

# Aries™ TWD

Integral non pressure-compensated,  
high clogging resistance dripper,  
for multi seasonal applications

→ 12150 - 16125 - 16150 - 22125



High clogging  
resistance



Self-cleaning  
labyrinth



Wide filtration  
area

## / Benefits & Features

- **High clogging resistance** Even with poor quality water, with self-cleaning labyrinth that flushes debris, throughout operation.
- **Wide filtration area** Ensures optimal performance even under harsh water conditions, preventing the entrance of sediments into the drippers.
- **TurbuNext™** Labyrinth ensures wide water passages, large deep and wide cross section that improves clogging resistance.

## / Specifications

- ✓ Maximum system pressure: according to driplines wall thickness.
- ✓ Recommended filtration: depending on dripper flow rate. 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.
- ✓ TurbuNext™ labyrinth with superior performance.
- ✓ Weldable into thin wall driplines (0.31, 0.38 mm).
- ✓ Injected dripper, very low CV.
- ✓ High UV resistant. Resistant to standard nutrients used in agriculture.
- ✓ Aries™ driplines meet ISO 9261 Standards with Israel Standard Institute (SII)-certified production.

## → DRIPPERS TECHNICAL DATA

12150, 16125, 16150, 22125 - 0.31, 0.38 mm wall thickness driplines

FLOW RATE* (L/H)	MAXIMUM WORKING PRESSURE (BAR)**	WATER PASSAGES DIMENSIONS WIDTH-DEPTH-LENGTH (MM)	FILTRATION AREA (MM <sup>2</sup> )	CONSTANT K	EXPONENT X	RECOMMENDED FILTRATION (MICRON)/(MESH)
0.50	1.5 / 1.8 / 2.2 / 3.0	0.47 x 0.53 x 65	39	0.173	0.46	130/120
0.80		0.54 x 0.69 x 65	43	0.277	0.46	130/120
0.95		0.60 x 0.74 x 65	49	0.329	0.46	200/80
1.35		0.71 x 0.85 x 65	53	0.468	0.46	200/80
1.85		0.76 x 1.03 x 65	54	0.641	0.46	200/80
2.80		0.90 x 1.20 x 65	54	0.971	0.46	200/80
3.80		0.94 x 1.28 x 33	54	1.318	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 driplines wall thicknesses / inside diameter

## → DRIPLINES TECHNICAL DATA

MODEL	INSIDE DIAMETER (MM)	WALL THICKNESS (MM)	OUTSIDE DIAMETER (MM)	MAX. WORKING PRESSURE (BAR)	MAXIMUM FLUSHING PRESSURE (BAR)	KD
12150	11.80	0.38	12.56	3.0	3.9	0.40
16125	16.20	0.31	16.82	1.8	2.3	0.30
16150	16.20	0.38	16.96	2.2	2.9	0.30
22125	22.20	0.31	22.82	1.5	2.0	0.06

## → DRIPLINES PACKAGE DATA (ON CARTON COIL)

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)
12150	0.38	0.15	1000	19.1	480	480000
		0.20 to 0.25	1100	19.3	480	528000
		0.30 to 1.00	1200	19.8	480	576000
16125	0.31	0.15 to 0.25	1000	18.7	640	640000
		0.30 to 1.00	1100	19.5	640	704000
16150	0.38	0.15 to 0.25	900	20.1	640	576000
		0.30 to 1.00	1000	21.4	640	640000
22125	0.31	0.15 to 0.25	900	21.9	640	576000
		0.30 to 1.00	1000	23.4	640	640000

\* 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-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)

12150, 16125, 16150, 22125 - 0.31 and 0.38 mm wall thickness driplines

FLOW RATE* (L/H)	PRESSURE (BAR)							
	0.2	0.4	0.6	0.8	1.0	1.5	2.0	2.25
0.50	0.24	0.33	0.39	0.45	0.50	0.60	0.69	0.76
0.80	0.38	0.52	0.63	0.72	0.80	0.96	1.10	1.15
0.95	0.45	0.62	0.75	0.86	0.95	1.14	1.31	1.36
1.35	0.64	0.89	1.07	1.22	1.35	1.63	1.86	1.94
1.85	0.88	1.21	1.46	1.67	1.85	2.23	2.54	2.66
2.80	1.34	1.84	2.21	2.53	2.80	3.37	3.85	4.02
3.80	1.81	2.49	3.01	3.43	3.80	4.58	5.23	5.46
8.00	3.81	5.25	6.32	7.22	8.00	9.64	11.00	12.19

\*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

Aries™ TWD • 12150 • ID 11.8 mm • KD 0.40 • Flow rate 0.50 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%	72	90	103	113	119	125	130	133	136
	1%	81	106	126	143	158	170	181	191	199
FLAT TERRAIN	0	91	124	153	180	205	228	250	272	292
DOWNHILL	-1%	98	138	175	210	242	274	305	335	364
	-2%	105	150	192	232	271	308	344	379	413

