

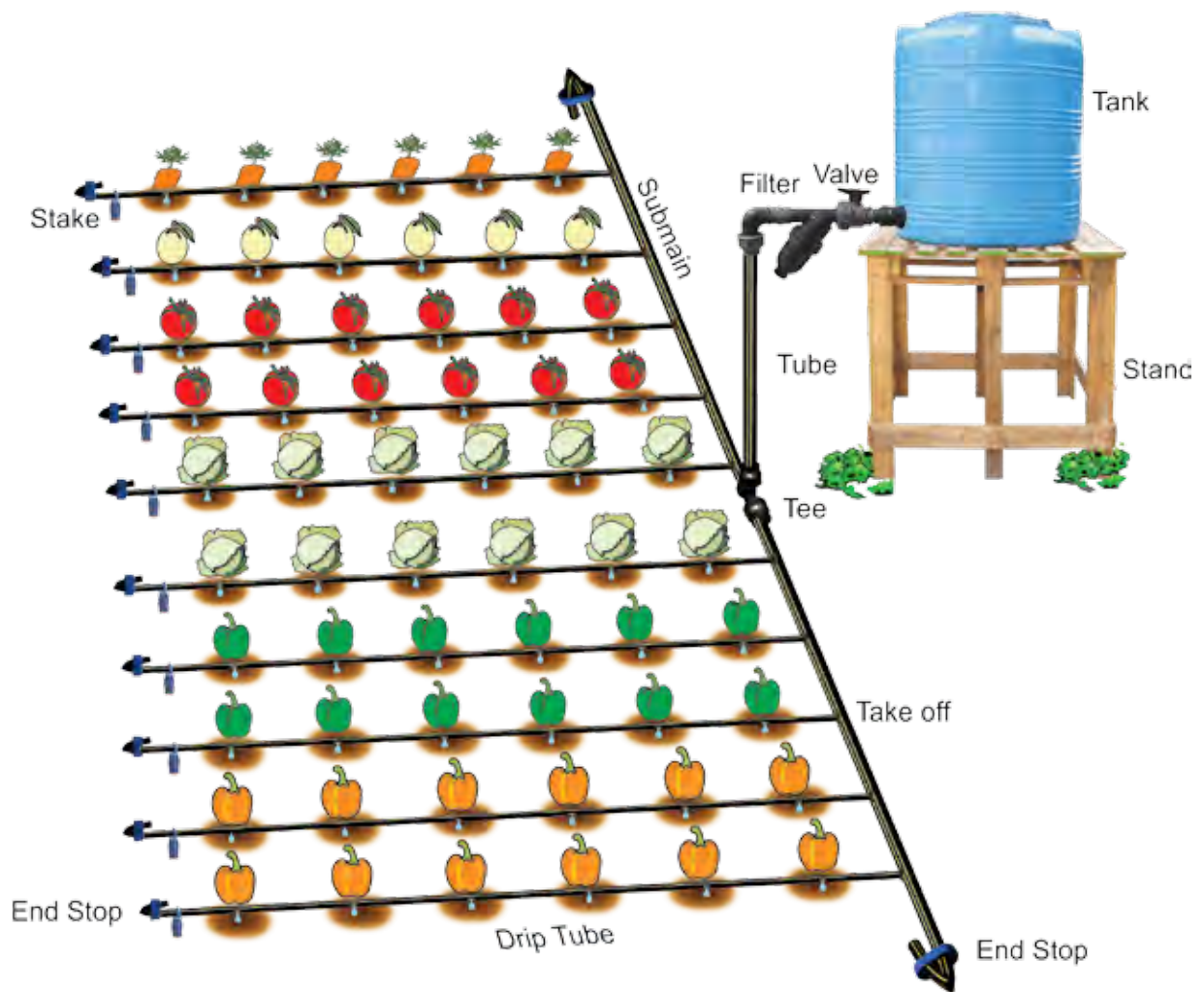
drip

TECH

best value drip irrigation

A **JAIN IRRIGATION** COMPANY





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Driptech specialises in Drip Irrigation solution for **small farm plots**. We bring the **benefit of Drip Irrigation technology** used in large sophisticated farms to **small farm holders**.

Driptech is the '**Best Value Drip Irrigation**' company. It offers '**affordable drip irrigation solutions**' - innovative novel high performance drip irrigation system at affordable cost.

The company's unique innovation of **Laser punched Dripline** delivers **the benefit of drip irrigation technology at a cost which is much lower than the traditional drip system**.

The company founded in USA, is now a subsidiary of one of the **global leaders in micro irrigation** based in India.

'DT – Gravity Kit'

Welcome to the world of Gravity Drip Irrigation Kits - ready to use semi assembled drip irrigation system. The products come in **convenient ready to use Kit** form which can be easily installed and used by everyone. They operate under gravity pressure without any pump.

Drip irrigation saves water, increases yield, saves fertilisers, and reduces weeds etc. With our Kits, even smallest of the small landholders can use this technology. This enables the small land holders to adopt drip technology and empowers them to:

- ✓ Cultivate high value cash crop and improve their income.
- ✓ Grow their own nutrition. Fight lack of nutrition.
- ✓ Increase the quality and quantity of the produce.
- ✓ Save water and fertiliser. Helps fight drought.
- ✓ It can be powerful tool for a nation to improve the lot of its small and marginal farmers

'DT- Gravity Kit' - An unique offer from Driptech for small plots:

- ✓ They contain all components of drip irrigation system in handy boxes.
- ✓ Works without pumps on gravity pressure. Saves electricity
- ✓ Ideal for small plots.
- ✓ Simple and quick to install.
- ✓ Easy to transport and handle.
- ✓ Easy to install with the help of user friendly manual
- ✓ Easy to operate and maintain.
- ✓ Affordable cost – quick pay back

'DT- Gravity Kit' is available for plot sizes:

2000 m², 1000 m², 500 m², 250 m², 100 m², 30 m²

Applications

- ◆ Mainly suitable for cultivation of vegetables. Can be used for cereals, pulses, cotton and other closely spaced crops.
- ◆ Can be used for irrigation in open fields, Green house / Net house and nurseries.
- ◆ Suitable for Kitchen Gardens and also Hilly (Terrains) where land holding is very small.
- ◆ Useful as a survival irrigation tool in rainfed area of water scarcity region or when there is a prolonged gap between rains & / or electricity is not available

We can also supply
you customised Kit of
any plot size to meet your
specific requirement.





Components of DT-GravityKit



Driplines

Driplines are the heart of the Kit. They form the major part of the Kit. The following driplines are used:



'DT Thin Wall' :

Thin Wall Dripline With Flat Drinker Inside

- Good quality yet economical
- Finest dripper
- Weir structure prevents sand particles to enter flow path
- 3 dimensional filtration which enables clog free operation even under high clog risk conditions

Technical data

- Diameter of 16mm
- Wall thickness from 5mil, 6mil & 8mil
- Discharge 4 lph at 1.0 kg/cm²
- Approx. permissible length is 76m (for 4 lph @ 0.40cm)
- Available dripper spacing from 30, 40, 60 & 90 cm.

Applications

- Green House and Nursery
- Cotton
- Chilies
- Cotton
- Many other vegetable crops



Specifications

Specification	DT-GravityKit					
Area in M ²	30	100	250	500	1000 (¼ acre)	2000 (½ acre)
Type of Dripline	DT-Thin Wall					
Discharge at 1 bar in LPH	0.96	0.96	1.6	1.6	1.6	1.6
Dripper spacing in cm	30	30	30	30	30	30
Lateral length in m	15	10	12.5	25	25	40
No. of lateral	2	10	20	20	34	42
Lateral Spacing in m	1	1	1	1	1.2	1.2
Sub-main size in mm	8	16	25	25	25	32
Sub-main length in m	2.5	10	20	20	40	50
Filter in inch	16 mm	16 mm	¾"	1"	1"	1"
Operating head in m	1.5	1.5	2	2	2.5	3

Components

Valve



PVC Single union Valve used to control the flow of water into the system

Filter



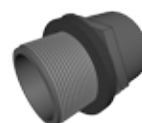
Super Flow filter used to prevent clogging of emitters or thinner passages

Rainport Compression Fitting



Rainport Fittings allows connection & easy dismantling of Mainline & Submain

Tank Adaptor



Unique adaptor to connect DT-GravityKit components to storage tank.

Take off Adaptor



Used to Quick Connect DT-Thin Wall Dripline to Submain

Tool 32x7.5



Combination tool to make hole on Tank, Submain & to Push Rainport adaptor.

Tool STP



Used to make hole on Submain to install DT-Thin Wall adaptor.

8 Shape End



For easy closing of 25mm Submain (in operation) & opening during flushing.

Tape lock End Sleeve



For closing of DT-Thin Wall & opening during flushing.

Stake



Used to hold the drip line in place so that water emission is done within root zone.

Design



In order to use the Kit, we need to know:

- Water Requirement of crop being cultivated
- Height at which you should place the tank.
- The water flow out of the Drip Kit system at different gravity pressure (height of the tank).
- The time for which you should keep run the irrigation system to meet the water requirement of the crop.
- How often you need to refill the tank given the height of the tank and the volume of flow of water.

Table 1 : Peak Water Requirement of various crops

The water requirement of crops varies at different stages of growth and at different months of the year (summer / monsoon). The following table gives the water requirement of some of the important crops:

Crops	Spacing Row & Plant (Ft)	PWR, lpd
Vegetable	2 x 4 x 2	8
	3 x 3 x 3	8
Sugarcane	3 x 3 x 3	12
	2.5 x 4.5 x 2.5	14
	3 x 5 x 3	16
Grapes	6x6	14
	8x8	16
	10x10	14
Pomegranate	12x12	24
	15x15	40
Guava	15x15	50
	18x18	60
Apple	15x15	40
Orange	18x18	60
Lemon	20x20	80
Mango	20x20	120
	25x25	130
Banana	5x5	16
	10x10	20
Papaya	7x7	20
Coconut	20x20	80
	25x25	100

Table 2 : Head Vs Discharge

Height of the tank should be equal to the pressure head required at the dripper plus the head loss in the pipe lines.

The table below gives the discharge at different pressure head for the driplines used. The head loss in these Kits can be taken at 1.5mtr. So, if you are using the 'Laser Drip' with 1 m head then the tank height should be 2.5 mtr

Head in m	Discharge in LPH
	'DT – Thin Wall'
	1.6 LPH @ 1 bar
1.5	0.56
2	0.66
2.5	0.75
3	0.83
4	0.97
5	1.09

(* Head denotes pressure head at the dripper and not the tank height. You can add tank height by adding 1m to 1.5m to operating head.)

Table 3 : Water flow from the drip system at the different height of the tank

Dripline	Tank Height (m)	Water flow in LPH					
		30	100	250	500	1000	2000
		m ²	m ²	m ²	m ²	m ²	m ²
'DT- Thin Wall'	1.5	56	187	467	933		
	2	66	220	550	1100		
	2.5	75	250	625	1250	1042	2083
	3	83	277	692	1383	1153	2306
	4	97	323	808	1617	1347	2694

NOTE

- Water requirement given is for one hour operation of DT-Gravitykit. You need to fill up the tank frequently according to the water requirement of the crop.
- Up to 500 m² area lateral spacing considered as 1m & for 1000m² & 2000 m² area lateral spacing considered as 1.2m.
- For 1000 m² & 2000 m² DT-GravityKit, minimum tank height recommendation is 2.5 m.
- For 1000 m² & 2000 m² only one section/one valve need to be operate at a time.

Design a DripKit for 250 m² area with tank height of 2.5 m for vegetables.

Design Input

- 1) Crop - Vegetable 3 x 3 x 3
- 2) DT-ThinWall - 250 m²

Solution

Step 1

Emitter discharge at 2.5 m head = 0.75 lph (refer Table 3)

Step 2

Peak water requirement of vegetable at 3' x 3' x 3' is 8lph/m/day (refer table)

Step 3

From this we can calculate flow irrigated per meter to fulfill peak water requirement of crop is

Irrigation by present emitter

= (Emitter discharge at 2.5 m head in lph)/(emitter spacing in m)

= 0.75/0.3

= 2.5 lph/m

Step 4

Time for which the irrigation system is to be run.

Time depends on water required by the crop and flow rate of water from the system.

Time;

= Water requirement of Crop/ Flow rate of water from the system

= PWR in mm x area of the plot / Flow rate of water from the system

Example;

= For 500 m² plot of vegetable: Peak water requirement is 8 mm. (see the table no 1)

If you are using the GravityKit, tank height is 2.5 m, the water flow is 1250 lph (see the table no 3)

So, the irrigation time will be

$8 \times 500 / 1250 = 3.2 \text{ Hour}$

Step 5

Time for refilling the tank

Time to refill = Size of the tank / Water flow.

If we are using a tank of 1000 litre, time to refill will be
= $1000 / 1250 = 0.80 \text{ hour}$

Step 6

Considering the losses in tubing & fitting as Lm;

Tank height = 2.5m (operating head) + 1 m (losses) = 3.5 m

Remarks : This means that, user need to irrigate his 250 m² area for 3 hrs, 12 min daily to complete PWR of vegetables

Note: These calculations are considered for peak water requirement, at early stage of vegetable may need less water.

These calculation may change according to site conditions.

Installation of DT-GravityKit System



Installation of DT-GravityKit System is a very simple process. It can be divided into three stages:

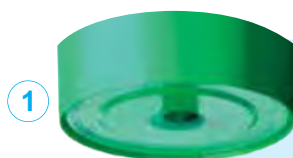
1. Installing water source (bucket, barrel, tank etc.)
2. Laying of pipes and emitters
3. Commissioning

If there is no overhead tank then a water source must be created (i.e. a bucket, barrel, tank, etc.) It has to be installed above ground level on a stable support platform at the required height to achieve minimum pressure requirements for the system (minimum 1.5 meter). The system then can be connected to the water source.

Before operating the system, end caps at the end of the laterals and sub-main are released so that if there is dirt in the tubes, it is washed away and air is also driven out. Open the control valve and let the water flow freely through the tubes for some time (flush the system). Then close the end caps and ensure that water is coming out from each emitter.



