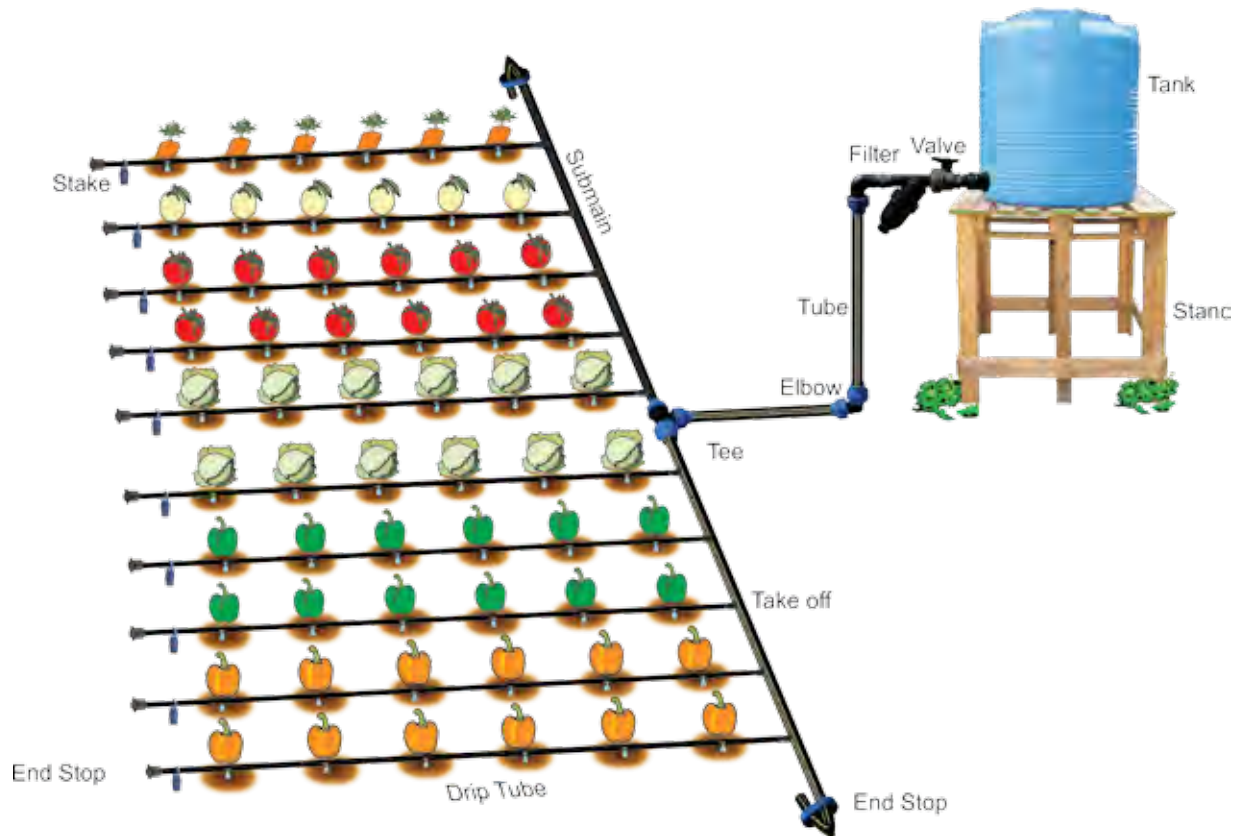




Sustainable Technology for Small Land Holders



More Crop Per Drop®



Index



1	Introduction	5
2	Jain DripKit & Components	8
3	Design	10
4	Installation of Jain DripKit System	13
4.1	Assembly of 30m ² Jain DripKit	14
4.2	Assembly of 100m ² Jain DripKit	16
4.3	250m ² Jain DripKit	18
	Components	18
	Main line assembly	19
	Submain laying	20
	Connection of Drip Tubes	21
	Plugging of Submain	22
	250 m ² Jain DripKit layout	23
4.4	500m ² Jain DripKit	24
	Components	24
	Main line assembly	25
	Submain laying	26
	Connection of Drip Tubes	27
	Plugging of Submain	28
	500 m ² Jain DripKit layout	29
4.5	1000 m ² Jain DripKit Layout	30
	Components	30
	Main line assembly	31
	Submain laying	32
	Connection of Drip Tubes	33
	Plugging of Submain	34
	1000 m ² Jain DripKit layout	35
4.6	Components of 2000m ² Jain DripKit	36
	Main line assembly	37
	Submain laying	38
	Connection of Drip Tubes	39
	Plugging of Submain	40
	2000 m ² Jain DripKit layout	41
5	Operational Guidelines	42
6	Online DripKit System	43
6	Fertigation System	44
7	Maintenance of Jain DripKit system	45
8	Troubleshooting	49
9	Jain DripKit Add on features	50
10	Jain DripKit Specifications	53
11	Opportunities	54

More Crop Per Drop®



JainDripkit

Gravity Powered Drip Irrigation System

© Copyright: This catalogue has been prepared for providing information about Jain Irrigation Systems Ltd. Jalgaon, India, to the present/ prospective customer. This catalogue material contains proprietary and confidential information about the company. It should not be used for any purpose, other than the purpose specified here.

No part of this information should be disclosed, reprocessed, copied or stored in any manner without the prior consent, in writing, from the company.

The information given about Jain Irrigation Systems Ltd.'s (JISL) products is without any obligation. The technical data concerning JISL's products are typical values subject to alteration.

JISL reserves the right to re-design or modify their products without incurring further liability.

The actual use of the products by the purchaser / customer is beyond the control of JISL and JISL can not be held responsible for any loss and/or any consequential liability arising out of incorrect or faulty or mis-use of the products.

Jain DripKit Catalogue - Revision 01 - 2011

Introduction



A gravity fed irrigation system is a cost effective way to irrigate with drip irrigation system for smaller sized crop area. Jain DripKit contains specifically designed drip irrigation system. These systems are provided as standard packing for small plots along with user-friendly instruction manuals that enable small holders to cultivate commercial crops. In other words, micro irrigation can maximize crop productivity and protect the environment through conserving soil, water and fertilizer resources, while also increasing farmer income. Applying water just to the root zone of each plant is the key idea behind drip irrigation.

Jain Irrigation Systems has developed a range of small, easy-to-use, and affordable micro irrigation kits. This irrigation system allow the production of high value crops with less time and money than traditional ways of cultivating and irrigating commercial crops.

These products are sold as ready-to-use kits, assembled and packaged so that they can be moved off the, installed and used by farmers.

The emitters deliver water directly to the root zone in quantities that approach the consumptive use of the plants. Most of the components in a typical low-cost micro irrigation system are manufactured from polyethylene. Small land holder can easily adapt the technology to the needs of the small land holders and enable them to cultivate high-value cash crops with small amounts of water to increase their income. With the use of the technology, small land holders are able to increase their income up to two to three times what they make from traditional method. With available water, farmers can also increase their productive area by using Jain DripKit Systems.

The purpose of this manual is to guide both promoters and users through the major technical & general topics covered related with installation and maintenance of dripkit.

This manual is useful to all those suffering from a lack of nutritious food anywhere in the world due to adverse climatic or economic conditions. In most cases, the people being affected can not control these adverse conditions, but they can be taught simple sustainable techniques of land & soil management and food production that can certainly lower the impact and in many cases successfully cope with or even overcome the adversities.

Benefits of Jain DripKit

- ◆ **Reduce requirement of manual skilled labour :** As DripKit is easy for assembling, family person can easily assemble total system this saves requirement of skilled labours.
- ◆ **Use of existing resources :** Specially developed for small land holders for the complete use of existing resources like land near house, water, vegetables demand etc.
- ◆ **Improved Yield:** Slow and regular application of water and nutrients uniformly to all plants improves product quality and uniformity, and increases yield.
- ◆ **Water Saving:** Water savings are 50%, compared to traditional irrigation methods. This means that when using Jain DripKit, a farmer can irrigate more crop per unit of water used.
- ◆ **Application to Variety of Crops:** A number of different crops can be irrigated including vegetable fruit, commercial cash crops, flowers, etc.





Advantages of Jain DripKit

- ◆ Specifically designed cost effective system
- ◆ Fully gravity powered - no need of pump or power source
- ◆ Fully modular - can be easily dis assembled and stored
- ◆ All items & tools in one box, for faster installation.
- ◆ Easy to carry the kit.
- ◆ Affordable drip systems for small farmers.
- ◆ Early maturity of the crop. Early in the market and higher is the price.
- ◆ Technology for social justice & equity
- ◆ Efficient tool to overcome the challenges of water security, food security and energy security for the nation.
- ◆ Easy assembly and operation - no need of previous experience.
- ◆ Eliminates wetting of the foliage, reducing fungal diseases.



Applications of Jain DripKit

Jain DripKit System is useful for Irrigation of most of the crops.

- ◆ Ideal for small and marginal farmers.
- ◆ For Vegetables, Cereals, Pulses, Cotton and other closely spaced row crops.
- ◆ Can be used in green house/ shade house and nurseries for irrigation.
- ◆ For Small Pots / Kitchen Gardens
- ◆ Suitable for Himalayan / Hilly (Terrace) regions & / or where land holding is very small.
- ◆ Useful as a survival irrigation tool in rainfed area or water scarcity region or when there is a prolonged gap between rains.



Jain DripKit & Components



Jain DripKit is a gravity drip irrigation is a tailor-made system. The system is designed to suit the field conditions. The system components are so selected that they fulfill the functional requirement and are installed as per the design. And components are used according to the drip line option (Jain Turbo Excel® or Jain Turbo Slim TE® or Chapin Drip Tape).

