

Button & Pot dripper

On line non pressure-compensated dripper for applications such as greenhouses, nurseries, garden pots



High clogging resistance



Flexible location



Compact size

/ Benefits & Features

- **TurboNet™** Labyrinth ensures wide water passages, large deep and wide cross section that improves clogging resistance.
- **Flexible location** Dripper can be positioned exactly where required. Number of drippers can be increased to increase the water quantities applied aimed at meeting tree's growth rate requirements. Allows the installation of "spider assembly", splitting the drip supply to a number of drip outlets.

/ Specifications

- ✓ Working pressure up to 2.0 bar.
- ✓ 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.
- ✓ TurboNet™ labyrinth with large water passage.
- ✓ Insertable into thick wall blank PE pipes (0.90, 1.00, 1.20 mm).
- ✓ Injected dripper, very low CV.
- ✓ The Pot model to be threaded into a 3*5 mm micro-tube.

→ DRIPPERS TECHNICAL DATA

Button drippers

FLOW RATE* (L/H)	MAXIMUM WORKING PRESSURE (BAR)	WATER PASSAGES DIMENSIONS WIDTH-DEPTH-LENGTH (MM)	CONSTANT K	EXPONENT X	BASIS CODE COLOR	CAP COLOR CODE
2.0	2.0	0.98 x 0.89 x 50	0.662	0.48	Red	Black
3.0	2.0	1.05 x 0.95 x 50	0.993	0.48	Blue	Black
4.0	2.0	1.27 x 1.20 x 50	1.325	0.48	Black	Black
8.0	2.0	1.65 x 1.40 x 50	2.649	0.48	Green	Black

*Flow rate at 1.0 bar pressure

→ DRIPPERS TECHNICAL DATA

Pot drippers

FLOW RATE* (L/H)	MAXIMUM WORKING PRESSURE (BAR)	WATER PASSAGES DIMENSIONS WIDTH-DEPTH-LENGTH (MM)	CONSTANT K	EXPONENT X	BASIS CODE COLOR	CAP COLOR CODE
2.0	2.0	0.98 x 0.89 x 50	0.662	0.48	Red	Black
4.0	2.0	1.27 x 1.20 x 50	1.325	0.48	Black	Black
8.0	2.0	1.65 x 1.40 x 50	2.649	0.48	Green	Black

*Flow rate at 1.0 bar pressure

→ DRIPPERS PACKAGE DATA

	QUANTITY P/BOX UNITS	BOX DIMENSIONS (CM X CM X CM)	BOX WEIGHT (KG)
Flat outlet	10000	57 x 28 x 27	12.7
Barb outlet	9500	57 x 28 x 27	12.4
Nipple outlet	8500	57 x 28 x 27	11.2

/ 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-regulated 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)

Button drippers

FLOW RATE* (L/H)	PRESSURE (BAR)									
	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0
2.0	0.92	1.29	1.56	1.80	2.00	2.18	2.35	2.51	2.65	2.79
3.0	1.38	1.93	2.35	2.69	3.00	3.27	3.52	3.76	3.98	4.18
4.0	1.85	2.58	3.13	3.60	4.00	4.37	4.70	5.01	5.31	5.58
8.0	3.69	5.15	6.26	7.19	8.00	8.73	9.40	10.02	10.61	11.16

*Nominal flow rate at 1.0 bar pressure

Flow rate (l/h) vs. Pressure (bar)

Pot drippers

FLOW RATE* (L/H)	PRESSURE (BAR)									
	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0
2.0	0.92	1.29	1.56	1.80	2.00	2.18	2.35	2.51	2.65	2.79
4.0	1.85	2.58	3.13	3.60	4.00	4.37	4.70	5.01	5.31	5.58
8.0	3.69	5.15	6.26	7.19	8.00	8.73	9.40	10.02	10.61	11.16

*Nominal 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-regulated 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-regulated 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

Button & Pot drippers • On PE pipe 16/4 • ID 13.2 mm • Kd 0.39 • Flow rate 2.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	45	69	86	97	113	132	140
	1%	48	78	101	118	146	198	235
FLAT TERRAIN	0	52	87	117	143	188	297	415
DOWNHILL	-1%	55	96	132	166	228	399	615
	-2%	58	104	147	189	269	204	155

