	91	118	144	169	193	218	241	267
	1.5	75	109	140	170	199	227	254	281	309
	2.0	85	122	157	190	221	252	282	311	341
	2.5	93	133	171	207	241	274	306	337	369
	3.0	99	142	182	221	257	292	326	359	392
	3.5	105	151	193	234	272	308	343	379	413

Minimum considered pressure 0.4 bar

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

Leach Line™ D 16009/16010//16012 • ID 14.2 mm • Kd 0.72 • Flow rate 3.00 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	43	59	73	86	97	107	116	124	132
	1.5	53	74	93	110	125	139	153	165	176
	2.0	61	86	108	128	146	162	178	194	207
	2.5	67	95	119	142	162	181	199	216	232
	3.0	73	102	129	154	176	197	217	236	253
	3.5	77	109	138	164	188	211	233	253	272

FLAT TERRAIN	1.0	45	63	80	96	111	125	138	150	163
	1.5	55	78	99	119	137	155	171	186	202
	2.0	63	89	113	136	157	176	195	213	230
	2.5	69	98	124	149	172	194	214	235	254
	3.0	74	105	134	161	185	209	231	253	274
	3.5	79	112	142	171	197	223	246	269	291

DOWNHILL 2%	1.0	47	68	88	107	125	143	161	177	194
	1.5	57	82	106	128	149	169	190	209	228
	2.0	64	92	119	144	167	190	212	233	254
	2.5	70	101	130	157	182	207	230	253	275
	3.0	76	108	139	168	194	221	246	270	294
	3.5	80	115	147	177	206	234	260	285	311

Minimum considered pressure 0.4 bar

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

Leach Line™ D 16009/16010//16012 • ID 14.2 mm • Kd 0.72 • Flow rate 3.50 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	33	46	56	66	74	81	88	95	100
	1.5	45	63	78	93	106	117	128	139	148
	2.0	53	74	93	110	126	141	154	167	179
	2.5	59	83	104	124	142	159	174	190	204
	3.0	64	90	114	136	155	174	191	208	224
	3.5	68	97	122	146	167	187	206	224	241

FLAT TERRAIN	1.0	35	50	63	76	87	98	108	118	128
	1.5	47	66	84	100	116	130	144	158	170
	2.0	54	77	98	117	135	152	168	184	199
	2.5	60	86	108	130	150	169	187	205	222
	3.0	65	93	118	141	163	184	204	222	241
	3.5	69	99	126	151	174	197	218	238	257

DOWNHILL 2%	1.0	37	54	70	86	100	115	129	143	157
	1.5	48	69	89	108	126	144	161	177	193
	2.0	56	80	102	124	144	164	182	201	219
	2.5	61	88	113	137	158	180	201	221	240
	3.0	66	95	122	147	171	194	216	238	258
	3.5	71	101	130	157	182	206	230	252	274

Minimum considered pressure 0.6 bar

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

Leach Line™ D 16009/16010//16012 • ID 14.2 mm • Kd 0.72 • Flow rate 3.80 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	31	44	54	63	71	78	85	91	96
	1.5	43	59	74	88	100	112	122	132	141
	2.0	50	70	88	105	120	134	147	159	171
	2.5	56	79	99	118	135	151	166	180	194
	3.0	61	86	108	129	148	165	182	198	213
	3.5	65	92	116	138	158	178	196	213	230

FLAT TERRAIN	1.0	33	47	60	72	82	93	102	112	121
	1.5	44	62	79	95	110	123	137	149	161
	2.0	51	73	92	111	128	144	160	175	189
	2.5	57	81	103	124	142	160	178	194	210
	3.0	62	88	112	134	155	174	193	211	228
	3.5	66	94	119	143	165	186	206	226	244

DOWNHILL 2%	1.0	35	51	66	81	94	108	122	134	147
	1.5	46	65	84	102	119	135	151	167	182
	2.0	53	75	97	117	136	155	173	190	207
	2.5	58	83	107	129	150	170	190	209	227
	3.0	63	90	115	139	161	183	204	224	244
	3.5	67	96	122	148	172	195	217	239	259