DT-GravityKit - 30 m²



1 Cut the hole of dia 25mm at the bottom of bucket



2 Insert male threaded adaptor & rubber washer from inside the bucket



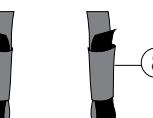
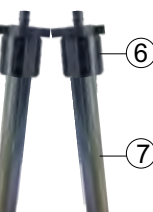
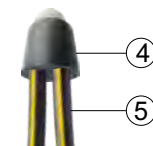
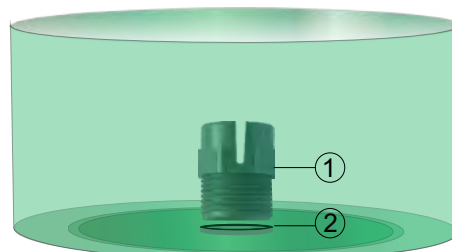
3 Tighten the female adaptor on male adaptor from bottom



4 Push filter screen in to female adaptor.
Insert two supply tube at the bottom of screen filter



5 Push barb end of poly hose connector in to tube

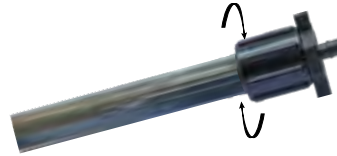


BUCKET KIT COMPONENT

No.	Material Description	Code	Qty
1	Male threaded adaptor	MTA034BK	1
2	Rubber washer	RWBKF	1
3	Female adaptor	FTA025	1
4	Bucket kit Filter	BKTFILSCN10232B	1
5	Microtube 8 mm	M08010M125	2.5
6	Poly Hose Connector	CPJ0816	2
7	DT- Thinwall		30
8	Sleeve 75mm length	TSS75L	2

6

Unscrew the cap of connector
push the drip tape & tighten the cap.



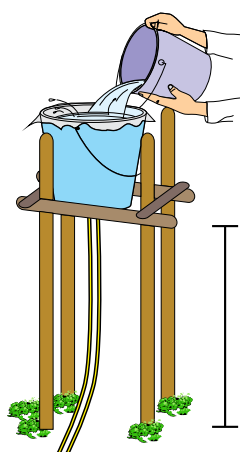
7

To close the ends

- Fold the tape (minimum 3 to 4 folds)
- Squeeze it lengthwise.
- Insert tape in to sleeve provided



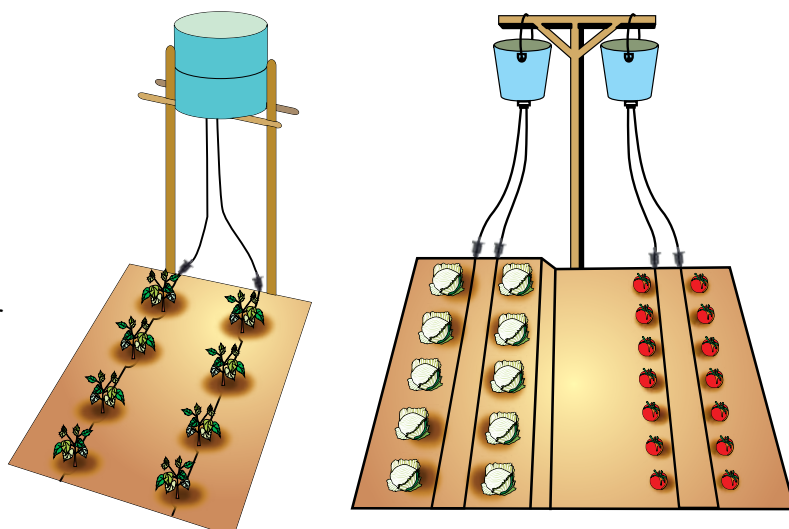
Fill the water in to bucket,
if impurities are present in water,
Filter through heavy cloth.



Minimum
1.5 Meter

Maintain height
of bucket at lest
1.5 meter
from the ground.

Schematic Layout



DT-GravityKit - 100 m²

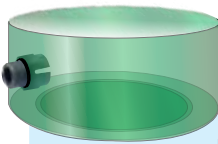


1



Cut the hole of dia 25mm on the drum

2



Insert male adaptor & rubber washer from inside the drum

3



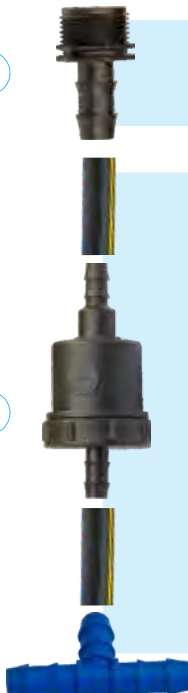
Tighten the female coupler on male adaptor

4



Tighten the poly adaptor on female coupler

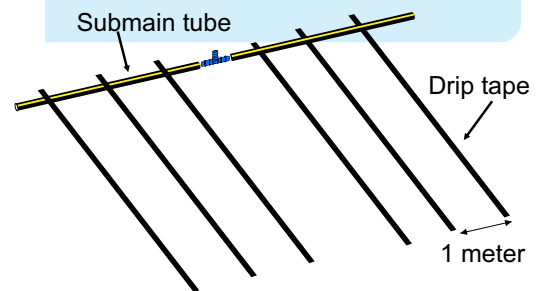
5



Cut two pieces of poly tube (minimum length 6") & connect barbed ends of Filter with poly adaptor & poly tee

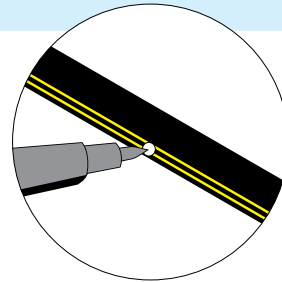
6

Cut the submain tube & lay on both side of tee at 1 meter spacing



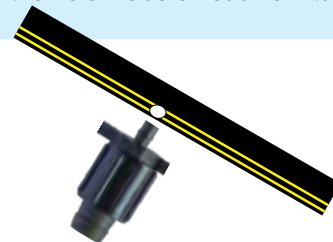
7

Make the hole on submain tube using Straight Punch



8

Insert barbed portion of poly take off in the hole made on submain tube



9

Unscrew the cap of connector
push the drip tape & tighten the cap.

Note: Ensure that tape is cut sharp straight and not irregular & angular.



10

To close the ends

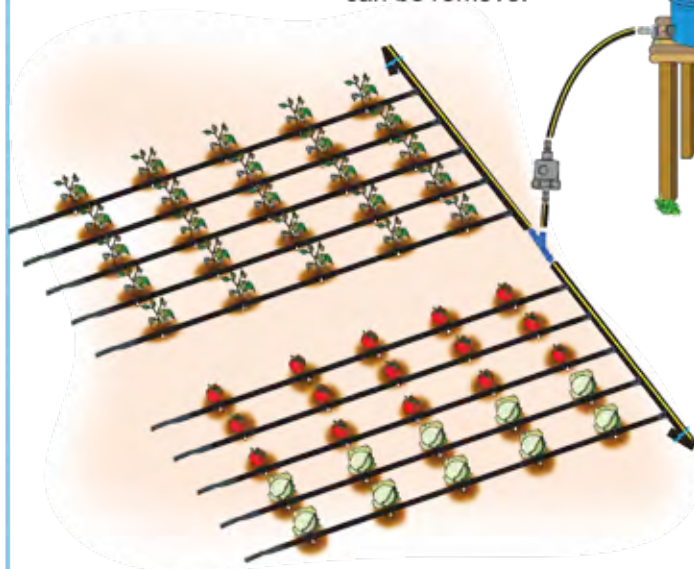
- Fold the tape (minimum 3 to 4 folds)
- Squeeze it lengthwise.
- Insert tape in to sleeve provided.



Fill Drum with water,
pour through heavy cloth
so that impurities if any
can be remove.



Keep the Drum at minimum
1.5 Mtr. Height above ground





















Sr.	Material Description	Code	Qty
1	Male threaded adaptor	MTA034BK	1
2	Rubber washer	RWBKF	1
3	Female Coupler	FTC034	1
4	Inline filter 16mm	LF16PB	1
5	Poly Hose Take Off	DLTOP1608	10
6	DT-Thinwall		100
7	Straight Punch	STP	1
8	Lateral end stop "8" shape	ESO816	2
9	Tube OD 16mm (in meter)	TO161001	15
10	Barbed Poly Tee 16 mm	TO16	1
11	Poly Threaded Adaptor	TAO1634	1
12	Sleeve 75mm Length	TSS75L	10

'DT- Gravity Kit' - 250m²

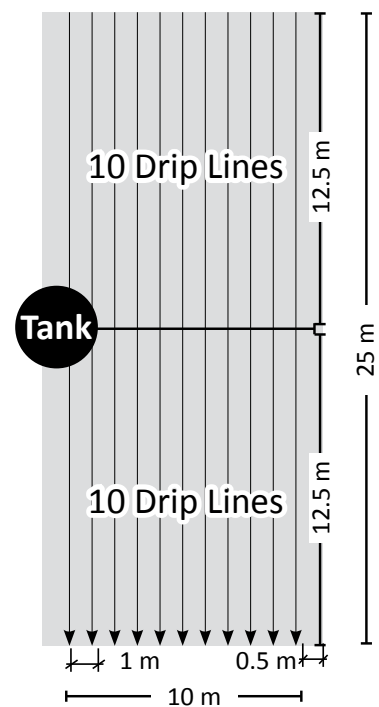
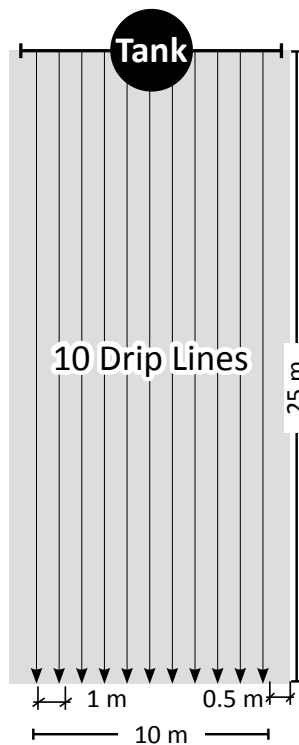
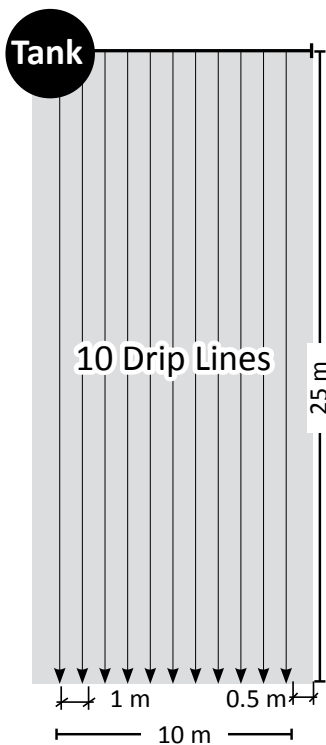
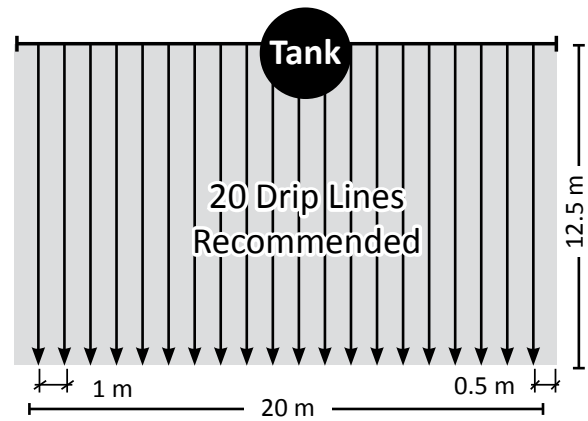
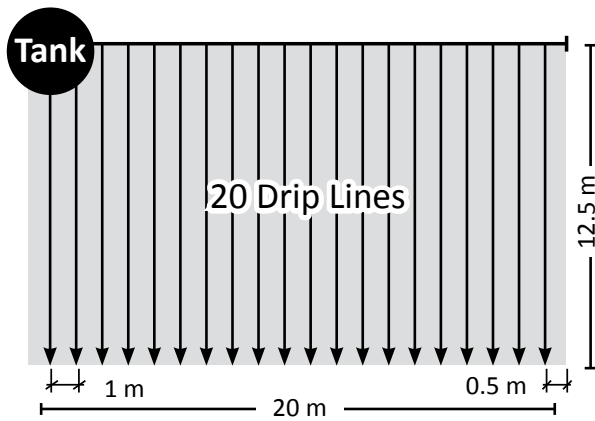


Bill of Materials

Sr.	Product	Description	Code	Qty
1		DripKit Adapter 1"	JDKA1	1
2		Reducer 1" x 3/4"	R134	1
3		Single Union Valve (25mm x 3/4"	SUV25HFM	1
4		Super Flow Filter 3m³/hr x 3/4"	JPSF03SC	1
5		Rainport Elbow 3/4" Female x 25mm	RPFTE2534	1
6		Tube OD 25 mm Class 1 (in meter)	TO251001	25
7		Rainport Tee 25mm	RPT25	1
8		Tool for DripKit 32mm x 7.5mm	TDK3275	1
9		Lateral End Stop "8" Shape 25mm	ESO825	2
10		Tube hold stake "C" Clip 12 mm or 16mm	LTHS12/ LTHS16	22
11		Teflon Tape	TT	1
12		Rubber Washer 44 x 27 x 5.5mm	ORSS	1

Sr.	Product	Description	Code	Qty
13		'DT- Thin Wall' (in meter)		250
14		Lateral Straight punch	STP	1
15		Tape lock by Poly take off 16x8 mm	DLTOP1608	22
16		DT Thin Wall Sleeve 75 mm length /DT Sleeve	TSS75L	22
Maintenance Kit for DT-GravityKit				
d)		Tape loc Joiner 16mm	CJ16	05
e)		Rainport Joiner 25 mm	RPJ25	01

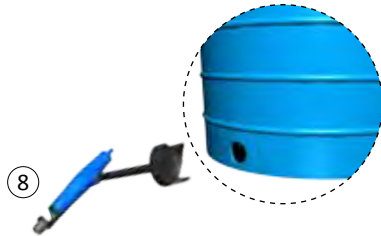
'DT-Gravity Kit' Possible Layouts - 250 m²



Installation guidelines for DT-Gravitykit 250m²

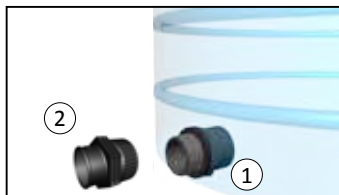
Step 1

Push Centering Point of tool on plastic drum & Rotate the tool TDK 3275 to cut the hole. Hole shall be approx. 1" above the bottom of the Plastic Drum.