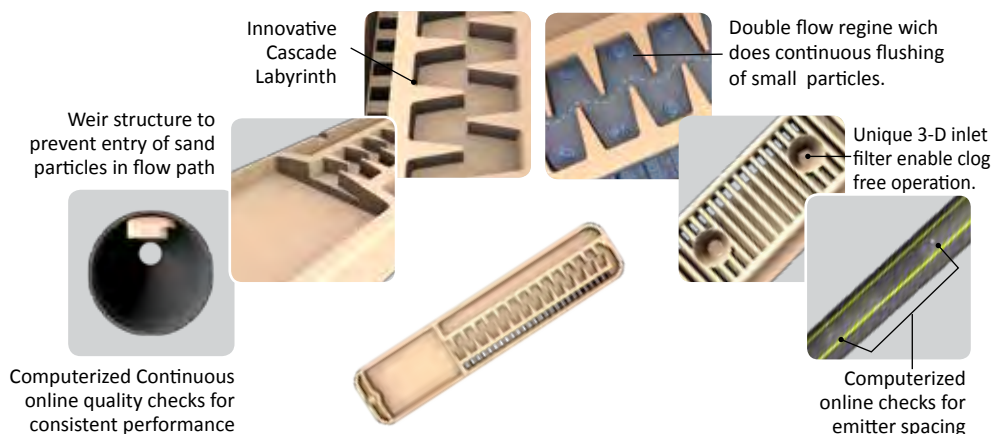
J-Turbo Excel®

- Available discharge rates - 1.6 lph.
- 12 mm nominal diameter.
- Dripper Spacing 30 cm.
- Wall Thickness 0.6 - 0.7 mm.



Jain Turbo Slim® Excel

- Available discharge rates 1.6 lph.
- Clog resistant dripper.
- 16 mm nominal diameter.
- Dripper Spacing 30 cm.
- Wall Thickness 6 mil.



Valve



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

Filter



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

Rainport Compression Fitting



Jain Rainport Fittings allows connection & easy dismantling of Mainline & Submain

Tank Adaptor



Unique adaptor to connect Jain DripKit components to storage tank.

Take off



For fast and easy leak proof connection of Jain Turbo Excel drip line to submain.

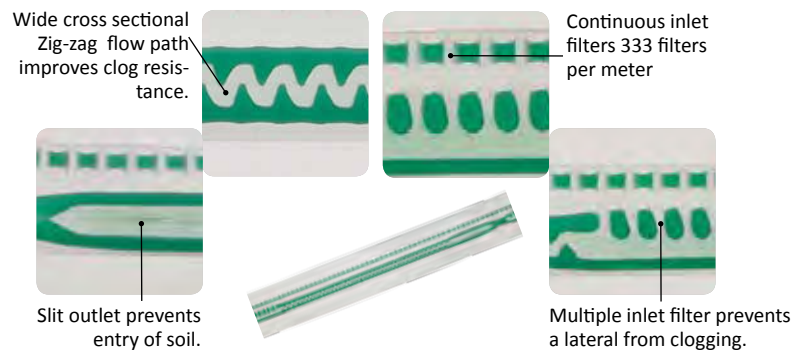
Tape off Adaptor



Used to Quick Connect Jain Turbo Slim TE or Chapin Tape to Submain

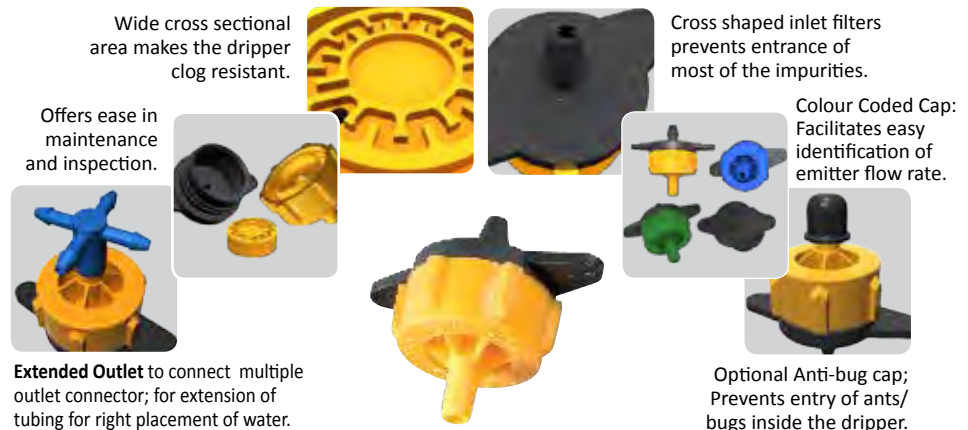
Chapin Deluxe

- Discharge rates 0.96 lph.
- Clog resistant dripper.
- 16 mm nominal diameter.
- Outlet Spacing 20 cm.
- Wall Thickness 6 mil.
- Application on the undulating land / terrains/ Steeps slope.



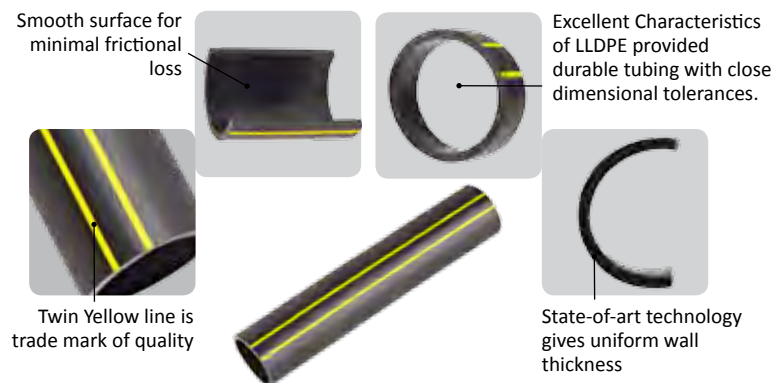
J-Turbo Key Plus®

- Discharge rates 2, 4, 8, 14 lph.
- Clog resistant dripper.
- Narrow cross shaped inlet acts as a filter.
- Openable dripper - easy to clean.
- Extended outlet facilitates use of polyethylene extension tube, vinyl tube with multioutlet connector arrangement.



Jain Tough Hose - Twin line®

- Black in colour with two parallel yellow stripes - 'Twin-Line®'.
- Manufactured from virgin LLDPE using advanced extrusion technology.
- Excellent characteristics of LLDPE provide durable tubing with close dimensional tolerances.
- UV stabilized, No environmental effects.
- Smooth inner surface minimizes frictional losses.
- Nominal Diameters are 12, 16, 25 and 32 mm



Tool 32x7.5



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

Tool STP



Used to make hole on Submain to install Jain Turbo Slim TE / Chapin adopter.

End Stop



For easy closing of Jain Tubro Excel (in operation) & opening during flushing.

8 Shape End



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

Tape lock End Cap



For closing of Jain Turbo Slim TE/ Chapin (in operation) & opening during flushing.

Stake



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

Design



As a first step in the proper design of DripKit System, it is necessary to know the crop water requirements. In general terms, the crop water requirement is equivalent to the rate of evapotranspiration necessary to sustain optimum plant growth. The accuracy of the determination of crop water requirement will be largely dependent on the type of climatic data available.

- Water Requirement of crop
- Water tank Size & Height (filtration requirement)
- Possible configurations
- Flow calculations as per tank height

Calculation of crop water requirement

Water required for Vegetables

Daily water required = $(A \times B \times C \times D) / E$
per tree (liters)

Where,

A = Evapotranspiration rate in mm/day,

B = Crop factor,

C = Canopy factor

D = Area of plant = (Plant spacing x Row spacing)

E = Efficiency of irrigation system.

Evapotranspiration (ET)

It is also called as consumptive use. It denotes the quantity of water transpired by plants during their growth or retained in the plant tissues plus the moisture evaporated from the surface of the soil and the vegetation.

Crop Factor

The crop factor, is selected for given crop and stage of crop development under prevailing climatic condition. For each crop there are four growth stages. Crop factors have to be determined for each of the stage. The crop factor for the Initial Stage is lower (0.3 to 0.4) and it increases to (0.7 to 0.8) during the Crop Development Stage. It is about 1.0 to 1.10 at fully Grown Stage and it reduces again to 0.8 to 0.9 at the harvesting stage.

Canopy Factor

It is expressed as the ratio of the area covered by plant foliage to the total area provided for the plant. Thus, it is the ratio of the plant's shadow area at 12 noon to the area of the plant. The area provided to a plant is the product of plant spacing and row spacing.

All the Drip Kits are designed by considering the peak water requirement of vegetables. DripKit with J Turbo Excel will emit 3.2 lph/m water, Chapin Deluxe Drip tape will emit water about 2 lph/m. Based on type of crop available irrigation scheduling can be done.



Table 1 : Recommended Numbers & Discharge of Drippers/ Micro Jets/ Micro Sprinkler for different crops, spacing and soil type.

Crops	Spacing Row & Plant (Ft)	** PWR	Crops	Spacing Row & Plant (Ft)	** PWR
Vegetable	2 x 4 x 2	8	Apple	15x15	40
	3 x 3 x 3	8	Orange	18x18	60
Sugarcane	3 x 3 x 3	12	Lemon	20x20	80
	2.5 x 4.5 x 2.5	14	Mango	20x20	120
	3 x 5 x 3	16		25x25	130
Grapes	6x6	14	Banana	5x5	16
	8x8	16		10x10	20
	10x10	14	Papaya	7x7	20
Pomegranate	12x12	24	Coconut	20x20	80
	15x15	40		25x25	100
Guava	15x15	50	<i>* Pattern : HC Half, FC - Full Circle, LD - Low Discharge, HD - High Discharge. ** PWR : Peak Water Requirement in litre per day per plant.</i>		
	18x18	60			

Table 2 : Tank size dermination as per height of tank & type of tube

Tube Details	Tank Height (m)	Water required (lph) @ Area (m ²)						
		30	100	250	lph	500	1000	2000
J Turbo Excel	1.5	-	-	469.7		939.3	-	-
	2	-	-	550.2		1100.4	-	-
	2.5	-	-	622		1244	1036.7	2073.4
	3	-	-	687.6		1375.3	1146.1	2292.1
	4	-	-	805.5		1611	1342.5	2685
Jain Turbo Slim TE	1.5	-	-	469.7		939.3	-	-
	2	-	-	550.2		1100.4	-	-
	2.5	-	-	622		1244	1036.7	2073.4
	3	-	-	687.6		1375.3	1146.1	2292.1
	4	-	-	805.5		1611	1342.5	2685
Chapin Deluxe Drip Tape	1.5	50.7	169.1	422.7		845.4	-	-
	2	59.4	198.1	495.2		990.3	-	-
	2.5	67.2	223.9	559.8		1119.6	933	1866.1
	3	-	247.5	618.9		1237.7	1031.4	2062.9
	4	-	-	725		1449.9	1208.3	2416.5

NOTE

- Tank height as mentioned in table is at the bottom of the Tank.
- Water requirement given is for one hour operation of Jain Dripkit. 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 DripKit, minimum tank height recommendation is 2.5 m.