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

Aries™ TWD • 12150 • ID 11.8 mm • KD 0.40 • Flow rate 0.80 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%	58	74	87	97	105	112	118	122	126
	1%	63	83	101	115	128	140	150	160	168
FLAT TERRAIN	0	68	93	116	136	155	172	190	204	220
DOWNHILL	-1%	72	101	128	153	177	201	223	246	268
	-2%	76	110	141	172	202	232	262	291	320

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

Aries™ TWD • 12150 • ID 11.8 mm • KD 0.40 • Flow rate 0.95 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	68	80	91	98	105	111	116	120
	1%	57	76	92	106	118	128	138	147	155
FLAT TERRAIN	0	61	83	104	122	139	154	170	184	198
DOWNHILL	-1%	64	89	113	135	157	177	197	216	235
	-2%	67	96	124	150	176	202	227	252	277

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

Aries™ TWD • 12150 • ID 11.8 mm • KD 0.40 • Flow rate 1.35 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	77	85	92	97	102	106
	1%	46	62	75	87	97	106	115	122	130
FLAT TERRAIN	0	49	66	82	97	111	124	135	147	158
DOWNHILL	-1%	50	70	88	106	122	137	153	167	181
	-2%	53	74	95	115	134	153	171	189	207

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

Aries™ TWD • 12150 • ID 11.8 mm • KD 0.40 • Flow rate 1.85 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%	36	48	57	66	73	79	85	90	94
	1%	38	51	62	72	81	90	98	104	111
FLAT TERRAIN	0	40	54	67	80	91	101	111	121	130
DOWNHILL	-1%	41	57	71	85	98	110	122	133	145
	-2%	42	59	76	91	106	120	134	149	162

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

Aries™ TWD • 12150 • ID 11.8 mm • KD 0.40 • Flow rate 2.80 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%	28	38	46	53	59	64	69	74	78
	1%	29	40	49	57	64	71	77	83	88
FLAT TERRAIN	0	30	42	52	61	69	77	85	92	99
DOWNHILL	-1%	31	43	54	64	74	83	91	100	108
	-2%	32	44	56	68	78	89	98	108	118

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

Aries™ TWD • 12150 • ID 11.8 mm • KD 0.40 • Flow rate 3.80 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%	24	32	38	45	50	55	59	64	68
	1%	24	33	40	48	53	60	65	70	75
FLAT TERRAIN	0	25	34	42	50	57	64	70	77	82
DOWNHILL	-1%	25	35	44	52	60	67	74	81	88
	-2%	26	36	46	55	63	71	79	87	94

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

Aries™ TWD • 12150 • ID 11.8 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%	15	20	24	29	32	36	38	41	44
	1%	15	20	25	30	34	37	41	44	47
FLAT TERRAIN	0	15	21	26	31	35	39	42	47	50
DOWNHILL	-1%	15	21	26	32	36	41	45	49	53
	-2%	16	22	27	33	37	42	46	50	55

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

Aries™ TWD • 16125/16150 • ID 16.2 mm • KD 0.30 • Flow rate 0.50 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%	103	121	132	138	142	145	147	149	150
	1%	127	161	187	206	221	234	243	252	258
FLAT TERRAIN	0	154	212	262	309	352	392	430	467	502
DOWNHILL	-1%	176	251	321	388	452	514	574	634	691
	-2%	192	280	362	443	524	601	673	741	805

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

Aries™ TWD • 16125/16150 • ID 16.2 mm • KD 0.30 • Flow rate 0.80 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%	87	107	120	130	136	141	145	147	150
	1%	101	131	155	175	191	204	216	226	235
FLAT TERRAIN	0	116	159	198	233	265	295	325	352	378
DOWNHILL	-1%	128	183	235	285	334	382	430	478	525
	-2%	141	209	276	344	412	481	549	617	685

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

Aries™ TWD • 16125/16150 • ID 16.2 mm • KD 0.30 • Flow rate 0.95 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%	81	100	114	124	130	136	140	143	146
	1%	92	120	142	162	178	190	202	212	222
FLAT TERRAIN	0	104	143	177	209	237	265	290	316	339
DOWNHILL	-1%	113	161	206	250	292	334	374	415	455
	-2%	124	182	239	296	353	412	470	210	187

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

Aries™ TWD • 16125/16150 • ID 16.2 mm • KD 0.30 • Flow rate 1.35 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%	68	86	100	110	118	125	129	133	137
	1%	75	99	119	136	150	163	174	185	193
FLAT TERRAIN	0	83	113	141	166	190	211	232	251	271
DOWNHILL	-1%	88	125	159	192	224	254	285	314	343
	-2%	95	138	180	221	262	302	343	384	425

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

Aries™ TWD • 16125/16150 • 16.2 mm • KD 0.30 • Flow rate 1.85 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%	57	74	87	97	106	112	118	122	127
	1%	62	83	100	115	128	140	151	160	169
FLAT TERRAIN	0	67	93	115	136	155	173	190	205	221
DOWNHILL	-1%	71	100	127	153	178	201	224	247	269
	-2%	75	109	140	172	202	232	262	293	322