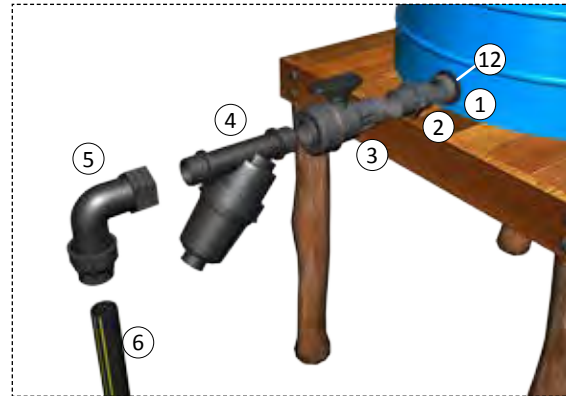
Step 2

From inside the Drum insert adaptor with washer through hole. Insert washer from outside of drum. Tighten the Reducer on adaptor for proper sealing.

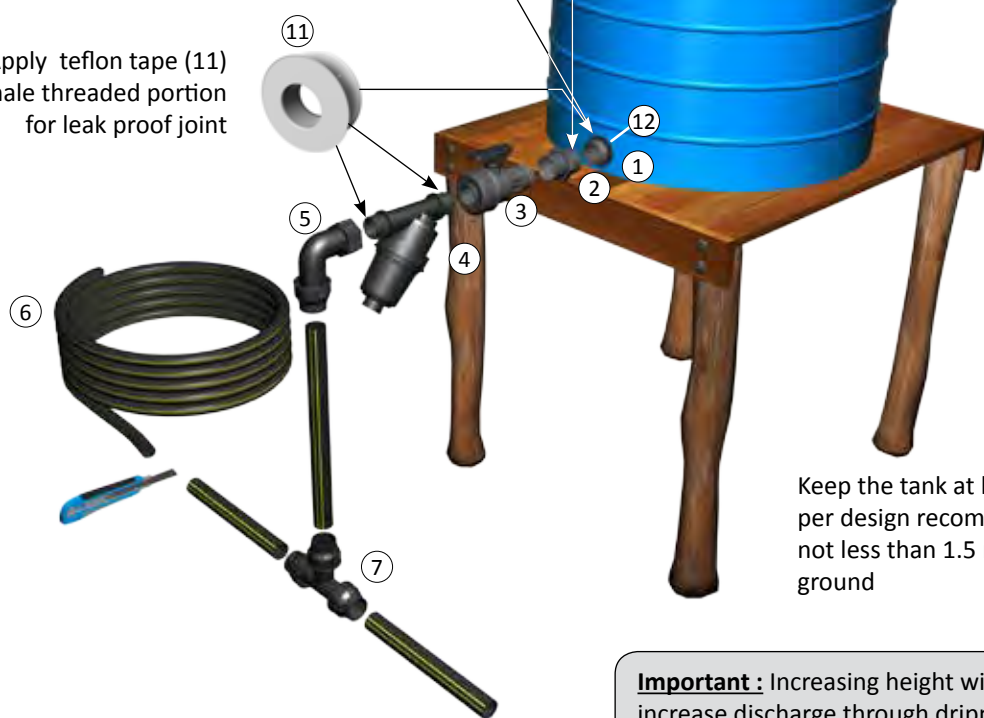


Step 3

Assemble all the components as shown. Use Teflon tape at threaded joint.



Apply teflon tape (11) on male threaded portion for leak proof joint



Keep the tank at height as per design recommendation not less than 1.5 m above ground

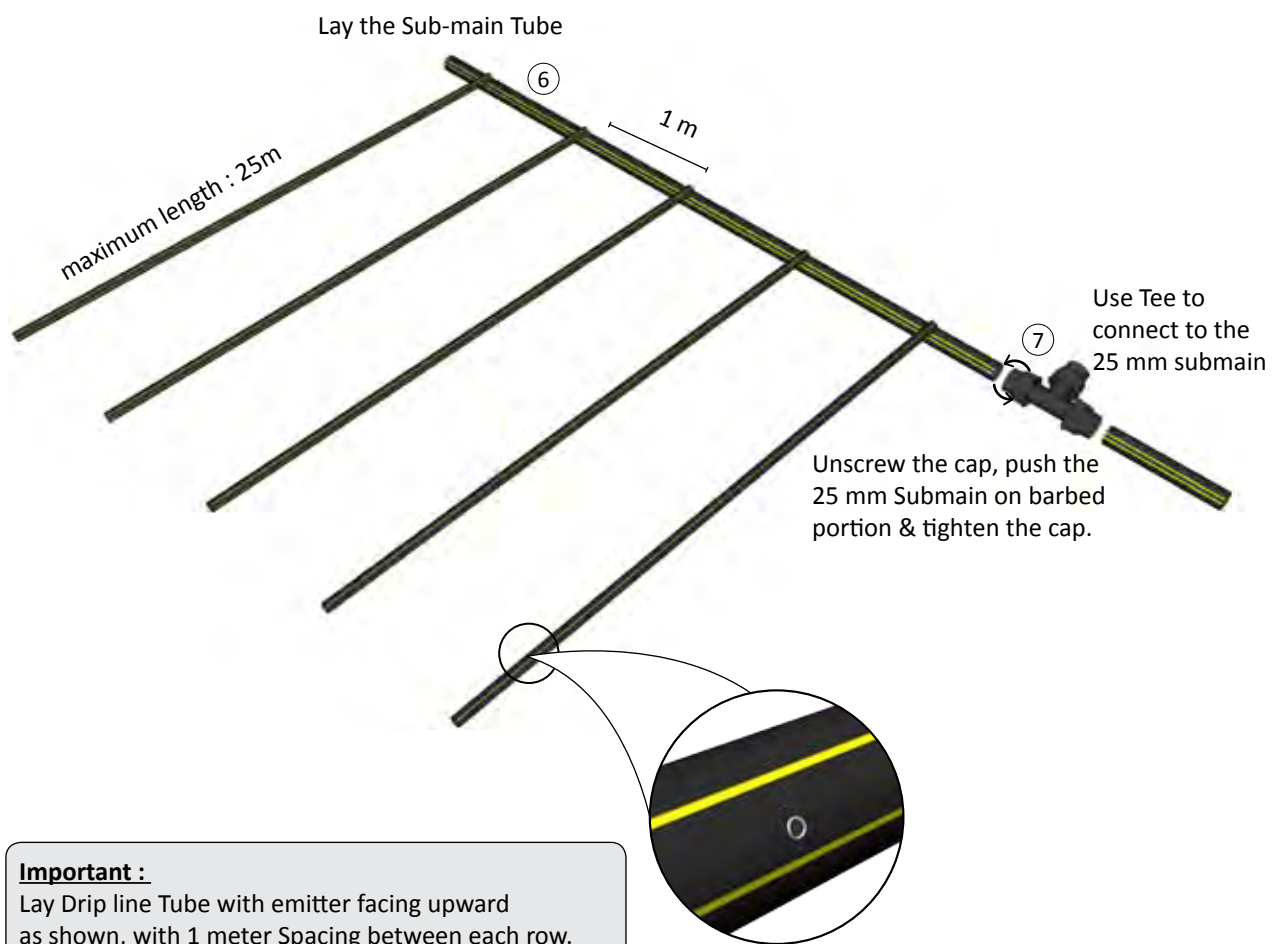
Note: Kit does not include Tank & Stand. Client has to procure / arrange for the same. Please refer page 53 for ordering

Important : Increasing height will increase discharge through dripper correspondingly Irrigation time will also be reduced.

Step 4 - Laying the submain Pipe



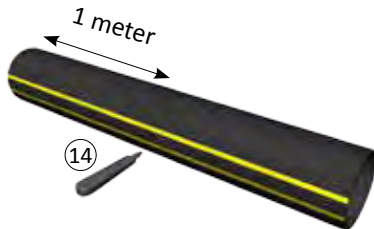
Use sharp knife to cut the tube/tape straight and clean.
(Note : Knife is not a part of Kit)



Step 5 - Connection of drip tubes & Flushing the system

For DT-ThinWall

Step 5 A



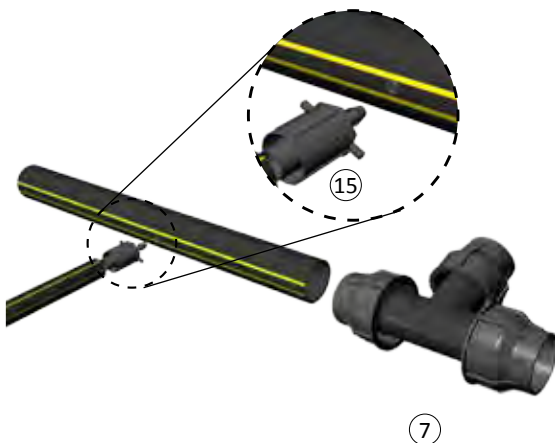
Use tool STP to punch the hole on 25mm Submain

Step 5 B



Unscrew the cap, insert the tape over barbed portion & tighten the cap.

Step 5 C



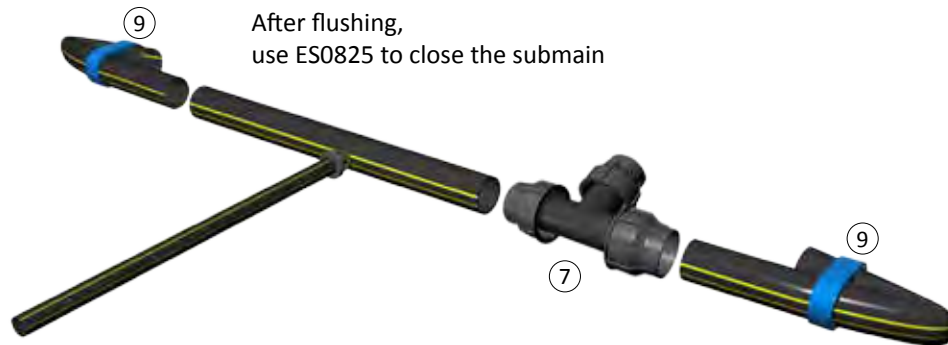
Important

After Installation, flush the entire system to remove dirt/ debris

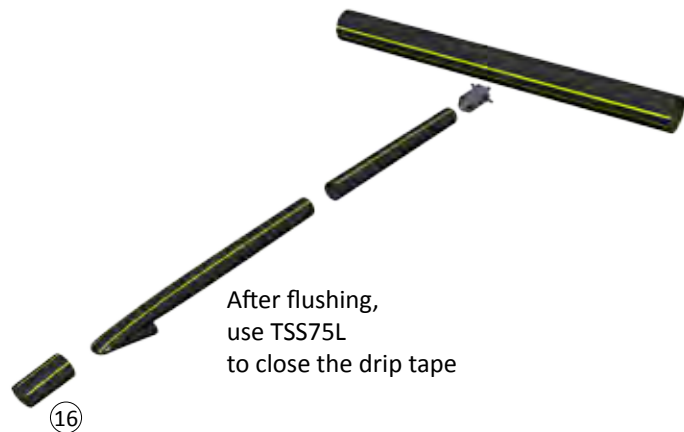
Step 6 - Plugging the submain ends

For DT-ThinWall

Step 6 A



Step 6 B















Step 6 C









DT-GravityKit - 500m²

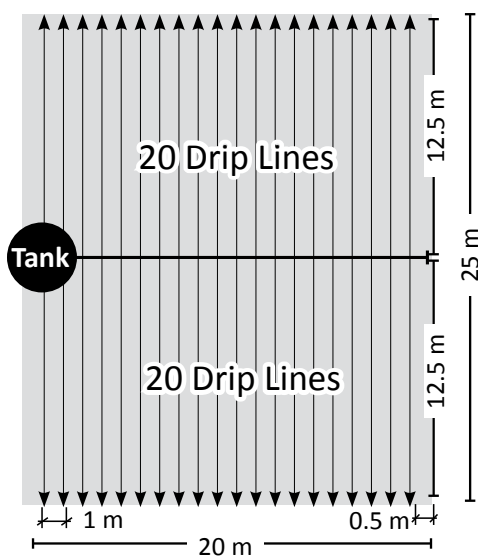
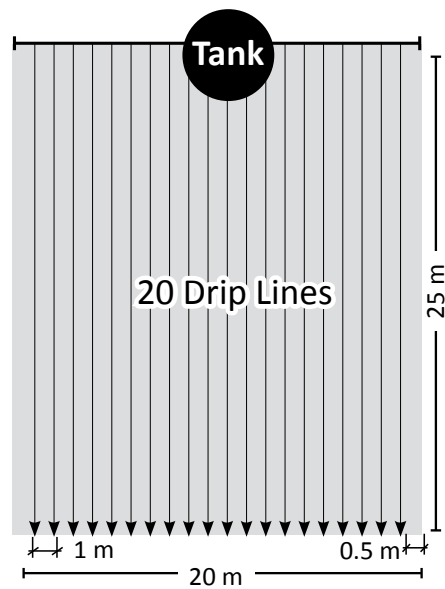
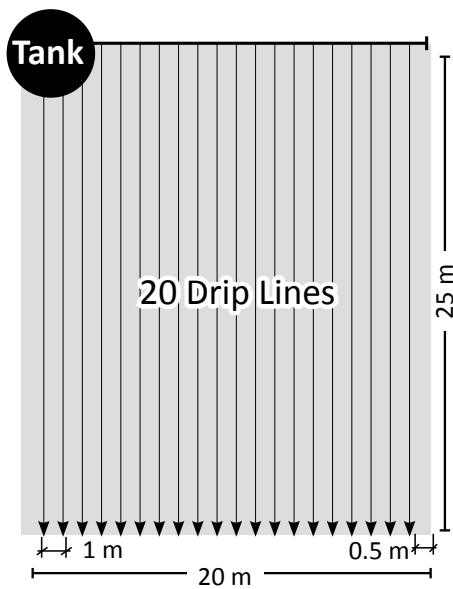
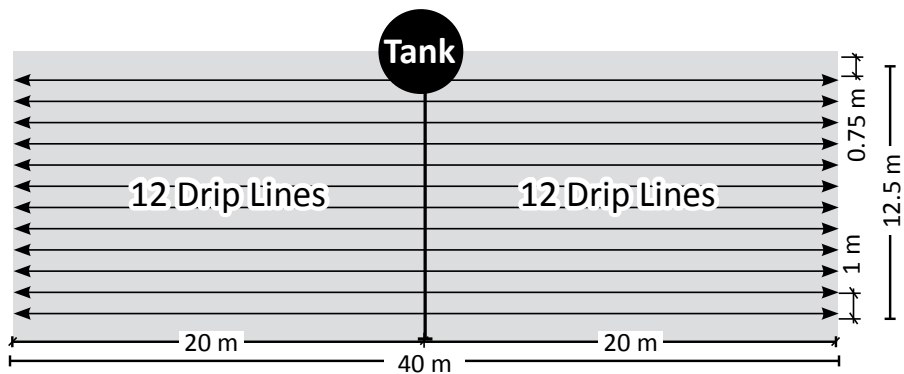