Table 3 : Head Vs Discharge

Sr. No.	*Head (m)	Discharge (lph)		
		JTA 1.6 lph	Chapin 0.95 lph	JTS 1.6 lph
1	1.5	0.56	0.34	0.56
2	2	0.66	0.40	0.66
3	2.5	0.75	0.45	0.75
4	3	0.83	0.50	0.83
5	4	0.97	0.58	0.97
6	5	1.09	0.66	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.)

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) Jain DripKit - 250 m² JTA
- 3) Tank height : 2.5 m

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 (refer table)

Step 3

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

$$\begin{aligned}
 \text{Irrigation by present emitter} &= (\text{Emitter discharge at 2.5 m head in lph}) / (\text{emitter spacing in m}) \\
 &= 0.75 / 0.3 \\
 &= 2.5 \text{ lph/m}
 \end{aligned}$$

Step 4

Time required to fulfill total water need of vegetable

$$\begin{aligned}
 &= (\text{PWR of vegetables}) / (\text{Irrigation by present emitters}) \\
 &= 8 / 2.5 \\
 &= 3.2 \text{ hrs i.e. 3 hrs, 12 min.}
 \end{aligned}$$

Step 5

If user has 1000 lit water tank, then total water required per day to irrigate 250 m² area is given by:

$$\begin{aligned}
 \text{Total water required per day} &= (\text{Water required for 250 m}^2 \text{ area @ 2.5 m head; from table 3}) \times (\text{time required to fulfill total water need of vegetable}) \\
 &= 622 \times 3.2 \\
 &= 1991 \text{ liters per day.}
 \end{aligned}$$

i.e. user need to fill tank twice a day.

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 Jain DripKit System

Installation of Jain DripKit System is a very simple process. It can be divided in to three stages:

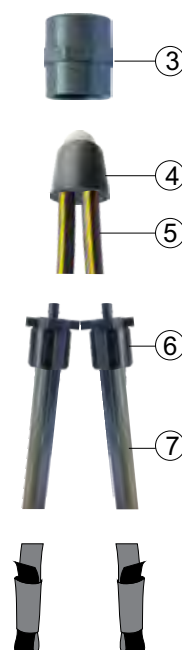
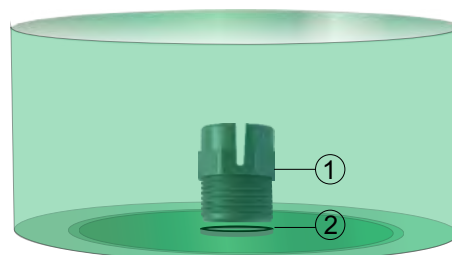
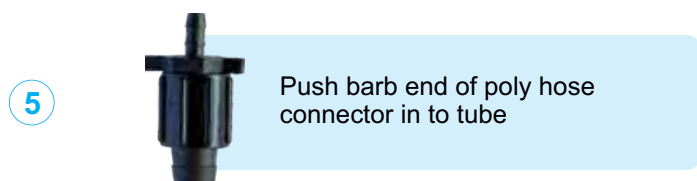
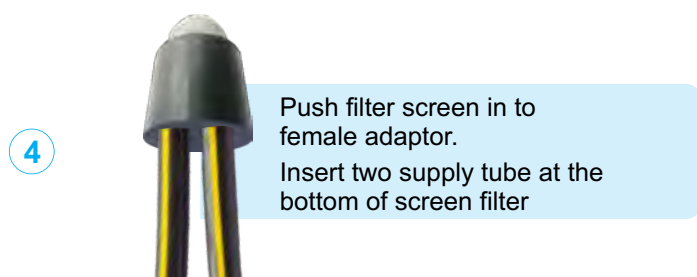
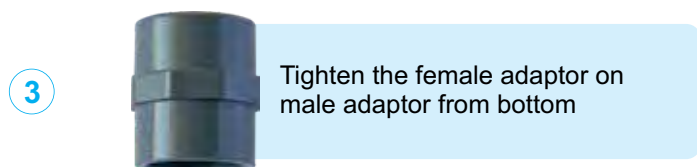
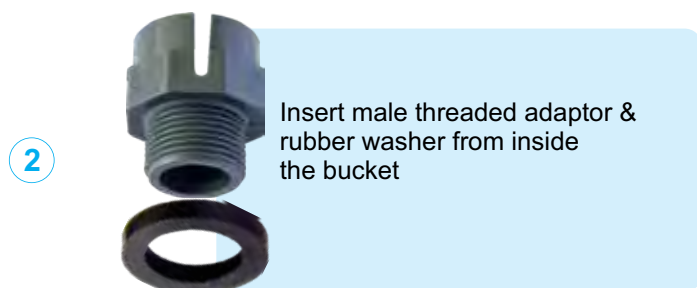
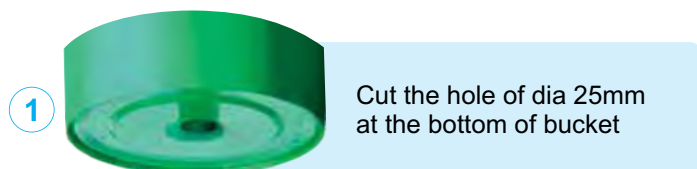
1. Installing water source (bucket, barrel, tank etc.)
2. Laying of pipes and emitters
3. Commissioning

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.



Jain DripKit - 30 m²

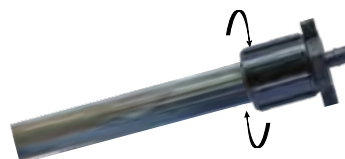


BUCKET KIT COMPONENT

Sr.	Material Description	Code	Qty
1	Male threaded adaptor	MTA034BK	1
2	Rubber washer	RWBKF	1
3	Female adaptor	FTA 025	1
4	Bucket kit Filter	BKTFILSCN10232B	1
5	Microtube 8 mm	M08010M125	2
6	Poly Hose Connector	CPJ0816	2
7	Drip Tape (in meter)	DLX16063022330	30

6

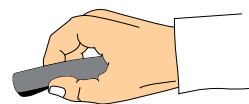
Unscrew the cap of connector
push the drip tape & tighten the cap.



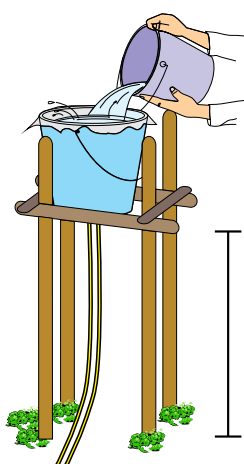
7

To close the ends

- Cut approximate 3" length of Chapin Tube to use it as an end cap.
- Fold the tape (minimum 3 to 4 folds)
- Squeeze it lengthwise.
- Insert tape in to sleeve made from small piece of tape.



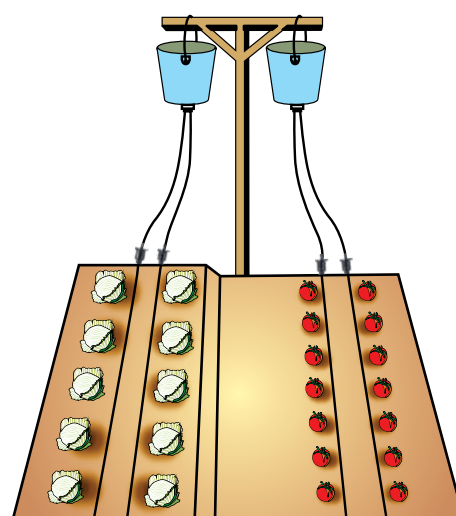
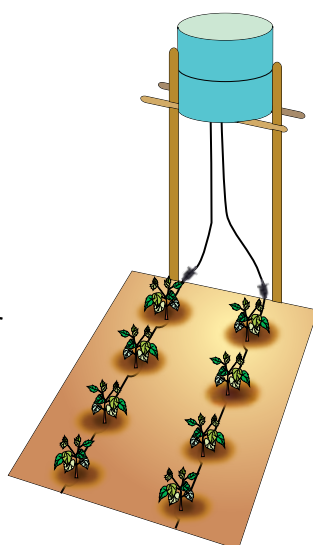
Fill the water in to bucket,
if impurities are present in water,
Filter through heavy cloth.