Minimum considered pressure 0.6 bar

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

Leach Line™ D 20010/20012 • ID 17.5 mm • Kd 0.25 • Flow rate 1.00 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	142	173	195	212	225	235	244	251	257
	1.5	191	238	275	306	331	352	371	387	401
	2.0	226	285	333	374	408	438	465	489	510
	2.5	254	323	380	428	470	508	541	572	598
	3.0	278	355	419	474	523	566	605	641	674
FLAT TERRAIN	1.0	179	235	284	329	371	410	446	482	516
	1.5	222	292	354	410	461	510	556	600	642
	2.0	254	334	405	469	528	584	637	688	736
	2.5	280	369	446	517	583	644	702	758	812
	3.0	303	398	482	559	629	696	759	819	877
DOWNHILL 2%	1.0	217	308	409	535	812	**	**	**	**
	1.5	255	355	463	596	878	**	**	**	**
	2.0	283	392	506	644	931	**	**	**	**
	2.5	307	422	542	685	976	**	**	**	**
	3.0	328	449	574	721	1016	**	**	**	**

Minimum considered pressure 0.4 bar

Due to lateral filling time and flushing effectiveness it is not recommended to exceed 800 meters lateral length

** In such a cases where the head losses are minor, due to low flow rate associated with wide drippers spacing and positive slope (downhill), the driplines lengths are exceeding the maximum lengths that we determined to achieve effective lateral flushing. In these cases we using smaller diameter driplines that can be found on the above tables .

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

Leach Line™ D 20010/20012 • ID 17.5 mm • Kd 0.25 • Flow rate 1.60 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	112	139	160	177	191	202	212	221	228
	1.5	147	186	218	245	268	288	307	323	338
	2.0	172	220	260	294	324	351	375	397	418
	2.5	193	248	294	334	369	401	430	457	482
	3.0	210	271	322	367	407	443	477	508	536
FLAT TERRAIN	1.0	132	174	210	244	274	303	331	357	382
	1.5	164	216	262	303	341	378	412	445	476
	2.0	188	248	300	347	391	433	472	509	545
	2.5	207	273	330	383	431	477	520	562	601
	3.0	224	295	357	414	466	515	562	607	650
DOWNHILL 2%	1.0	153	210	266	325	387	457	542	663	**
	1.5	182	247	309	373	440	515	602	728	**
	2.0	204	275	342	411	482	560	651	779	**
	2.5	222	299	370	442	517	598	693	824	**
	3.0	238	319	394	470	548	632	729	862	**

Minimum considered pressure 0.4 bar

Due to lateral filling time and flushing effectiveness it is not recommended to exceed 800 meters lateral length

** In such a cases where the head losses are minor, due to low flow rate associated with wide drippers spacing and positive slope (downhill), the driplines lengths are exceeding the maximum lengths that we determined to achieve effective lateral flushing. In these cases we using smaller diameter driplines that can be found on the above tables .

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

Leach Line™ D 20010/20012 • ID 17.5 mm • Kd 0.25 • Flow rate 2.00 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	99	124	144	161	174	186	196	205	213
	1.5	129	165	194	219	241	260	278	293	307
	2.0	151	194	230	261	289	314	336	356	376
	2.5	169	218	259	295	327	356	383	408	431
	3.0	184	238	283	324	359	393	423	451	477
	3.5	197	255	305	349	388	424	458	489	518
FLAT TERRAIN	1.0	115	151	182	211	238	263	287	310	332
	1.5	142	188	227	263	296	328	357	385	413
	2.0	163	215	260	301	339	375	409	442	473
	2.5	180	236	286	332	374	414	451	487	521
	3.0	194	255	309	359	404	447	487	527	563
	3.5	207	272	330	382	431	476	519	561	600
DOWNHILL 2%	1.0	130	178	223	268	314	363	415	474	544
	1.5	156	211	261	311	361	414	470	533	605
	2.0	175	235	290	344	398	454	514	579	654
	2.5	191	256	315	372	430	489	550	617	695
	3.0	204	274	336	397	457	518	582	653	731
	3.5	216	289	355	418	481	545	611	683	764