Bill of Materials

Sr.	Product	Description	Code	Qty
1		DT-GravityKit Adapter 1"	JDKA1	1
2		Female Threaded Coupler 1"	FTC100	1
3		Single Union Valve (32mm x 1"	SUV32HFM	1
4		Super Flow Filter 7m³/hr 1"	JPSF07SC	1
5		Rainport Elbow 1" Female x 25mm	RPFTE2501	1
6		Tube OD 25 mm Class 1 (in meter)	TO251001	25
7		Rainport Tee 25mm	RPT25	1
8		Tool for DripKit 32mm x 7.5mm	TDK3275	1
9		Lateral End Stop "8" Shape 25mm	ESO825	2
10		Tube hold stake "C" Clip 12mm/16mm	LTHS12 / LTHS16	42
11		Teflon Tape	TT	1
12		Rubber Washer 44 x 27 x 5.5mm	ORSS	1

Sr.	Product	Description	Code	Qty
13		'DT- Thin Wall' (in meter)		500
14		Lateral Straight punch	STP	1
15		Tape lock by Poly take off 16x8 mm	DLTOP1608	42
16		DT Thin Wall Sleeve 75 mm length /DT Sleeve	TSS75L	42
Maintenance Kit for DT-GravityKit				
d)		Tape loc Joiner 16mm	CJ16	10
e)		Rainport Joiner 25 mm	RPJ25	02

DT-GravityKit Possible Layouts - 500 m²

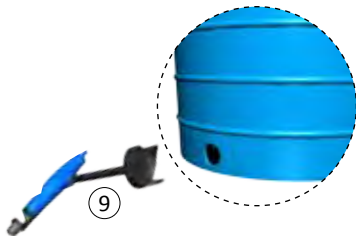


Note : Layout Sample Not to Scale

Installation guidelines for DT-Gravitykit 500m²

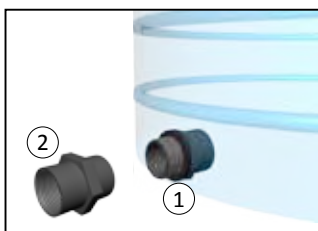
Step 1

Push Centering Point of tool on plastic drum
& Rotate the tool TDK 3275 to cut the hole, approx. 1" above the bottom of the Plastic Drum



Step 2

From inside the Drum insert adaptor with washer through hole.
Insert washer from outside of drum.
Tighten the Reducer on adaptor for proper sealing.

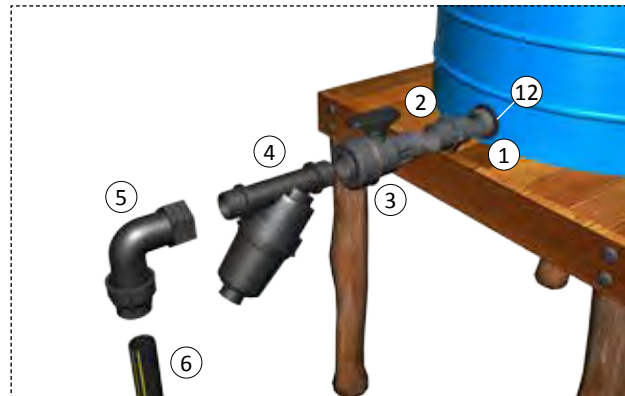


Apply teflon tape (11)
on male threaded portion
for leak proof joint



Step 3

Assemble all the components as shown. Use Teflon tape at threaded joint.



Keep the tank at height as per
design recommendation not
less than 1.5 m above ground

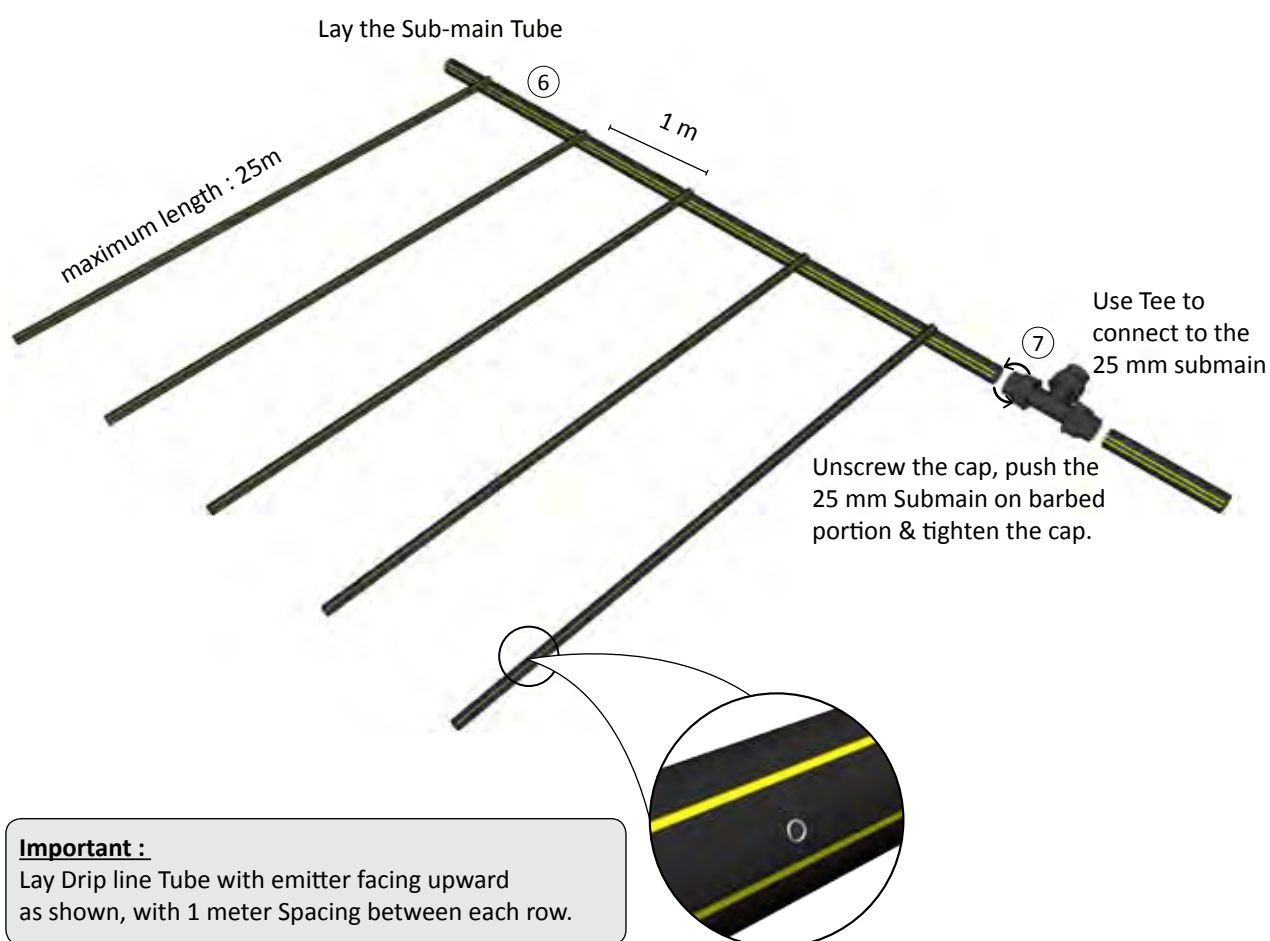
Note: Kit does not include Tank & Stand. Client has to procure / arrange for the same. Please refer page 53 for ordering

Important : Increasing height will increase discharge through dripper correspondingly Irrigation time will also be reduced.

Step 4 - Laying the submain Pipe



Use sharp knife to cut the tube/tape straight and clean.
(Note : Knife is not a part of Kit)



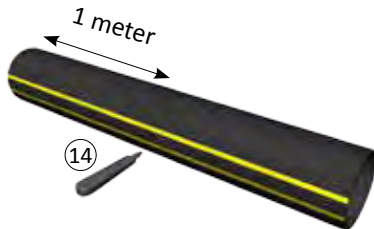
Important :

Lay Drip line Tube with emitter facing upward as shown, with 1 meter Spacing between each row.

Step 5 - Connection of drip tubes & Flushing the system

For DT-ThinWall

Step 5 A



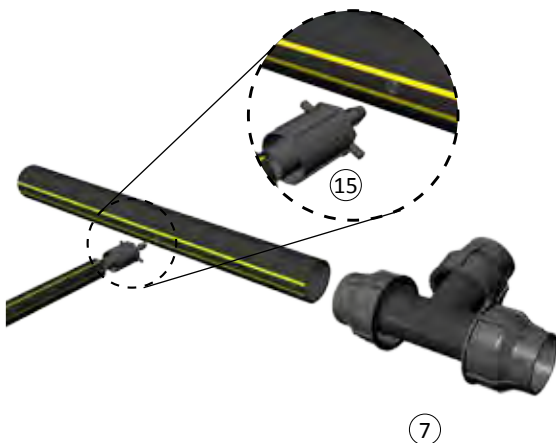
Use tool STP to punch the hole on 25mm Submain

Step 5 B



Unscrew the cap, insert the tape over barbed portion & tighten the cap.