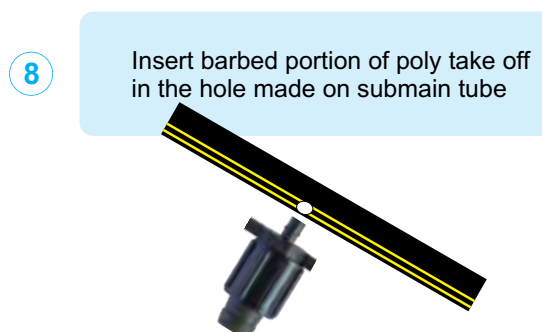
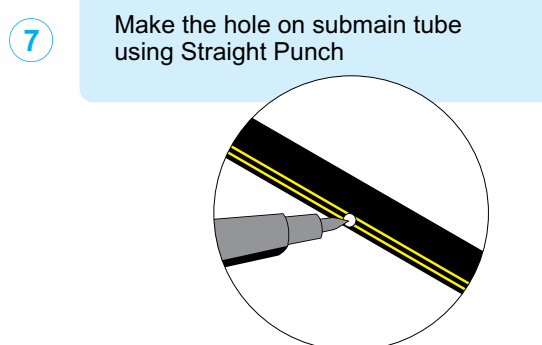
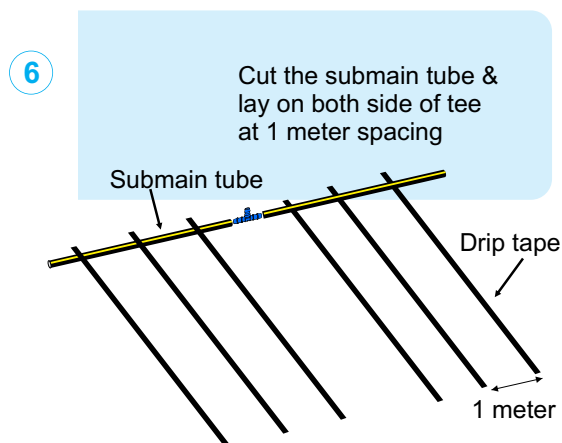
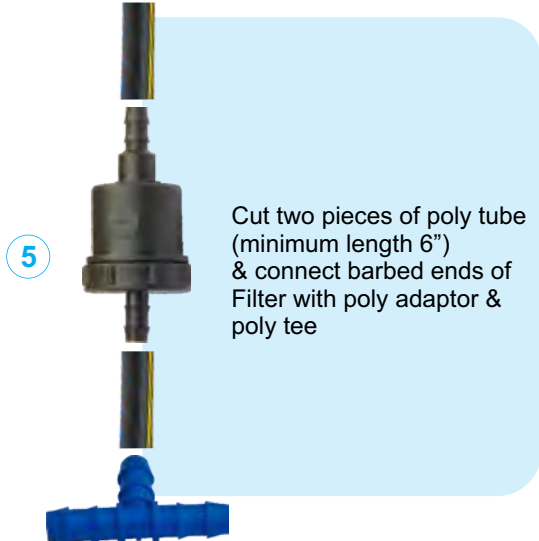
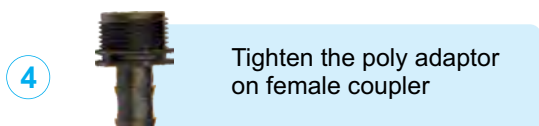
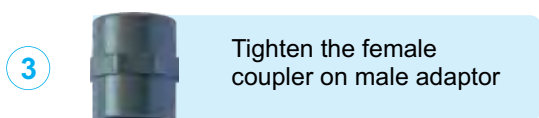
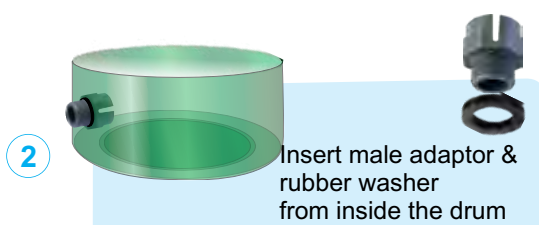
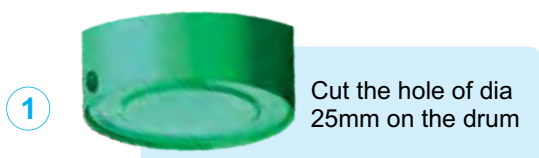
Minimum
1.5 Meter

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

Schematic Layout



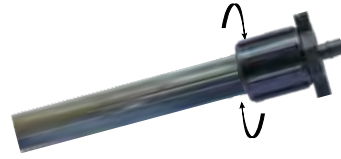
Jain DripKit - 100 m²



9

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

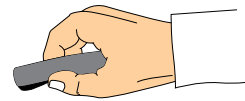
Note: Ensure that tape is cut sharp straight and not irregular & angular.



10

To close the ends

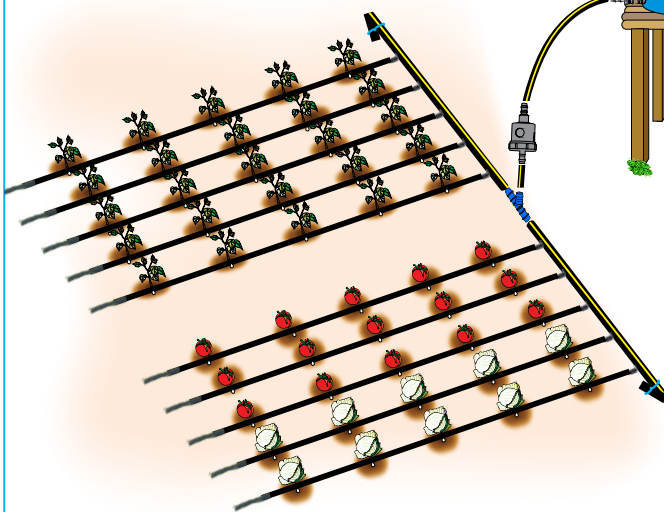
- Cut approximate 3" length of Chapin Tube to use it as an end cap.
- Fold the tape (minimum 3 to 4 folds)
- Squeeze it lengthwise.
- Insert tape in to sleeve made from small piece of tape.



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	Jain Inline filter 16mm	LF16PB	1
5	Poly Hose Connector	DLTOP1608	10
6	Chapin Deluxe(in meter)	DLX16063022330	100
7	Straight Punch	SHP	1
8	Lateral end stop "8" shape	ESO816	2
9	Tube OD 16mm (in meter)	TO161R100	15
10	Barbed Poly Tee 16 mm	TO16	1
11	Poly Threaded Adaptor	TAO1634	1

Jain DripKit - 250m²



Sr.	Product	Description	Code	Qty
1		Jain DripKit Adapter 1"	JDKA1	1
2		Reducer 1" x 3/4"	R134	1
3		Single Union Valve (25mm x 3/4")	SUV25HFM	1
4		Jain Super Flow Filter 3m³/hr x 3/4"	JPSF03SC	1
5		Female Threaded Coupler 3/4"	FTCO34	1
6		Rainport Elbow 3/4" male x 25mm	RPMTE2534	1
7		Tube OD 25 mm Class 2 (in meter)	TO252001	25
8		Rainport Elbow 25mm	RPE25	1
9		Rainport Tee 25mm	RPT25	1
10		Tool for DripKit 32mm x 7.5mm	TDK3275	1
11		Lateral End Stop "8" Shape 25mm	ESO825	2
12		Tube hold stake "C" Clip 12 mm or 16mm	LTHS12/ LTHS16	22

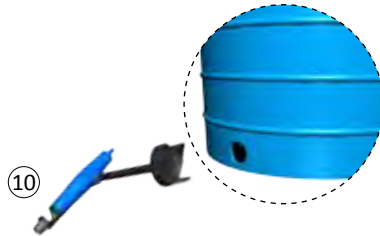
Sr.	Product	Description	Code	Qty
13		Teflon Tape	TT	1
14		Rubber Washer 44 x 27 x 5.5mm	ORSS	1

15		Jain Turbo Excel (in meter)	E12160302250N	250
16		Take off adaptor male 12x8mm	HTOAB128	22
17		Take off adaptor female 12x8mm	HTOAS128	22
18		Lateral End Stop "8" Shape 12mm	ESO812	22
19		Take off plug 12x8mm	HTOAP128	10

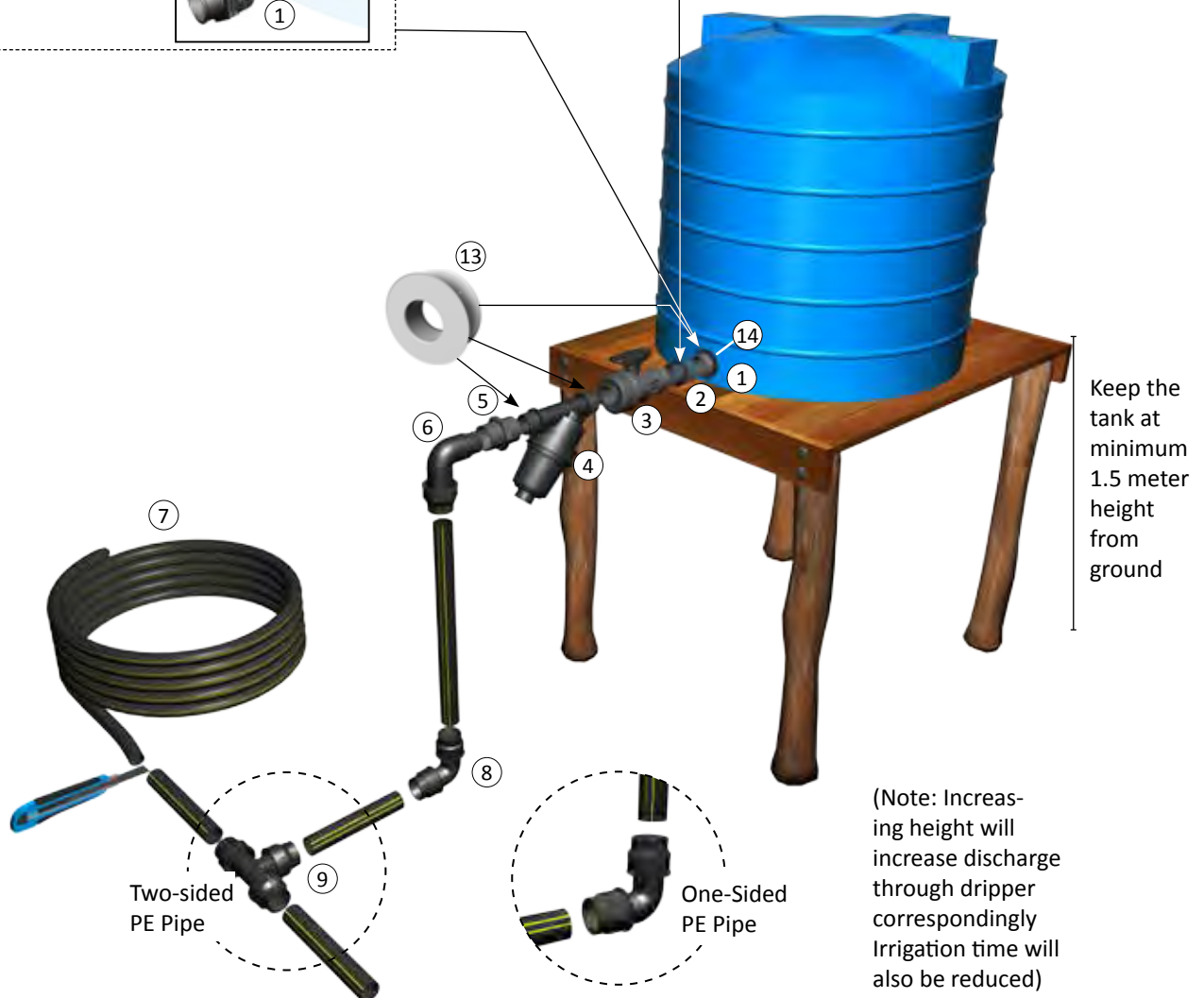
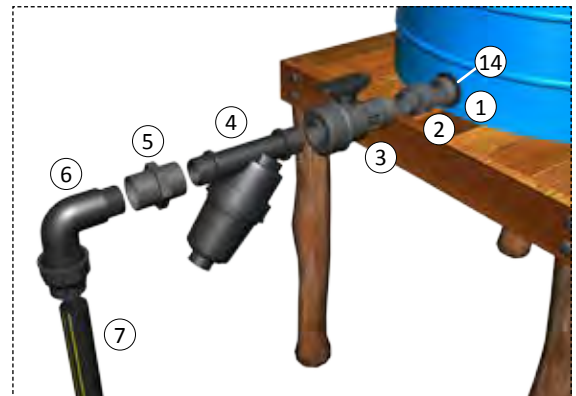
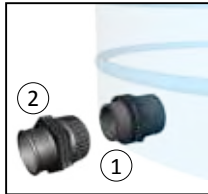
20		Jain Turbo Slim TE Chapin Deluxe (in meter)	TS15916030062700N DLX16063022330	250
21		Lateral Straight punch	STP	1
22		Tape lock by Poly take off 16x8 mm	DLTOP1608	22
23		Tape lock End Plug 16mm	DLEP16	22