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

Button drippers • On PE pipe 16/4 • ID 13.2 mm • Kd 0.39 • Flow rate 3.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	36	57	71	82	98	123	135
	1%	38	62	80	95	120	168	210
FLAT TERRAIN	0	40	68	90	110	146	231	325
DOWNHILL	-1%	42	73	100	124	170	291	440
	-2%	43	78	108	137	194	354	175

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

Button & Pot drippers • On PE pipe 16/4 • ID 13.2 mm • Kd 0.39 • Flow rate 4.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	30	49	62	72	87	114	130
	1%	32	52	68	81	104	150	190
FLAT TERRAIN	0	33	56	75	92	122	192	270
DOWNHILL	-1%	34	60	82	101	138	234	350
	-2%	36	63	88	111	155	276	440

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

Button & Pot drippers • On PE pipe 16/4 • ID 13.2 mm • Kd 0.39 • Flow rate 8.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	20	33	43	51	65	90	110
	1%	21	35	46	55	71	105	140
FLAT TERRAIN	0	21	36	48	59	78	126	175
DOWNHILL	-1%	22	38	51	63	86	141	210
	-2%	22	39	53	67	92	159	245

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

Button & Pot drippers • On PE pipe 20/4 • ID 17.0 mm • Kd 0.13 • Flow rate 2.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	69	96	112	121	132	144	145
	1%	78	118	145	166	197	246	270
FLAT TERRAIN	0	87	142	187	226	296	462	645
DOWNHILL	-1%	96	165	227	284	396	717	360
	-2%	104	187	267	345	212	153	150

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

Button drippers • On PE pipe 20/4 • ID 17.0 mm • Kd 0.13 • Flow rate 3.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	56	82	97	108	122	138	145
	1%	62	95	119	138	168	219	250
FLAT TERRAIN	0	67	109	144	174	228	357	500
DOWNHILL	-1%	72	123	168	209	288	507	790
	-2%	77	137	191	245	350	165	150

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

Button & Pot drippers • On PE pipe 20/4 • ID 17.0 mm • Kd 0.13 • Flow rate 4.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	48	72	86	98	113	132	140
	1%	52	81	102	120	147	198	235
FLAT TERRAIN	0	56	91	120	145	191	300	415
DOWNHILL	-1%	59	101	137	170	231	402	615
	-2%	63	110	152	194	273	201	155

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

Button & Pot drippers • On PE pipe 20/4 • ID 17.0 mm • Kd 0.13 • Flow rate 8.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	33	50	63	73	89	114	130
	1%	34	54	70	83	105	150	190
FLAT TERRAIN	0	36	59	77	94	123	192	270
DOWNHILL	-1%	37	63	84	104	140	234	350
	-2%	39	67	91	114	156	279	440

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

Button & Pot drippers • On PE pipe 25/4 • ID 21.2 mm • Kd 0.10 • Flow rate 2.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	90	117	129	135	141	147	150
	1%	108	157	188	209	237	273	285
FLAT TERRAIN	0	127	207	272	330	431	678	940
DOWNHILL	-1%	145	256	358	456	650	345	310
	-2%	163	306	449	175	158	150	145

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

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

Button drippers • On PE pipe 25/4 • ID 21.2 mm • Kd 0.10 • Flow rate 3.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	75	103	118	126	135	144	150
	1%	86	129	158	180	210	255	275
FLAT TERRAIN	0	98	160	210	255	333	522	730
DOWNHILL	-1%	109	189	261	330	462	849	330
	-2%	119	218	314	409	174	153	145

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

Button & Pot drippers • On PE pipe 25/4 • ID 21.2 mm • Kd 0.10 • Flow rate 4.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	66	93	108	118	129	141	145
	1%	73	112	139	159	191	240	265
FLAT TERRAIN	0	81	133	175	212	278	435	605
DOWNHILL	-1%	89	153	210	264	366	657	390
	-2%	96	173	245	317	461	156	150

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

Button & Pot drippers • On PE pipe 25/4 • ID 21.2 mm • Kd 0.10 • Flow rate 8.0 l/h • Inlet pressure 1.5 Bar

	DISTANCE BETWEEN DRIPPERS (METER)							
	SLOPE	0.25	0.50	0.75	1.00	1.50	3.00	5.00
UPHILL	2%	46	68	83	94	110	132	140
	1%	49	77	97	114	141	192	230
FLAT TERRAIN	0	52	86	113	137	179	282	390
DOWNHILL	-1%	56	94	128	158	215	372	570
	-2%	58	102	142	179	252	468	160