Step 5 C



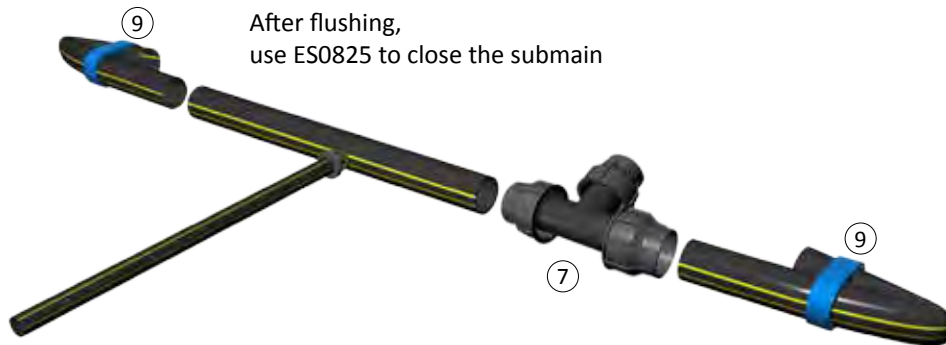
Important

After Installation, flush the entire system to remove dirt/ debris

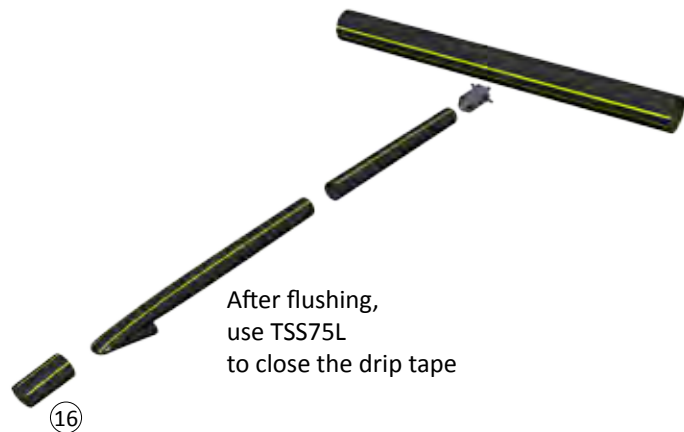
Step 6 - Plugging the submain ends

For DT-ThinWall

Step 6 A



Step 6 B
















Step 6 C









DT-GravityKit - 1000m²

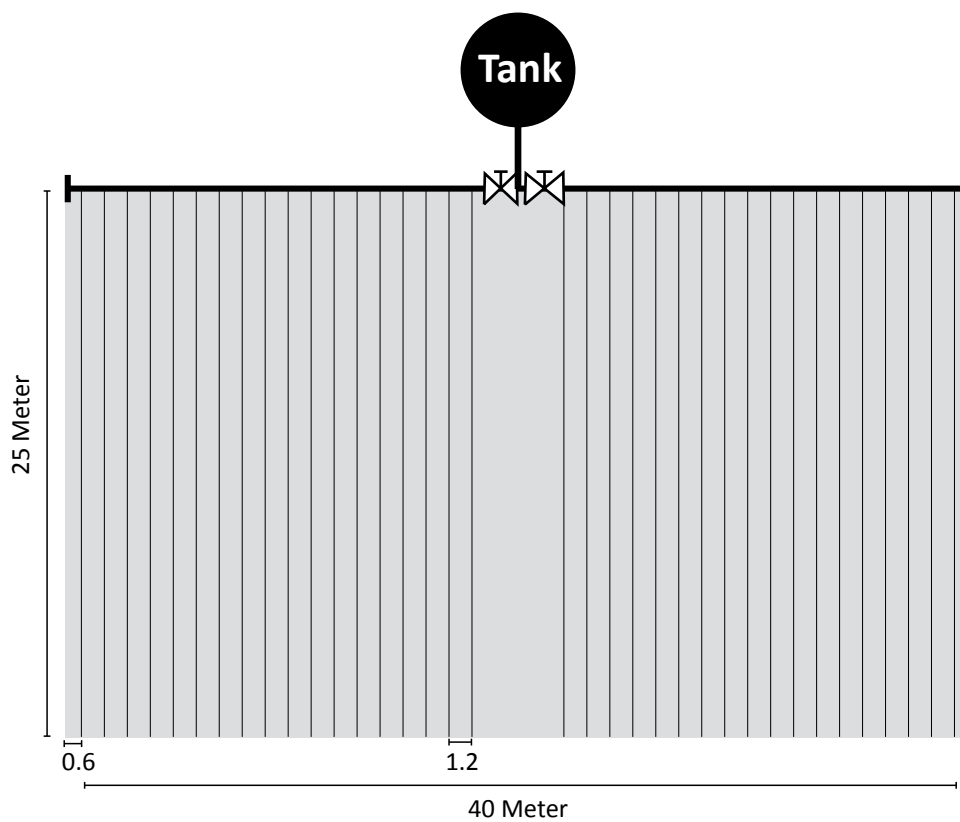


Bill of Materials

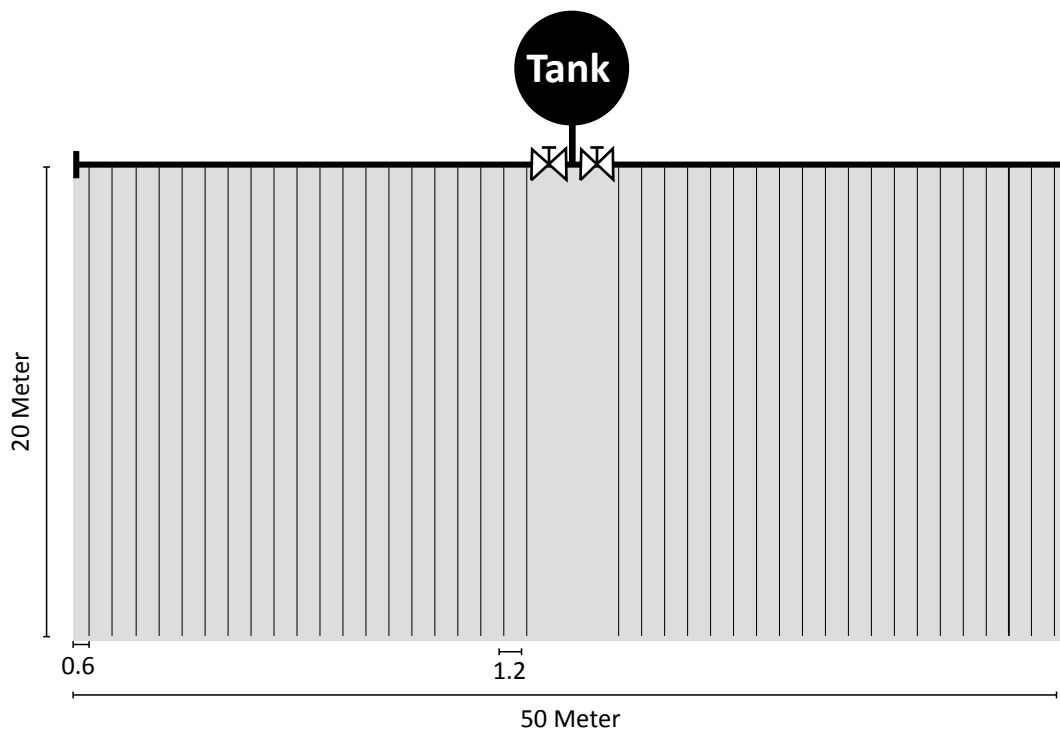
Sr.	Product	Description	Code	Qty
1		DT-GravityKit Adapter 1"	JDKA1	1
2		Female Threaded Coupler 1"	FTC100	1
3		Super Flow Filter 7m³/hr 1"	JPSF07SC	1
4		Rainport Elbow 1" Female x 25mm	RPFTE2501	1
5		Tube OD 25 mm Class 1 (in meter)	TO251001	55
6		Rainport Adaptor ¾" x 25mm	RPFTA2534	1
7		Threaded Tee ¾" male	TT34	1
8		Rainport Single Union Valve 25mm x ¾"	SUV25FRP	2
9		Tool for DripKit 32mm x 7.5mm	TDK3275	1
10		Lateral End Stop "8" Shape 25mm	ESO825	2
11		Tube hold stake "C" Clip 12 mm or 16mm	LTHS12/ LTHS16	65
12		Teflon Tape	TT	1
13		Rubber Washer 44 x 27 x 5.5mm	ORSS	1

Sr.	Product	Description	Code	Qty
14		'DT- Thin Wall' (in meter)		850
15		Lateral Straight punch	STP	1
16		Tape lock by Poly take off 16x8 mm	DLTOP1608	65
17		DT Thin Wall Sleeve 75 mm length /DT Sleeve	TSS75L	20
Maintenance Kit for DT-GravityKit				
d)		Tape loc Joiner 16mm	CJ16	15
e)		Rainport Joiner 25 mm	RPJ25	04

DT-GravityKit Possible Layouts - 1000m²



Note : You can lay DripKit 1000m² in different manner also but for better result refer above mentioned layout.



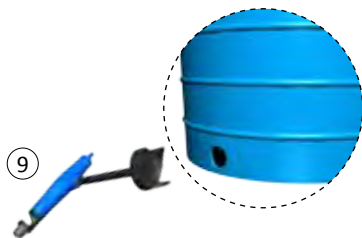
Note : You can lay DripKit 1000m² in different manner also but for better result refer above mentioned layout.

Note : Layout Sample Not to Scale on page

Installation guidelines for DT-GravityKit 1000m²

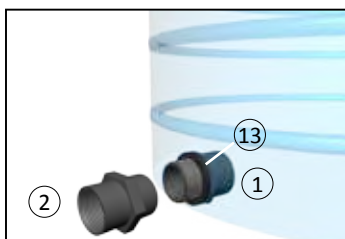
Step 1

Push centering point on Plastic drum & rotate the tool TDK 3275, to cut the hole approx. 1" above the bottom of the plastic drum.



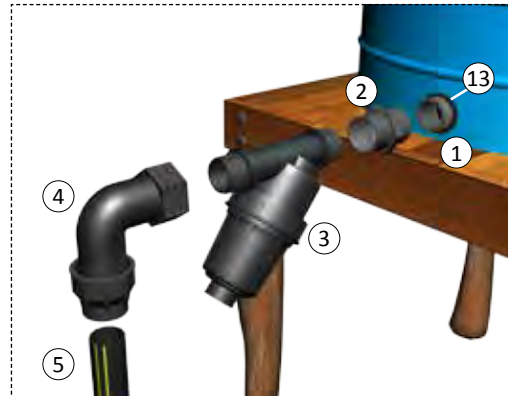
Step 2

From inside the Drum insert adaptor with washer through hole. Insert washer on adaptor from outside the drum tighten the coupler on adaptor for proper sealing.

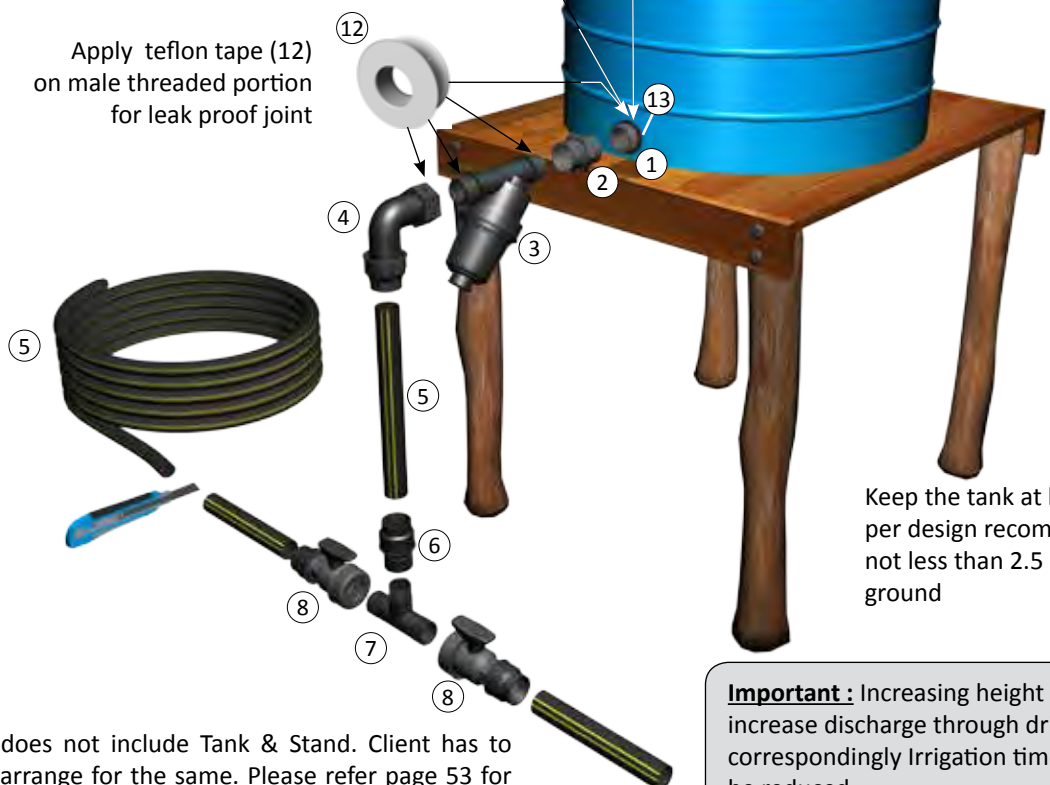


Step 3

Assemble all the components as shown. Use Teflon tape at threaded joint.



Apply teflon tape (12) on male threaded portion for leak proof joint



Keep the tank at height as per design recommendation not less than 2.5 m above ground

Note: Kit does not include Tank & Stand. Client has to procure / arrange for the same. Please refer page 53 for ordering

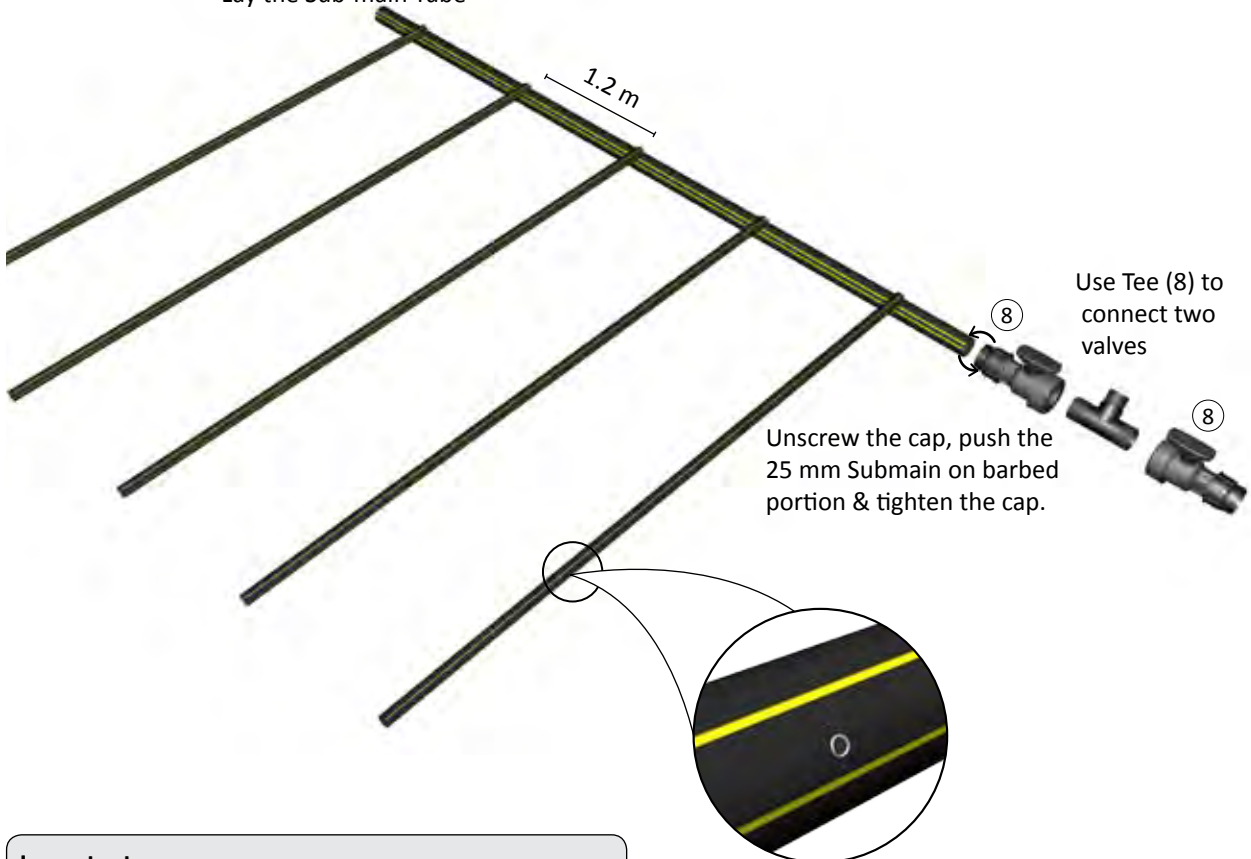
Important : Increasing height will increase discharge through dripper correspondingly Irrigation time will also be reduced.

Step 4 - Laying the submain Pipe



Use sharp knife to cut the tube/tape straight and clean.
(Note : Knife is not a part of Kit)

Lay the Sub-main Tube



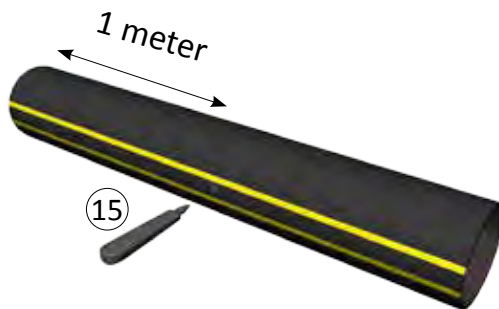
Important

Lay Drip line Tube with emitter facing upward as shown with 1.2 meter Spacing between each row.

Step 5 - Connection of drip tubes & Flushing the system

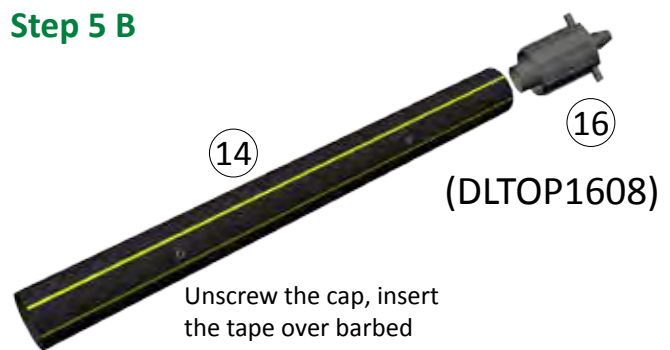
For DT Thin Wall

Step 5 A



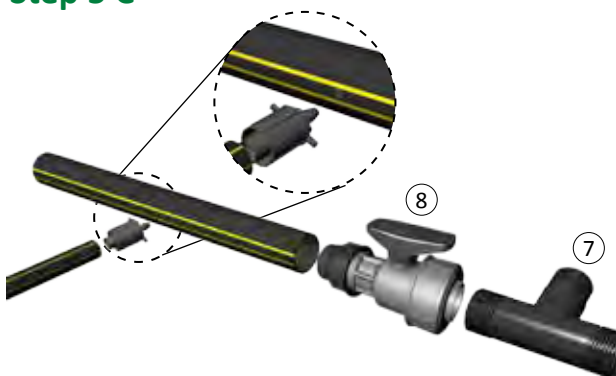
Use tool STP to punch the hole on 25mm Submain

Step 5 B



Unscrew the cap, insert the tape over barbed portion & tighten the cap.