Step 1 - Main Line Assembly - 250m²

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



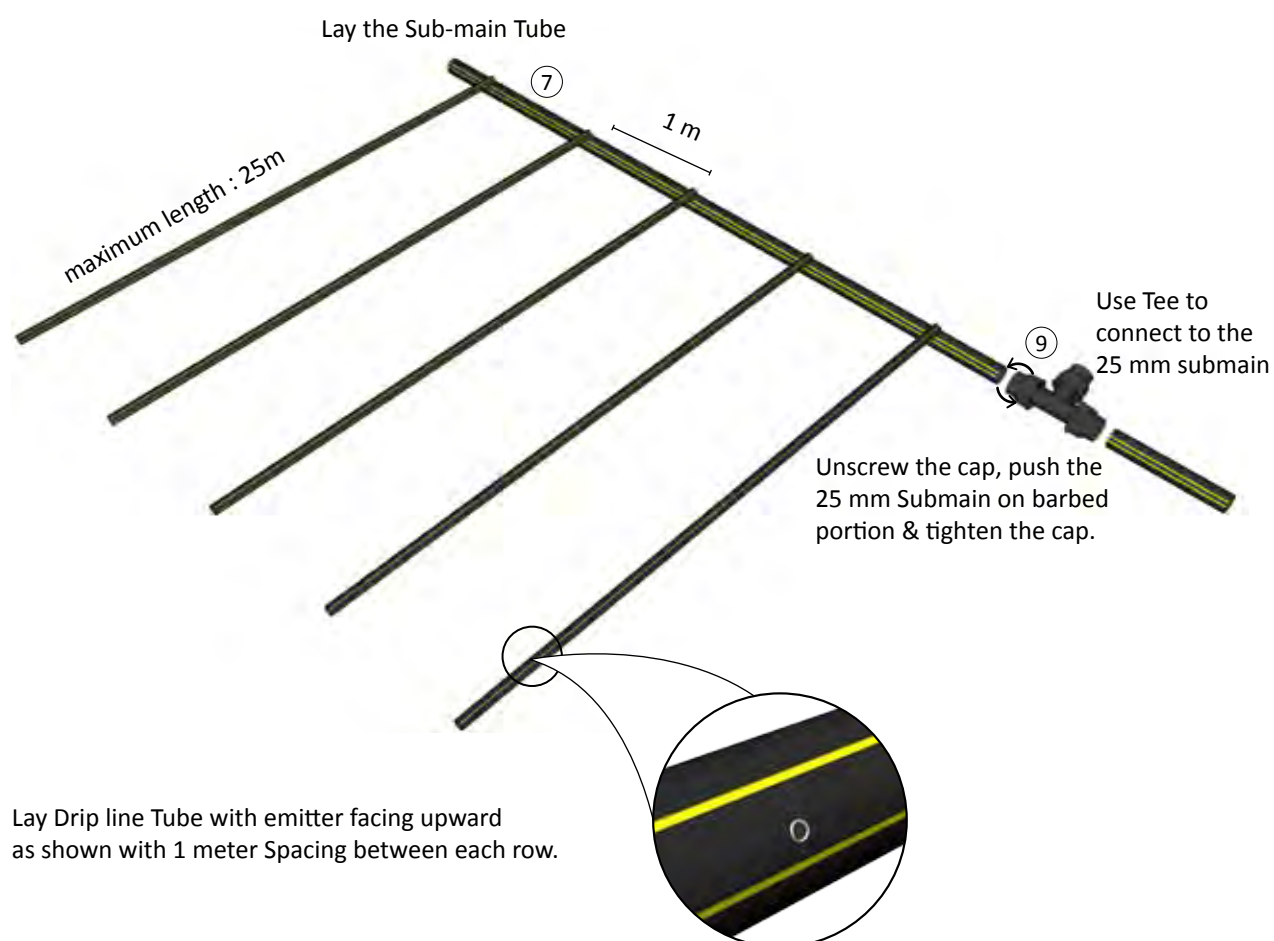
From inside the Drum insert adaptor with washer through hole .
Insert washer from outside of drum.
Tighten the Reducer on adaptor for proper sealing.