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

Aries™ TWD • 16125/16150 • ID 16.2 mm • KD 0.30 • Flow rate 2.80 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	60	71	81	89	96	102	107	111
	1%	48	65	79	92	103	113	122	131	139
FLAT TERRAIN	0	51	71	88	104	119	133	146	158	170
DOWNHILL	-1%	53	75	95	114	131	148	166	182	197
	-2%	56	80	103	125	146	167	187	208	228

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

Aries™ TWD • 16125/16150 • ID 16.2 mm • KD 0.30 • Flow rate 3.80 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%	38	51	61	70	77	83	90	95	99
	1%	40	54	67	78	87	96	104	112	118
FLAT TERRAIN	0	42	58	73	86	97	109	120	131	140
DOWNHILL	-1%	43	61	77	92	106	120	133	146	158
	-2%	45	64	82	99	116	132	147	163	178

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

Aries™ TWD • 16125/16150 • ID 16.2 mm • KD 0.30 • 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%	24	32	40	46	52	56	61	65	69
	1%	25	34	42	49	55	61	66	72	77
FLAT TERRAIN	0	26	35	44	52	59	67	73	79	85
DOWNHILL	-1%	26	37	46	55	63	71	78	86	93
	-2%	27	38	48	57	66	75	83	91	99

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

Aries™ TWD • 22125 • ID 22.2 mm • KD 0.06 • Flow rate: 0.50 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%	136	145	148	150	151	153	153	153	154
	1%	203	235	255	268	277	283	287	291	294
FLAT TERRAIN	0	301	399	485	564	636	704	769	831	890
DOWNHILL	-1%	377	526	665	795	905	1000	1080	1140	1180
	-2%	237	198	185	181	178	177	176	176	175

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

Aries™ TWD • 22125 • ID 22.2 mm • KD 0.06 • Flow rate: 0.80 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%	128	141	148	152	154	156	158	158	159
	1%	171	206	230	248	261	271	278	284	291
FLAT TERRAIN	0	227	301	366	425	480	531	580	627	671
DOWNHILL	-1%	277	392	503	614	723	834	945	1056	1167
	-2%	333	496	669	842	1015	1188	1361	1534	1707

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

Aries™ TWD • 22125 • ID 22.2 mm • KD 0.06 • Flow rate: 0.95 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%	122	136	144	149	152	155	156	157	158
	1%	158	193	217	235	249	260	269	276	282
FLAT TERRAIN	0	203	269	328	381	430	476	520	562	602
DOWNHILL	-1%	243	342	437	531	623	715	809	902	996
	-2%	287	423	559	695	831	967	1103	1239	1375

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

Aries™ TWD • 22125 • ID 22.2 mm • K 0.06 • Flow rate 1.35 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%	108	125	135	142	146	149	151	154	154
	1%	133	165	189	208	223	235	246	254	262
FLAT TERRAIN	0	162	215	262	304	344	380	416	448	481
DOWNHILL	-1%	187	260	330	398	464	530	595	661	725
	-2%	214	311	407	505	603	701	799	897	995



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

Aries™ TWD • 22125 • ID 22.2 mm • KD 0.06 • Flow rate 1.85 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%	95	113	124	133	138	142	146	148	150
	1%	113	142	164	183	198	211	222	231	239
FLAT TERRAIN	0	132	176	214	249	281	311	340	367	393
DOWNHILL	-1%	149	206	259	311	361	410	458	506	554
	-2%	167	239	309	379	450	523	597	676	761

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

Aries™ TWD • 22125 • ID 22.2 mm • KD 0.06 • Flow rate 2.80 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%	79	97	109	118	125	130	135	139	141
	1%	90	115	134	151	165	178	188	198	207
FLAT TERRAIN	0	101	135	164	191	216	239	261	282	302
DOWNHILL	-1%	111	152	190	227	262	295	329	362	395
	-2%	121	171	218	266	312	358	406	453	500

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

Aries™ TWD • 22125 • ID 22.2 mm • KD 0.06 • Flow rate 3.80 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%	68	84	97	106	114	120	125	130	133
	1%	75	97	115	130	143	155	165	174	183
FLAT TERRAIN	0	83	111	135	157	178	197	214	232	249
DOWNHILL	-1%	90	122	152	181	208	235	260	285	310
	-2%	96	135	171	207	242	277	310	345	379

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

Aries™ TWD • 22125 • ID 22.2 mm • KD 0.06 • 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%	45	57	67	75	82	88	94	98	102
	1%	48	62	74	85	95	104	111	119	125
FLAT TERRAIN	0	51	68	82	96	108	120	131	142	152
DOWNHILL	-1%	53	72	89	105	120	134	148	161	174
	-2%	56	76	95	113	129	146	161	176	191