Step 5 C



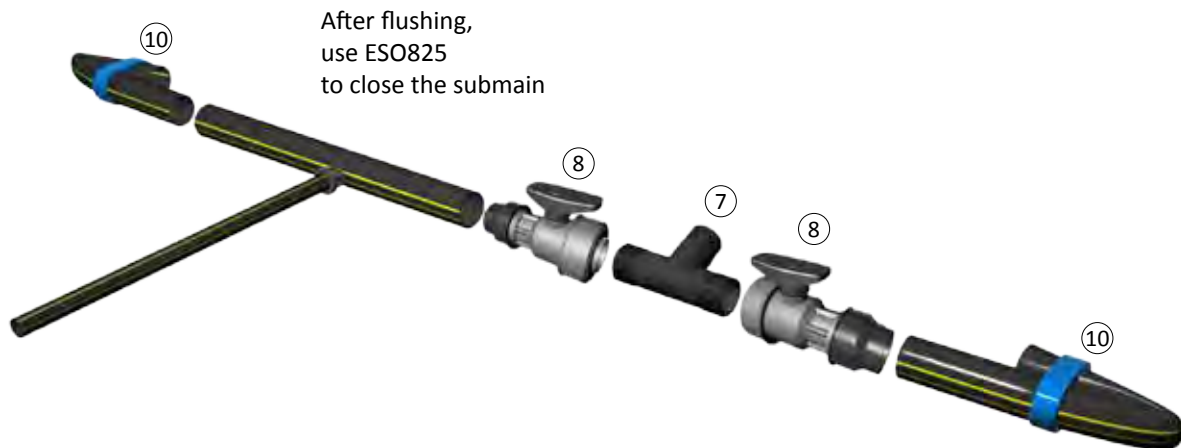
Important

After Installation, flush the entire system to remove dirt/ debris

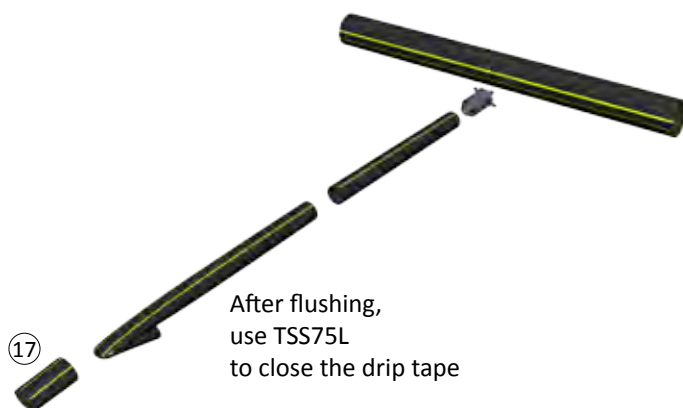
Step 6 - Plugging the submain ends

For DT Thin Wall

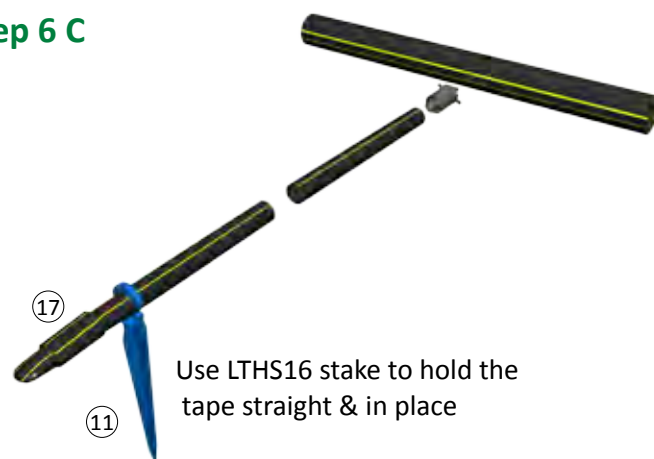
Step 6 A



Step 6 B



Step 6 C














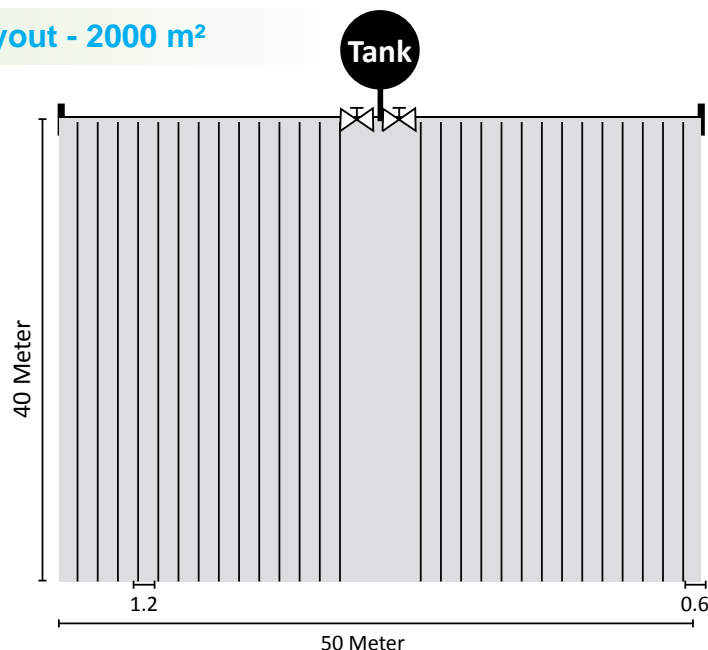
DT-GravityKit - 2000m²

Bill of Materials

Sr.	Product	Description	Code	Qty
1		DT-GravityKit Adapter 1"	JDKA1	1
2		Female Threaded Coupler 1"	FTC100	1
3		Super Flow Filter 7m³/hr 1"	JPSF07SC	1
4		Rainport Elbow 1" Female x 32mm	RPFTE3201	1
5		Tube OD 32mm Class 1 (in meter)	TO321001	60
6		Rainport Adaptor 1" x 32mm	RPFTA3201	1
7		Threaded Tee 1" male	TT01	1
8		Rainport Single Union Valve 32mm x 1"	SUV32FRP	2
9		Tool for DripKit 32mm x 7.5mm	TDK3275	1
10		Oval Hose End Stop	OHI052051M137	2

Sr.	Product	Description	Code	Qty
11		Tube hold stake "C" Clip 12 mm or 16mm	LTHS12 / LTHS16	85
12		Teflon Tape	TT	1
13		Rubber Washer 44 x 27 x 5.5mm	ORSS	1
14		'DT- Thin Wall' / 'Laser Drip'		1700
15		Lateral Straight punch	STP	1
16		Tape lock by Poly take off 16x8 mm	DLTOP1608	85
17		DT Thin Wall Sleeve 75 mm length /DT Sleeve	TSS75L	85
Maintenance Kit for DT-GravityKit				
d)		Tape loc Joiner 16mm	CJ16	15
e)		Rainport Joiner 32 mm	RPJ32	04

DT-GravityKit Layout - 2000 m²



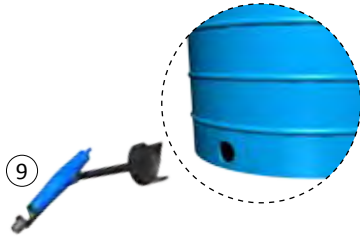
Note : You can lay DripKit 2000m² in different manner also but for better result refer above mentioned layout.

Layout Sample Not to Scale

Installation guidelines for DT-Gravitykit 2000m²

Step 1

Push centering point of tool on plastic drum & rotate the tool TDK 3275 to cut the hole, approx. 1" above the bottom of the plastic drum.



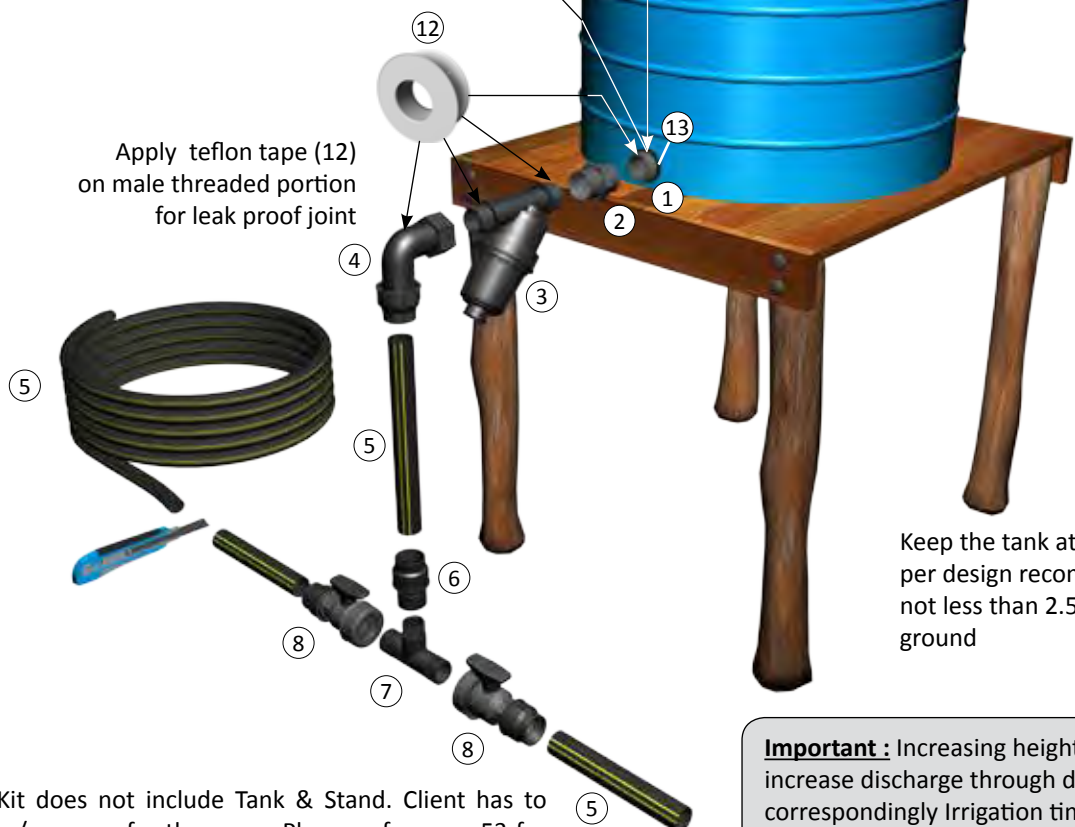
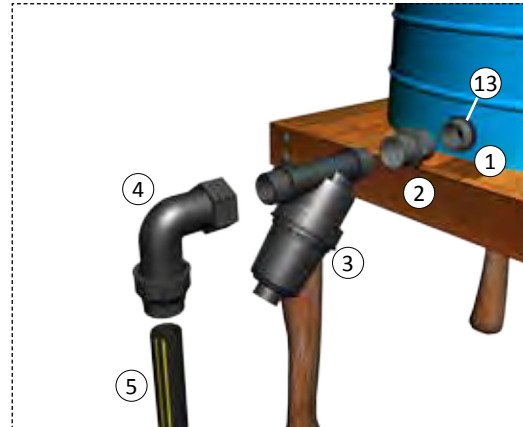
Step 2

From inside the Drum insert adaptor with washer through hole. Insert washer on adaptor from outside the drum tighten the coupler on adaptor for proper sealing.



Step 3

Assemble all the components as shown. Use Teflon tape at threaded joint.



Keep the tank at height as per design recommendation not less than 2.5 m above ground

Note: Kit does not include Tank & Stand. Client has to procure / arrange for the same. Please refer page 53 for ordering

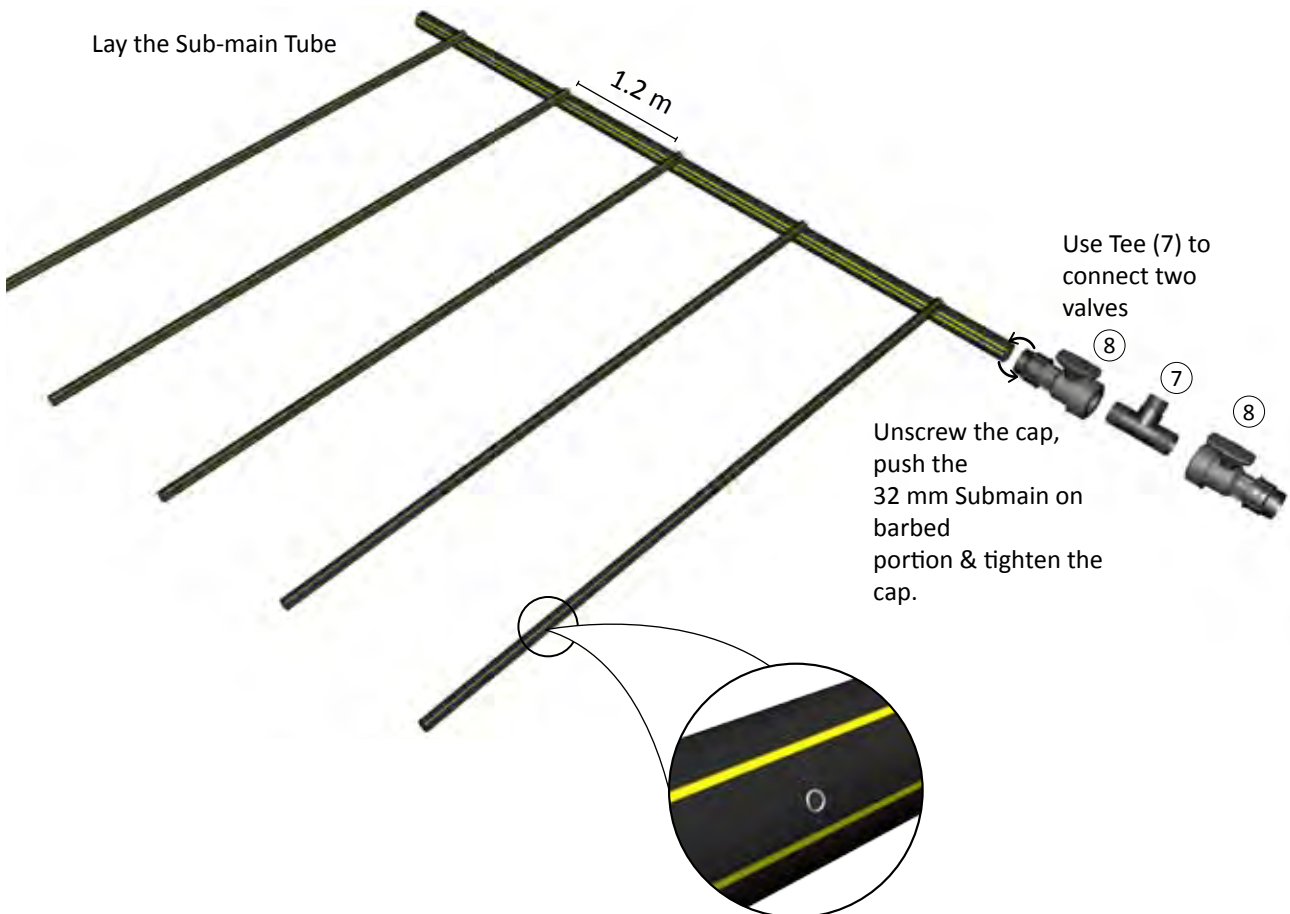
Important : Increasing height will increase discharge through dripper correspondingly Irrigation time will also be reduced.