Step 2 - Laying the submain Pipe



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



Step 3 - Connection of drip tubes & Flushing the system

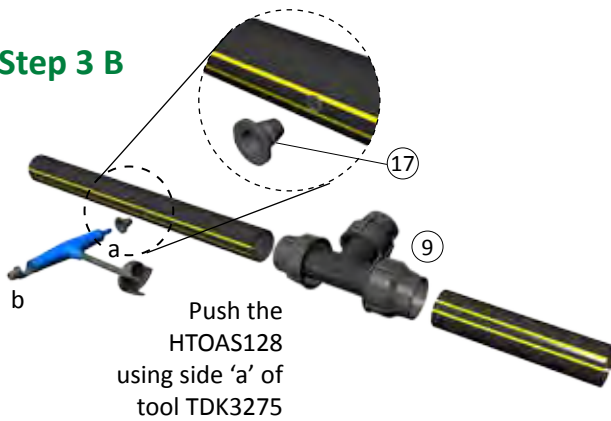
For Jain Turbo Excel

Step 3 A

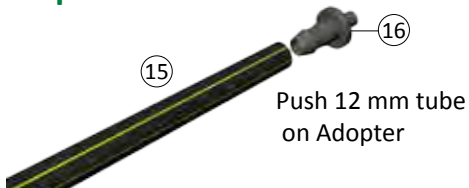


Punch the hole on 25mm submain
Using side 'b' of tool TDK 3275

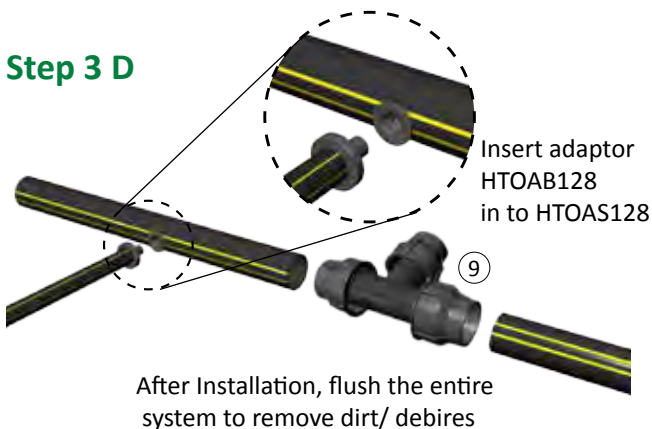
Step 3 B



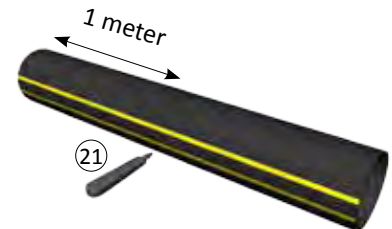
Step 3 C



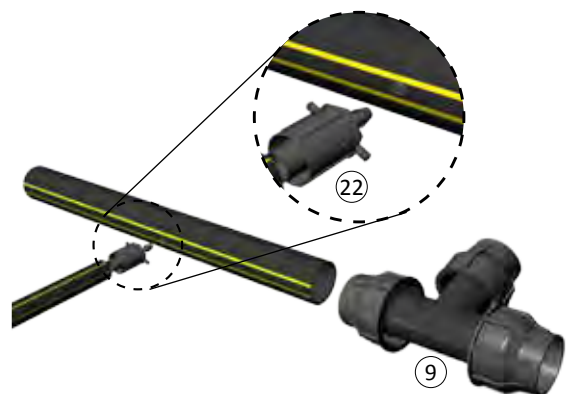
Step 3 D



For Jain Turbo Slim TE & Chapin Tape



Use tool STP to punch the hole on 25mm Submain

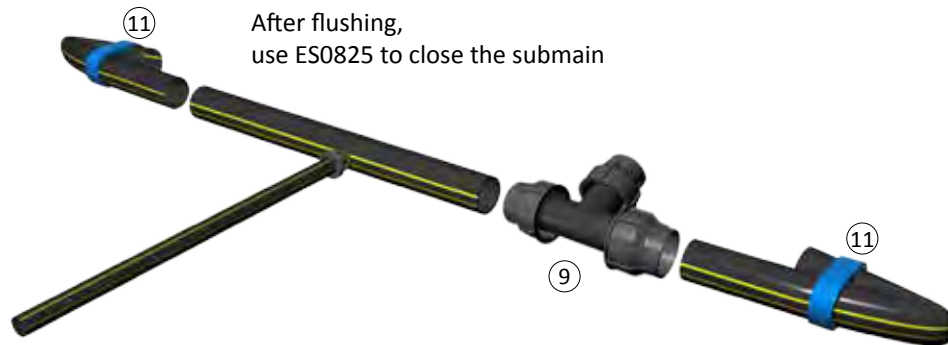


Step 4 - Plugging the submain ends

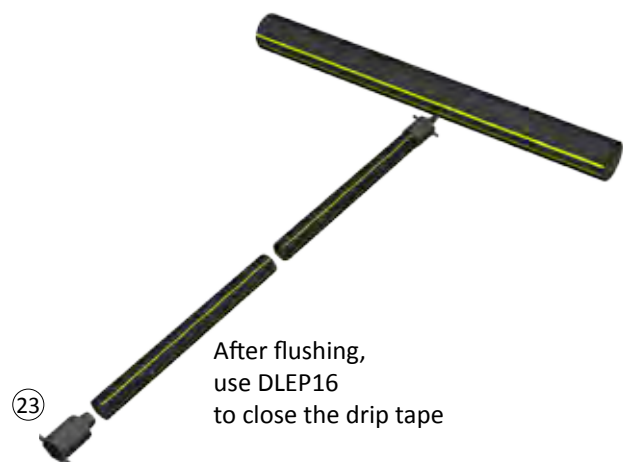
For Jain Turbo Excel

For Jain Turbo Slim TE & Chapin Tape

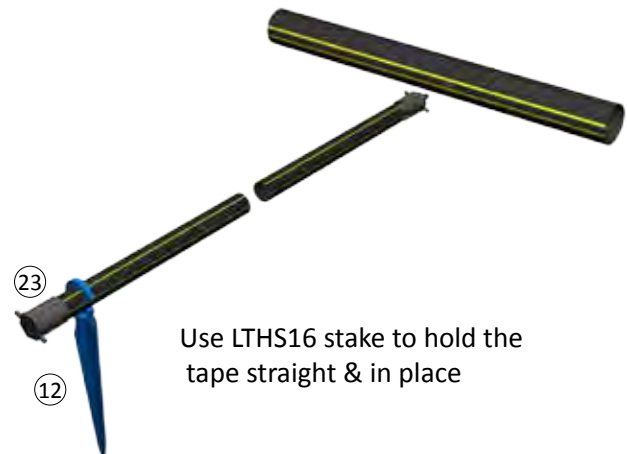
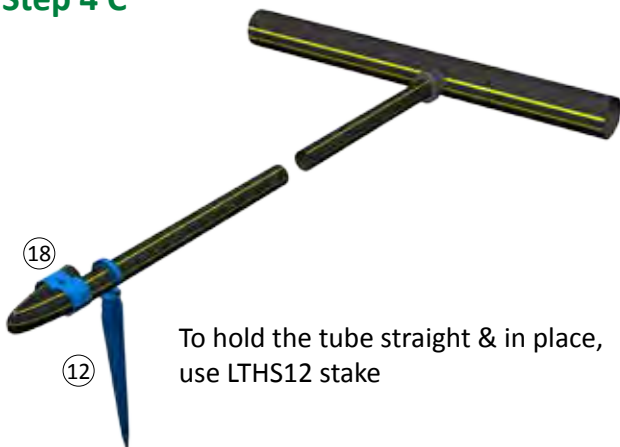
Step 4 A



Step 4 B

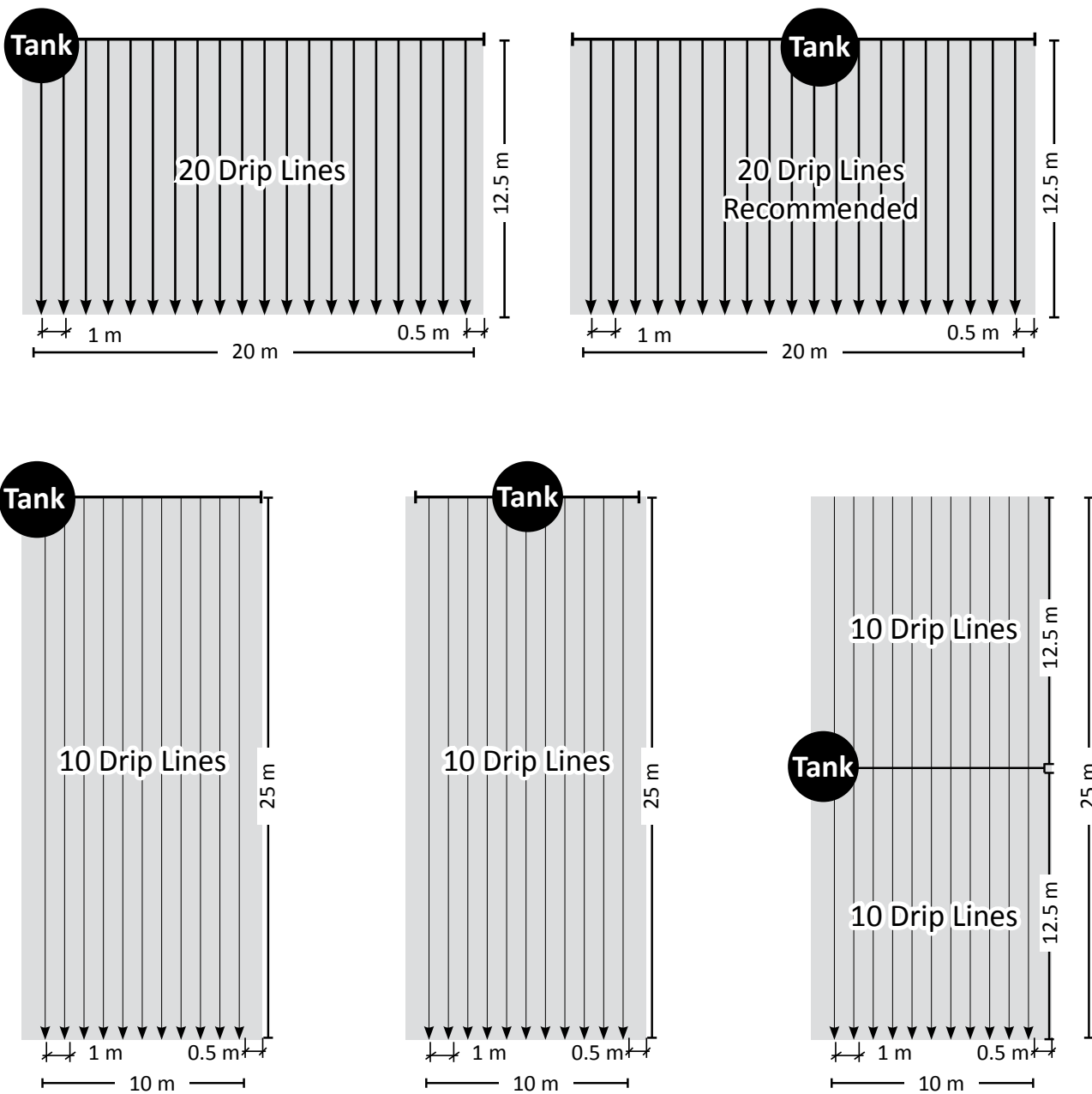


Step 4 C



Jain Dripkit Layout

With Jain Tubro Excel, Jain Turbo Slim TE & Chapin Tape 250m²



Jain DripKit - 500m²



Sr.	Product	Description	Code	Qty
1		Jain DripKit Adapter 1"	JDKA1	1
2		Female Threaded Coupler 1"	FTC01	1
3		Single Union Valve (25mm x 3/4"	SUV32HFM	1
4		Jain Super Flow Filter 7m³/hr 1"	JPSF07SC	1
5		Reducer 1" x 3/4"	R134	1
6		Rainport Elbow 3/4" male x 25mm	RPMTE2534	1
7		Tube OD 25 mm Class 2 (in meter)	TO252001	25
8		Rainport Elbow 25mm	RPE25	1
9		Rainport Tee 25mm	RPT25	1
10		Tool for DripKit 32mm x 7.5mm	TDK3275	1
11		Lateral End Stop "8" Shape 25mm	ESO825	2
12		Tube hold stake "C" Clip 12mm/16mm	LTHS12 / LTHS16	42

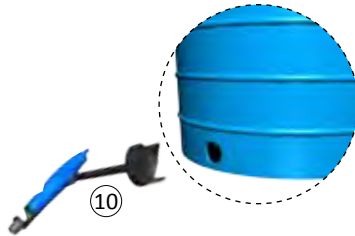
Sr.	Product	Description	Code	Qty
13		Teflon Tape	TT	1
14		Rubber Washer 44 x 27 x 5.5mm	ORSS	1

15		Jain Turbo Excel (in meter)	E12160302250N	500
16		Take off adaptor male 12x8mm	HTOAB128	42
17		Take off adaptor female 12x8mm	HTOAS128	42
18		Lateral End Stop "8" Shape 12mm	ESO812	42
19		Take off plug 12x8mm	HTOAP128	20