Minimum considered pressure 0.4 bar

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

Leach Line™ D 20010/20012 • ID 17.5 mm • Kd 0.25 • Flow rate 3.00 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	79	101	118	132	145	156	166	175	183
	1.5	102	131	155	177	195	212	227	241	255
	2.0	119	153	182	209	232	253	272	290	306
	2.5	132	171	204	234	260	285	307	329	348
	3.0	143	186	223	256	285	312	338	361	383
	3.5	153	200	239	275	307	337	364	390	414
FLAT TERRAIN	1.0	88	116	141	163	184	203	222	239	256
	1.5	110	145	175	203	229	253	276	298	319
	2.0	126	165	200	232	262	289	316	341	365
	2.5	138	182	221	256	289	319	348	376	403
	3.0	149	197	239	277	312	345	376	406	435
	3.5	159	210	254	295	332	368	401	433	463
DOWNHILL 2%	1.0	98	133	165	196	224	254	285	316	348
	1.5	118	158	195	230	263	296	330	364	398
	2.0	133	178	218	257	293	328	365	401	438
	2.5	145	194	238	279	317	356	394	432	471
	3.0	156	208	254	298	339	379	419	460	500
	3.5	165	220	269	315	358	400	442	484	526

Minimum considered pressure 0.4 bar

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

Leach Line™ D 20010/20012 • ID 17.5 mm • Kd 0.25 • Flow rate 3.50 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	53	70	83	95	104	112	119	126	131
	1.5	73	98	120	139	155	169	183	195	207
	2.0	87	118	144	168	188	207	225	241	256
	2.5	97	132	163	190	214	237	258	276	295
	3.0	106	145	178	209	236	261	284	306	326
	3.5	114	156	192	225	254	282	307	331	354

FLAT TERRAIN	1.0	59	81	100	118	134	151	165	179	192
	1.5	78	107	134	158	180	201	221	239	257
	2.0	91	125	156	185	211	235	258	280	302
	2.5	101	140	174	206	235	262	288	312	336
	3.0	110	152	189	223	255	285	313	340	366
	3.5	117	162	202	239	272	305	335	364	391

DOWNHILL 2%	1.0	65	92	118	143	167	191	214	237	259
	1.5	83	116	148	177	206	233	259	285	311
	2.0	95	133	168	202	233	263	292	320	348
	2.5	105	147	185	221	255	288	319	350	379
	3.0	113	158	200	238	274	309	342	374	406
	3.5	120	168	212	253	291	328	362	396	429

Minimum considered pressure 0.6 bar

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

Leach Line™ D 20010/20012 • ID 17.5 mm • Kd 0.25 • Flow rate 3.08 l/h

	Distance between drippers (meter)									
	Inlet pressure (bar)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Uphill 2%	1.0	50	66	80	91	100	108	115	122	127
	1.5	70	94	114	132	148	162	175	187	198
	2.0	82	112	137	160	179	198	215	230	245
	2.5	92	126	155	181	204	225	246	264	281
	3.0	101	138	170	199	224	249	271	292	312
	3.5	108	148	183	214	242	269	293	316	338

FLAT TERRAIN	1.0	56	77	95	112	128	143	157	170	183
	1.5	74	102	127	150	170	190	209	227	244
	2.0	86	119	148	175	200	223	245	266	286
	2.5	96	132	165	195	223	249	273	297	319
	3.0	104	144	179	212	242	270	297	322	347
	3.5	111	154	192	226	259	289	318	345	371

DOWNHILL 2%	1.0	61	87	111	135	157	179	201	221	243
	1.5	78	110	139	167	194	219	244	268	292
	2.0	90	126	159	191	220	249	276	302	328
	2.5	99	139	175	209	241	272	302	330	358
	3.0	107	150	188	225	259	292	323	354	383
	3.5	114	159	200	239	275	309	342	374	405

Minimum considered pressure 0.6 bar

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