Step 4 - Laying the submain Pipe



Use sharp knife to cut the tube/tape straight and clean
(Note : knife is not the part of Kit)

Lay the Sub-main Tube



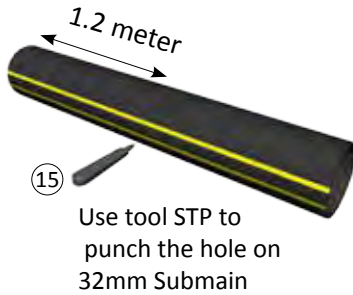
Important

Lay Drip line Tube with emitter facing upward as shown with 1.2 meter Spacing between each row.

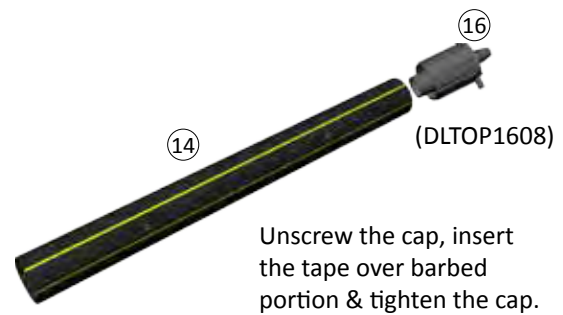
Step 5 - Connection of drip tubes & Flushing the system

For DT-ThinWall

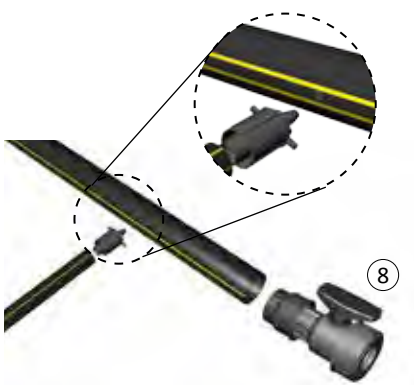
Step 5 A



Step 5 B



Step 5 C



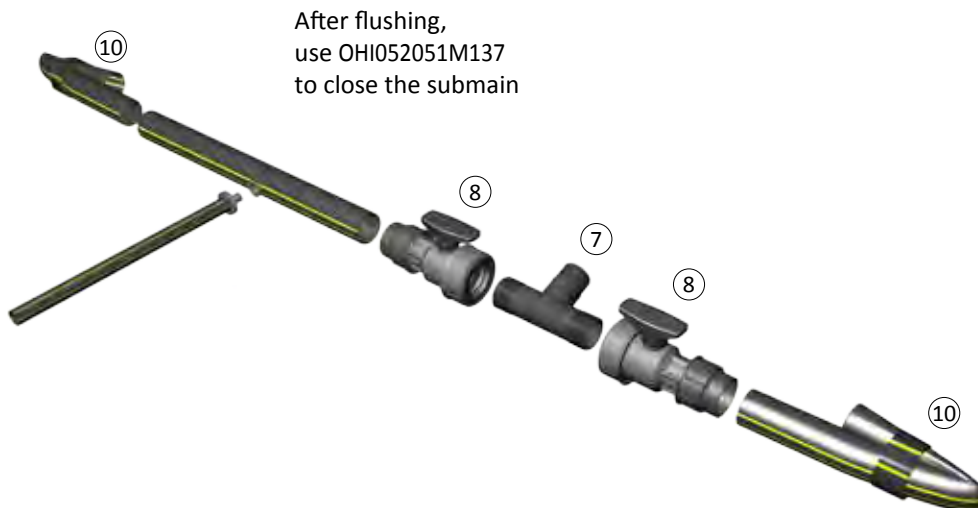
Important

After Installation, flush the entire system to remove dirt/ debris

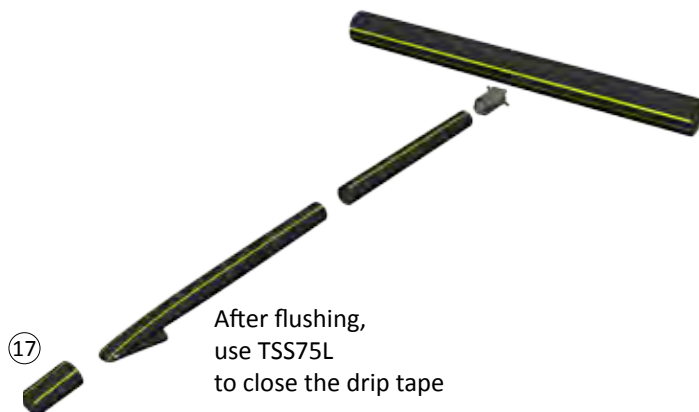
Step 6 - Plugging the submain ends

For DT-ThinWall

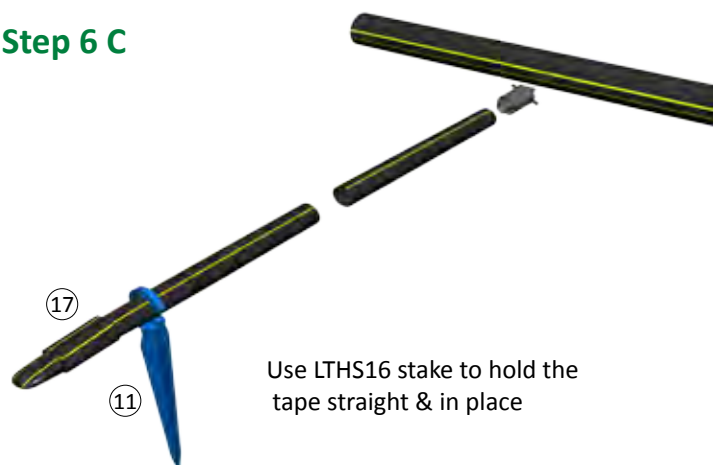
Step 6 A



Step 6 B



Step 6 C



Operational Guidelines



Guidelines for proper usage of DT-GravityKit

1. Keep the submain straight & maintain laterals with proper straight alignment.
2. Always use proper tools / products for installation / maintenance of DripKit.
4. It is always recommended to flush total system including filter before start of irrigation. This is to avoid entrance of dirt / sand / silt in emitters.
5. Check the emitter discharge at start of lateral and at the end of lateral. It shall not vary more than 10%.
6. You can irrigate total system at a time only for 30 m², 100 m², 250 m² & 500 m² areas. For 1000 m² & 2000 m² area it is always recommended to operate one valve at time for better performance.
7. Use takeoff plugs to plug undesired holes on submain and use joiners for any undesired cutting on lateral.
8. Collect lateral from the area before any interculturing of area.
9. Do proper maintenance of system for better outcome.

DT-GravityKit (m ²)	Valve Operation (at a time)
30,100,250, 500	Total System
1000 & 2000	One Valve





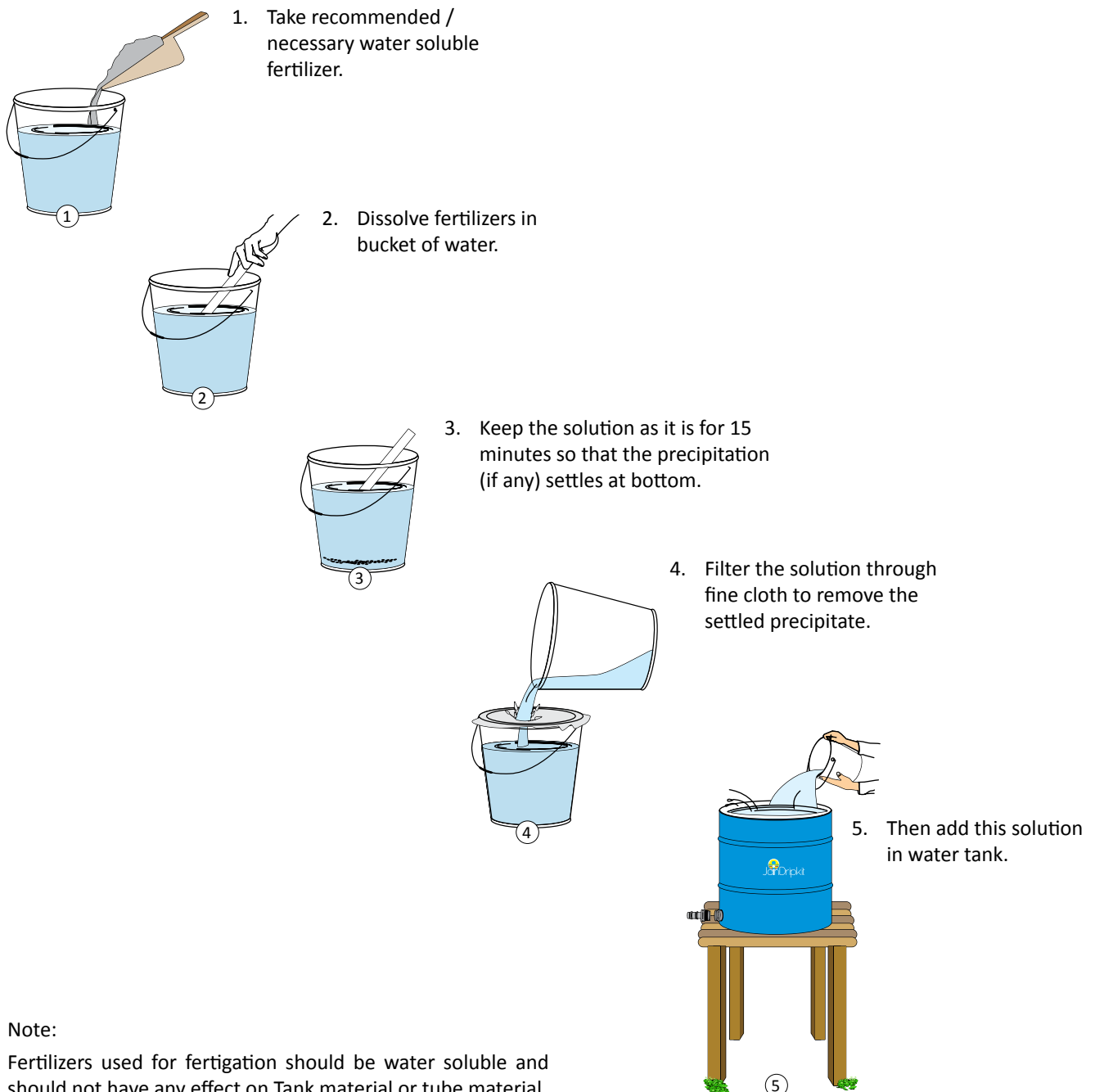
Fertigation system



Fertigation System & Chemigation equipment is a need for today's irrigation system. Optimum and efficient use of fertilizers is one of the major advantages of drip irrigation systems. We are well aware that success of micro irrigation system lies in precise application of fertilizers.

Fertilization via drip irrigation system besides irrigation is the most important management factor through which farmers control plant development, fruit yield and quality. The introduction of simultaneous irrigation and fertilization (Fertigation) opened up new possibilities for controlling water and nutrient supplies to crops and maintaining the desired concentration and distribution of ions and water in the soil.

As per as DripKit fertigation is concerned, fertigation is done by following steps



Note:

Fertilizers used for fertigation should be water soluble and should not have any effect on Tank material or tube material.

Source tank should be cleaned after your fertigation system.



Maintenance of DT-GravityKit system



There are basically two reasons why maintenance of drip irrigation system is so important.

- 1) Water is never found in its purest form in nature. Always it contains some physical, chemical and biological impurities which may block the pipeline, laterals and drippers in the system.
- 2) The function of dripper / emitter is to allow a gradual transition of water flow from optimum pressure to atmospheric pressure when it comes out through emitter, so as to get discharge in the form of a droplet. In doing so the flow of water has to pass through labyrinth, turbulent and minute flow path. There is always a chance of blockage of this flow path due to dirt particles or due to chemical precipitation.

In order that your DripKit system works smoothly and efficiently for years together, it is very essential to maintain the system with great care.

However, periodic and preventive maintenance is essential for smooth system function.

Daily Maintenance Checks

1. Clogging of emitters and wetting pattern (fig.1)
2. Check position emitter in right position. (fig. 2)
3. Flushing of sub-main & laterals by releasing the end caps. (fig. 3)
4. Leakages in pipes, valves, filter, fittings, etc.
5. Flushing & cleaning of filter by opening and cleaning the screen

Fortnightly Maintenance

Screen Filter

In order to get maximum efficiency and optimum results it is necessary to prevent clogging of emitters. Properly maintained filters will ensure maximum efficiency of DripKit systems, by avoiding clogging. Hence, filtration unit is the heart of irrigation system.

The fine particles and dirt are arrested on the filtering element of screen filter. This affects the filtering process. Therefore, it is essential to clean the filtering element every 15 days. For this, open the lid of screen filter and take out the filtering element. Rinse the element. Do not use wired brush, as it may damage the screen.

Monthly Maintenance

If the salts, algae and other impurities present in water enter into the drip irrigation system, then the laterals and drippers get clogged and may stop emitting water. Therefore, it is necessary to apply acid and chlorine treatments once in a month or as recommended in the water quality analysis report.

Do not perform both acid and chlorine treatment simultaneously.

Apart from physical impurities that can be separated by using a screen filter, there are dissolved chemical (mainly salts) impurities and also biological impurities like algae, bacteria, etc. present in some water sources. If the dissolved salts are more concentrated, they can accumulate and clog the emitters. Hydrochloric acid can be applied to the emitters to flush the salts. If bacteria or algae clogs the system, chlorine treatment in the form of bleaching powder (20 mg per liter) can be added to clean the emitters and inhibit slime growth.