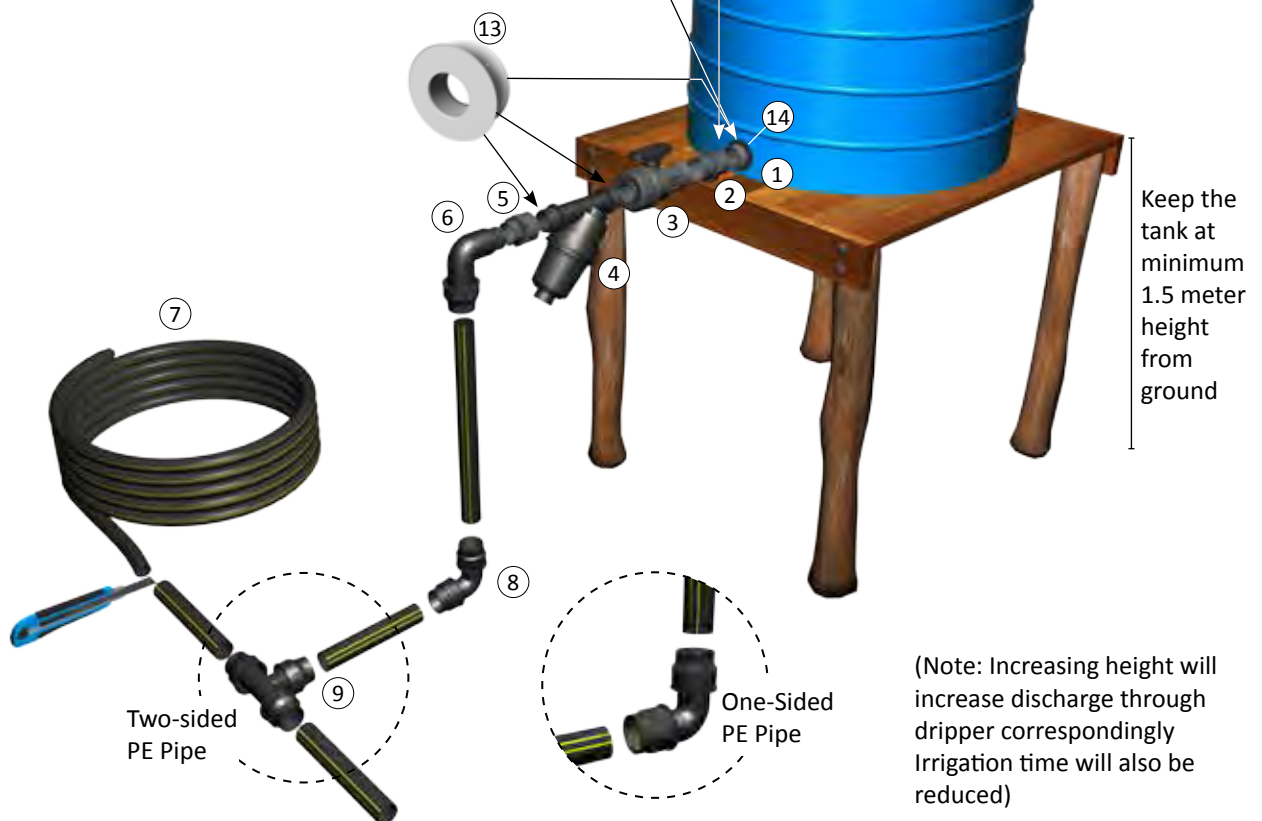
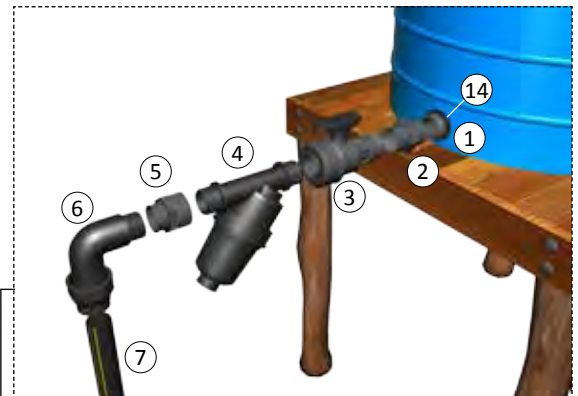
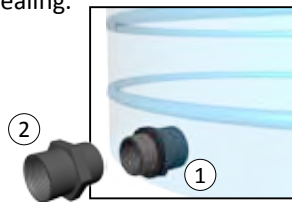
20		Jain Turbo Slim TE Chapin Deluxe (in meter)	TS15916030062700N DLX16063022330	500
21		Lateral Straight punch	STP	1
22		Tape lock by Poly take off 16x8 mm	DLTOP1608	42
23		Tape lock End Plug 16mm	DLEP16	42

Step 1 - Main Line Assembly - 500m²

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



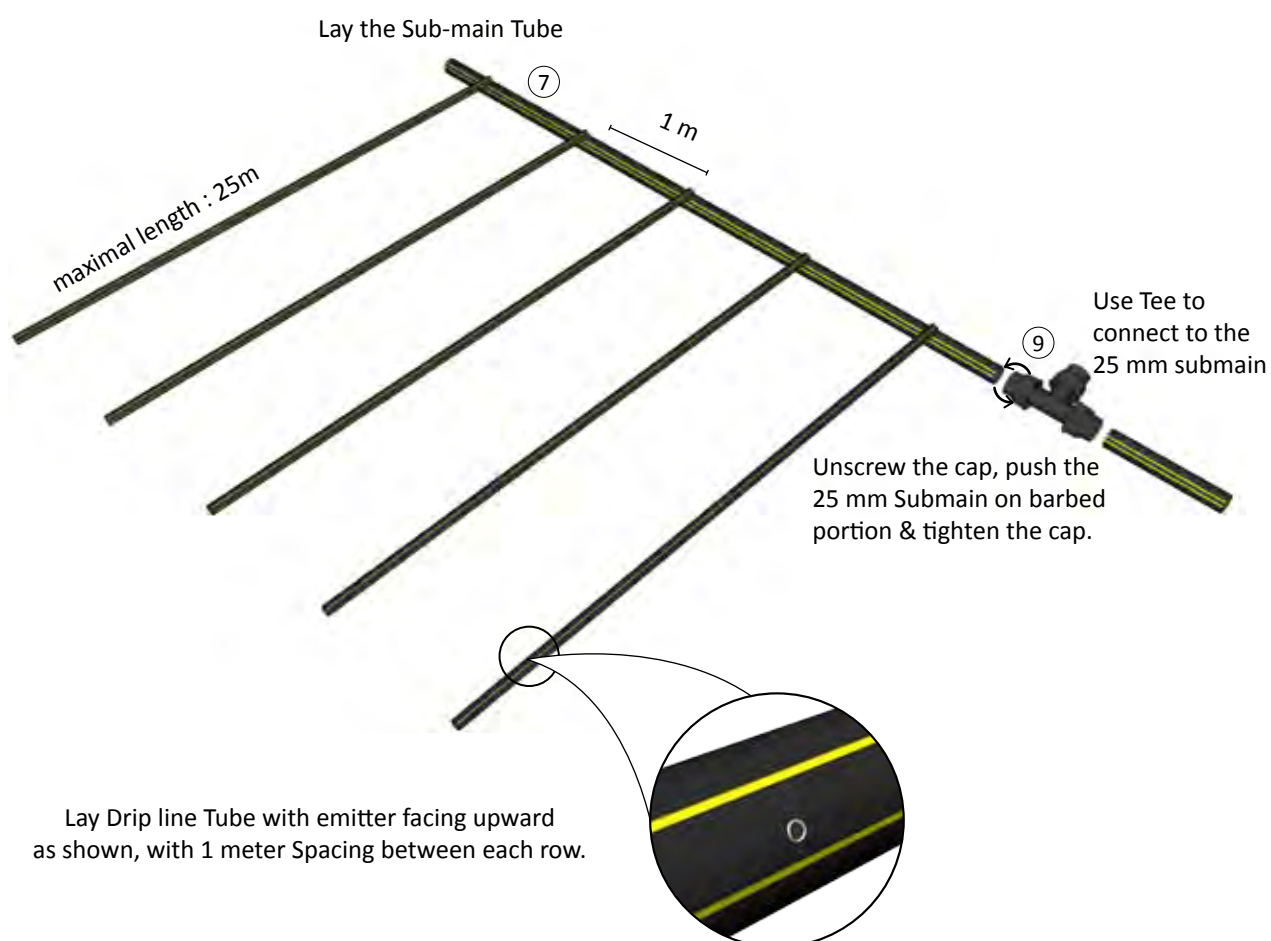
From inside the Drum insert adaptor with washer through hole .
Insert washer from outside of drum.
Tighten the Reducer on adaptor for proper sealing.