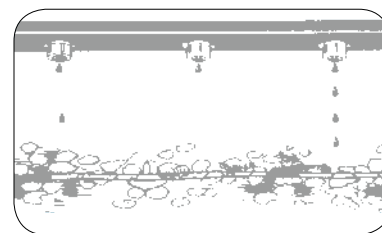
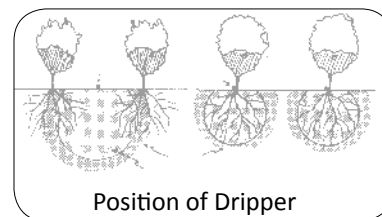


Figure 1



Position of Dripper

Figure 2

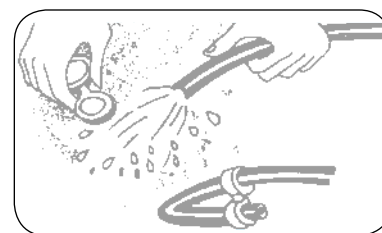


Figure 3

Acid Treatment

Precipitation of salts such as calcium carbonate, magnesium carbonate or ferric (iron) oxide can cause either partial or complete blockage of the Drip Systems. Acid treatment is applied to prevent precipitation of such salts in the drip system. Acid is also effective in cleaning systems which are already partially blocked with precipitates of salts.

For Acid treatment any one of the following acids can be used.

1. Hydrochloric Acid.
2. Sulfuric Acid.
3. Nitric Acid and
4. Phosphoric Acid

Material and accessories required

1. A plastic bucket or jar
2. An empty mineral water bottle of 1 liter volume
3. A dropper (available in any medical shop)
4. pH paper that indicates color change according to pH shift
5. Hydrochloric acid (Commercial grade available in market that is used for cleaning sanitary wares and flooring)

e.g. Consider 250 m² area is irrigated with a DT-GravityKit having a tank of 750 liters at 2.5 m height.

And time required to reach water up to last end of last lateral is 10 min.

Solution

We can add this Acid solution / Bleaching solution directly in water tank
Calculations for Acid Treatment for DT-GravityKit is as mentioned below:

Step 1. Estimation of volume of acid required for treatment

1. From the water source used for drip system, take 1 liter of water in a plastic bucket or jar.
2. Add acid drop by drop in this 1 liter water using a dropper. Stir the water well and measure its pH value.
3. Continue the above process till the pH value of water is equal to 4 (i.e. till the color of pH paper changes to light pink). Stop adding acid to water.
4. Note the quantity of acid in ml required to obtain pH value of 4. (Say it is 2 ml)
5. Find the time required for water to reach the farthest dripper of the section to which acid treatment is to be given, after starting the pump (Say it is 10 minutes). Acid has to be applied within this time duration.

(The time required for water to reach the farthest dripper can be physically measured in the field by noting the time of starting the pump and the time when water reaches the last dripper of the section).

6. Note the flow rate for the section to be treated from as mentioned in chapter "Tank Size determination as per height of tank & type of tube".

Flow of system for 15 min = Total System flow (lph)*10/(60) = 103 liters

7. Calculate the quantity of acid required for treatment of the given section as given below. Acid required for 1 liter water for attaining pH value of 4 = 2 ml.

8. Now Calculate Quantity Acid requirement for 250 m² area

Quantity of Acid Required = Acid required for 1 liter water for attaining pH value of 4 * Flow of system for 10 min

$$\begin{aligned} &= 2 * 103 \\ &= 206 \text{ ml} \end{aligned}$$



Figure 4



Figure 5

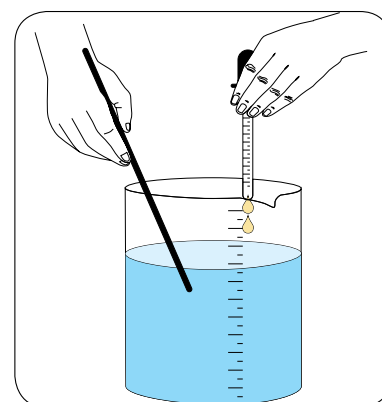


Figure 6



Figure 7



Figure 9

Step 2. Injection procedure

1. Take 103 liters of water in water tank, add 206 ml of acid in water tank. And ON system valve.
2. Check the pH of water at the nearest dripper of the section as well as last end of dripper.
3. After 24 hours open the submain flush valve and the ends of all laterals. Start the pump and flush out the entire system so that all acid and dissolved the salts are driven out of the system.

Just for understanding of farmers we have calculated quantity of acid required for particular area, you can refer following table for Acid Treatment Calculation:

Area (m ²)	30	100	250	500	1000	2000
Total Flow (lph)	50.7	169.1	550.2	1100.4	1244.0	2750.5
Operating Head (m)	1.5	1.5	2	2	2.5	3
Qty. of water for treatment (lph)	4	23	92	275	415	1375
HCL Acid (ml)	4	22	91	275	414	1375

Note: 1. If acid (ml)/ water (lit) proportion is 1:1 for pH = 4

2. Acid requirement may changes according to field conditions.

Chlorine Treatment

Bacterial and organic growth can be controlled by injecting chlorine into the drip irrigation system. Chlorine when dissolved in water acts as a powerful oxidizing agent and vigorously attacks microorganisms such as algae, fungi and bacteria. The quantity of chlorine required and the frequency of treatment depends on the amount of organic matter (i.e. level of contaminants) present in water.

Generally a chlorine concentration of 10-20 ppm is required to control the growth of biological matter in the system. The efficiency of chlorination will be more, if the pH of source water is less than 7. The maximum chlorine concentration injected should not exceed 20 ppm, otherwise it may precipitate solids that could clog the drippers.

It is very important to treat the system regularly to prevent blockage. Treatment on a 15 day cycle with chlorine injection at the end of irrigation is a good practice. If no organic matter is built up, this period can be extended. System should be chlorinated at the end of a crop season and prior to use in the next season to keep laterals / Inlines sterilized.

Common Sources of Chlorine

Chlorine is commercially available in the following forms.

- 1) Solid granules- Calcium Hypochlorite $\text{Ca}(\text{OCl})_2$
It is also known as "Bleaching Powder". It is available in the form of dry powder or granules and contains 65% freely available chlorine.
- 2) Liquid- Sodium Hypochlorite $\text{Na}(\text{OCl})$. It has 15% freely available chlorine.
- 3) Gas- Chlorine gas (Cl_2)

Chlorine Treatment using Calcium Hypochlorite or Bleaching Powder:

It is most widely used as it is cheaper, easily available and convenient to use by farmers. For practical purposes it can be assumed that 50% free chlorine is available from bleaching powder.

Use of calcium hypochlorite is not recommended if the irrigation water already contains a high concentration of calcium (in excess of 20ppm).

A known weight of bleaching powder can be added to the measured quantity of water to prepare a stock solution. The solution must be stirred vigorously to break the lumps. To measure the amount of chlorine during the treatment "Chlorine Paper" is used.

e.g.

Consider 250 m² area is irrigated with a DT-GravityKit having a tank of 750 liters at 2.5 m height.

And time required to reach water up to last end of last lateral is 10 min.

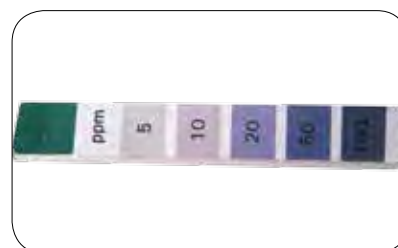


Figure 9



Figure 10



Figure 11

Procedure for Treatment

1. Note the time required for chlorine solution to reach the last dripper of section to be chlorinated, after starting the pump.
2. Note the flow rate for the section to be treated from as mentioned in chapter "Tank Size determination as per height of tank & type of tube".
Flow of system for 10 min = Total System flow (lph)*10/(60) = 103 liters
3. Calculate the quantity of bleaching powder required for chlorination:
If a farmer wants to apply 20 ppm chlorine through a drip system having flow rate of 103 lph. Bleaching powder will be mixed at the rate of 100gm / liter.
1 ppm = 1 mg/liter
20 ppm = 20 mg/liter
Now Bleaching Powder required for 103 liters of water = $103 * 20 * 2$
= 4.2 gm
4. Add 4 gm of Bleaching Powder for 103 liters of water.
5. Mix the powder in water by stirring the solution with a stick to break the lumps.
6. Keep the solution as it is for 15 minutes so that the powder settles at the bottom of container.
7. Filter the solution through a fine cloth to remove the settled precipitate.
8. Add this bleaching solution in tank (with 103 lit of water)
9. Check chlorine content of water at the first dripper of the system using a "Chlorine Paper".
10. Keep the system closed for 24 hours, as it takes 18 to 24 hours for the chlorine to destroy the bacterial, slime, algae etc. in the pipe line, laterals and drippers.
11. After 24 hours open the ends of all laterals / In lines and flush valve of the submain. Start the pump and flush the system to drive out the water containing algae, bacterial slime and other trash.

Just for understanding of farmers we have calculated quantity of acid required for particular area, you can refer following table for Acid Treatment Calculation:

Area (m ²)	30	100	250	500	1000	2000
Total Flow (lph)	50.7	169.1	550.2	1100.4	1244.0	2750.5
Operating Head (m)	1.5	1.5	2	2	2.5	3
Qty. of water for treatment (lph)	4	23	92	275	415	1375
Bleaching Powder (gm)	0.2	0.9	3.7	11.0	16.6	55.0

Note: 1. If acid (ml)/ water (lit) proportion is 1:1 for pH = 4

2. Acid requirement may changes according to field conditions.

Safety Precautions During Acid & Chlorine Treatment.

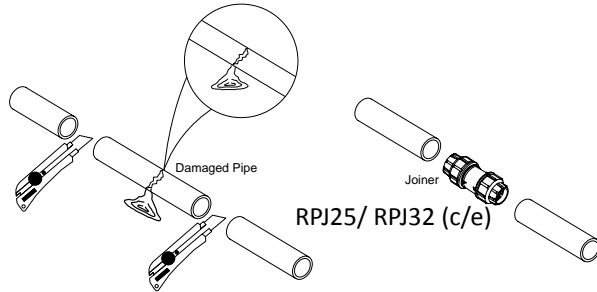

- 1) Acids are dangerous. All acids should be handled with care. Protective glass and hand gloves should be used to protect eyes and to prevent skin contacts.
- 2) Never add water to acid. Always add acid to water for dilution.
- 3) Acid treatment and chlorine treatment should not be carried out simultaneously as chlorine gas may be liberated, which is poisonous.
- 4) Irrigation water mixed with acid or high chlorine concentration is hazardous. Ensure that human beings and animals do not drink the system water during chemical treatments.
- 5) If acid comes in contact with any part of the body during the treatment, was the burns using copious water and consult a Doctor.
- 6) Do not inhale acid fumes or chlorine gas. Do not bend on the tank or bucket containing chlorine or acid solution.
- 7) Ensure that equipment used to handle the acid are resistant to acid attack.
- 8) Backwash the sand filter before performing acid or chlorine treatment. This will prevent entry of decomposed / decayed impurities into the drip system.
- 9) After completing chemical treatment [acid or chlorine] rinse / wash the filtering element of screen filter and fertilizer tank with clean water.



Figure 12

Troubleshooting



Sr.	Problem	Cause	Remedy
1	Emitter not delivering water.	Clogging due to impurities in water or air bubble in micro tube.	<ol style="list-style-type: none"> 1. Check water available in water tank. 2. Check section valve position, it should be ON. 3. Check the screen filter and gasket for any possible leakage and if required, replace them.
2	Leakage in lateral, submain or main pipe	Cut in pipe due to mechanical damage, rodents bite, etc.	Cut the pipe at the place of damage and connect it by using joiner / connector.
<p>Use Rainport Joiner to repair leaking submain and main pipe</p> 			
<p>Use Joiner to repair Laterals</p> 			
3	Reduced flow of water from emitter.	<ol style="list-style-type: none"> 1. Caked filter 2. Pipe leakage 3. Open end cap 	<ol style="list-style-type: none"> 1. Fill water in the tank, if water level is down. 2. Clean the filter screen. 3. Repair pipe leakage as mentioned above. 4. Tighten the end.
4	No discharge at the lateral/ Inline end.	Lateral/ Inline is cut or broken or has folds/kinks somewhere in between.	<ol style="list-style-type: none"> 1. Check lateral/ Inline along the length for cuts, folds/kinks. 2. Straighten it if folded or kinked and put joiners wherever necessary to repair the cuts.
5	White crustation material comes out through the lateral / Inline ends	<ol style="list-style-type: none"> 1. Water contains high quantity of salts in the form of white crustation. 2. Laterals/ Inline are not flushed for a long time. 	<ol style="list-style-type: none"> 1. For salts in the form of white crustation, carry out acid treatment as per the recommendations. 2. Flush filters, laterals / Inline regularly once in a week.
6	Fibrous bacterial slime material comes out through the lateral/ Inline ends.	<ol style="list-style-type: none"> 1. Water contains algae and excess iron and sulphides. 2. Laterals/ Inline are not flushed for a long time. 	<ol style="list-style-type: none"> 1. To control growth of algae and bacterial precipitation of iron and sulphur in the form of fibrous red / white slime mass, carry out chlorine treatment as per recommendations. 2. Flush filters, laterals / Inline regularly once in a week.



Opportunities



Best valve Drip Irrigation low cost - low risk "DT- GravityKit"

By helping start a use of drip kits in your area , you can help one or more families grow enough food for themselves and some extra to sell. As you are aware recently food and vegetable prices are on their peak and have become almost unaffordable and beyond the reach of middle and poor class people

If you are an individual, or connected with a school, civic organization, mission group, co operative society or an NGO, Come join us in spreading this message of saving limited resources and growing more.

If you know of anyone who you believe may be interested, please forward this information to them!

Driptech Irrigation Systems "Helping people grow vegetables when there is little or no rain"

How we can help you!

If You Are...	We Can Help You to...
A Non Government Organization	Provide simple irrigation equipment to schools, hospitals and orphanages so they can grow their own vegetables
An Agricultural Research Organization	Use the latest technology for growing vegetables in a garden
A Civic Organization	Be a part of a program to train trainers to be able to teach others to grow vegetables when there is less or no rain.
Zilla Parishad, Gram Panchayat	
Municipal Corporation	
A Funding Organization / Donar	Use your funds wisely in helping feed the hungry during their dry season.
An Individual with Agricultural or Irrigation experience	Have a short term mission to use your ability to teach others simple growing techniques
A Government Agency	Network with hundreds of organizations in country.
A Student studying to be of service to mankind.	Be able to train others to use a simple, inexpensive program to help the poorest of the poor to grow vegetables in the dry season.

We not only sell "Drip Kits" but support the users and retailers to popularize this innovative concept for good cause of harvesting vegetables / fruits and save resources such as water, labour, fertilizer, soil, electricity



A JAIN IRRIGATION COMPANY

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