Step 2 - Laying the submain Pipe



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



Step 3 - Connection of drip tubes & Flushing the system

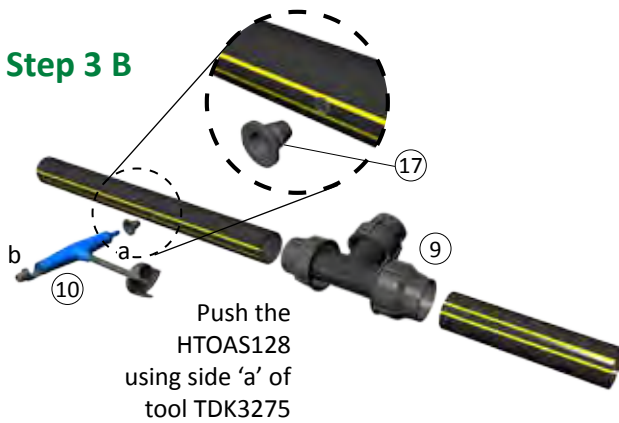
For Jain Turbo Excel

Step 3 A

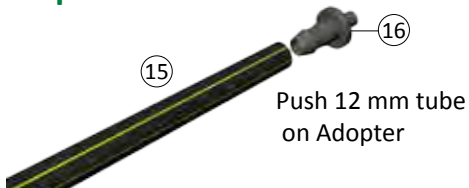


Punch the hole on 25mm submain
Using side 'b' of tool TDK 3275

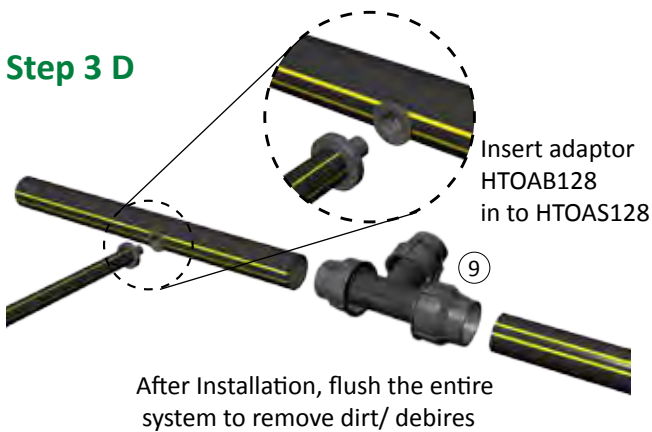
Step 3 B



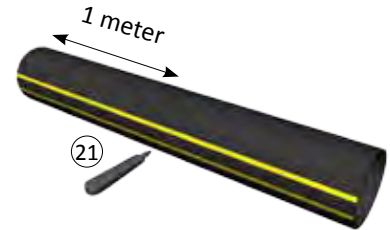
Step 3 C



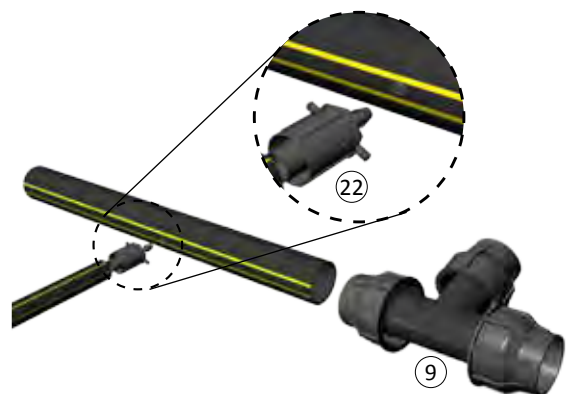
Step 3 D



For Jain Turbo Slim TE & Chapin Tape



Use tool STP to punch the hole on 25mm Submain

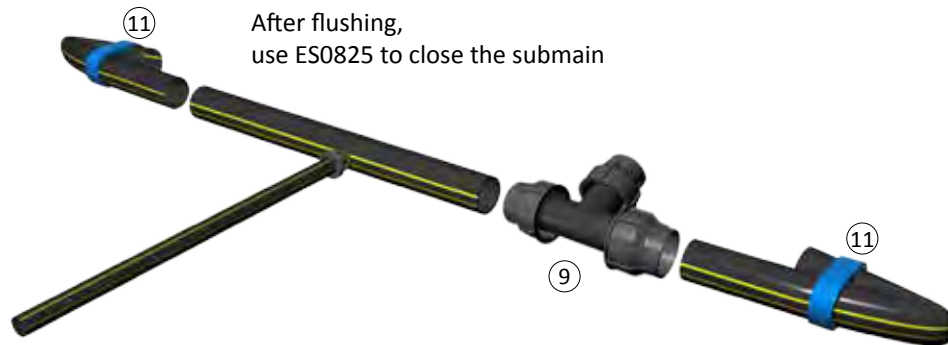


Step 4 - Plugging the submain ends

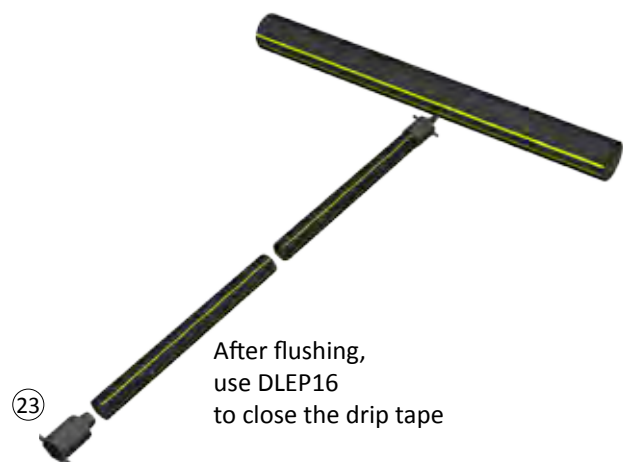
For Jain Turbo Excel

For Jain Turbo Slim TE & Chapin Tape

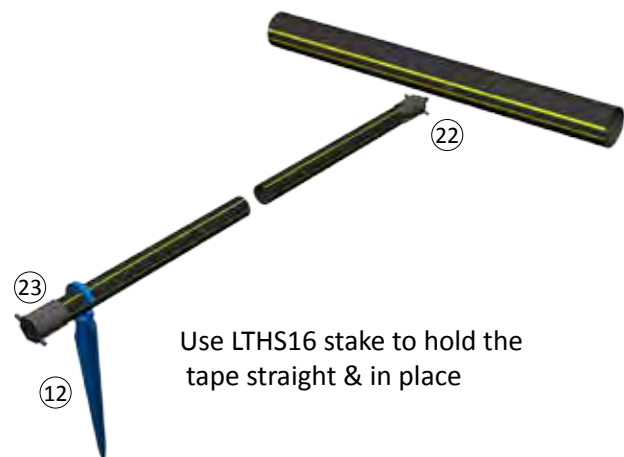
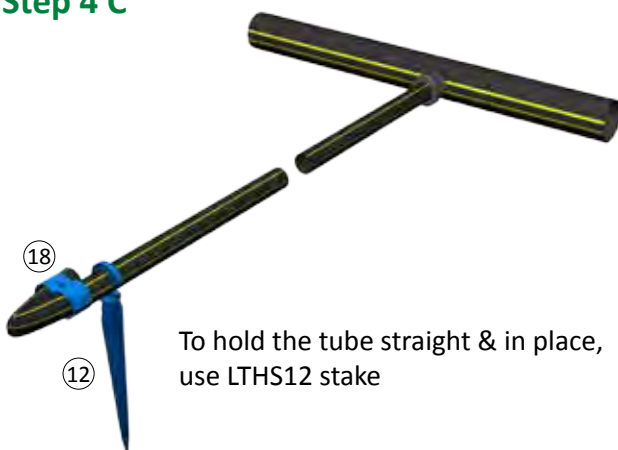
Step 4 A



Step 4 B

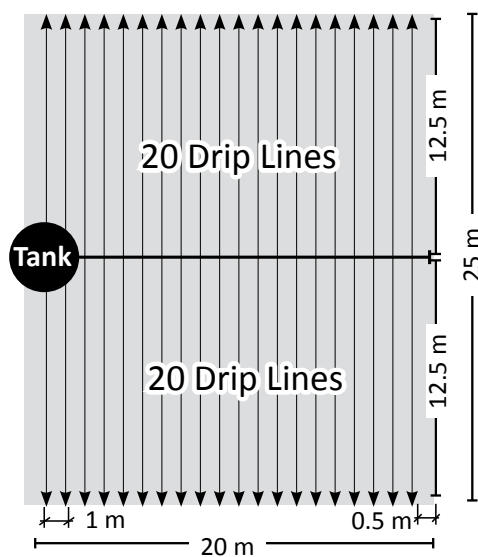
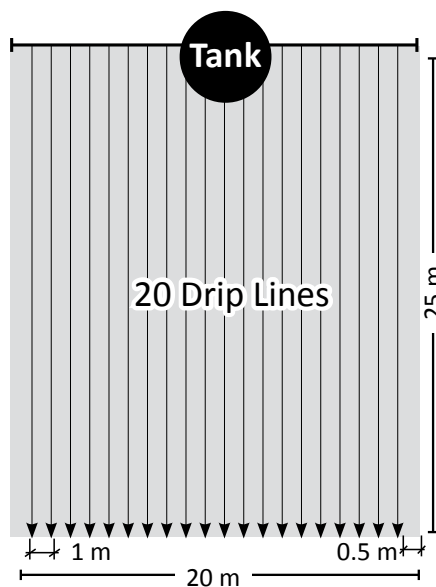
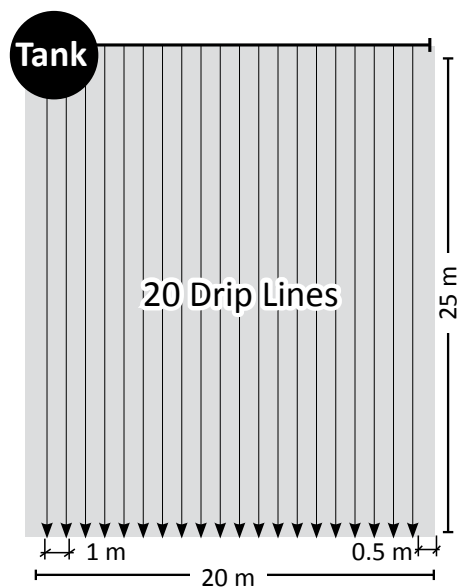
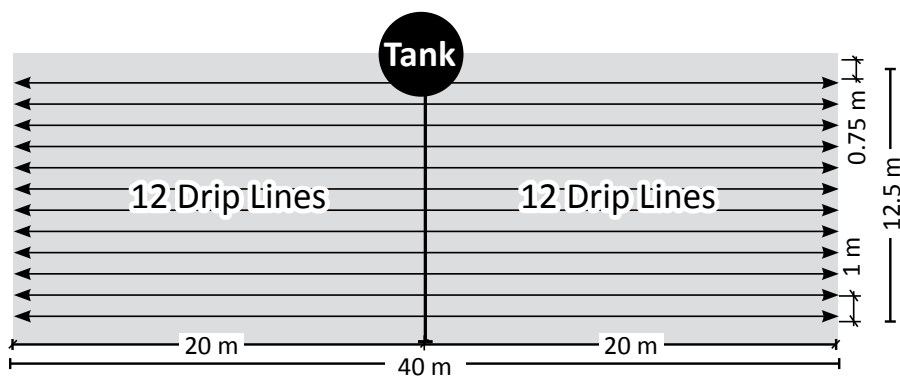


Step 4 C



Jain Dripkit Layout

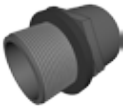
With Jain Tubro Excel, Jain Turbo Slim TE & Chapin Tape 500m²



Note : Layout Sample Not to Scale

Jain DripKit - 1000m²



Sr.	Product	Description	Code	Qty
1		Jain DripKit Adapter 1"	JDKA1	1
2		Female Threaded Coupler 1"	FTC100	1
3		Jain Super Flow Filter 7m³/hr 1"	JPSF07SC	1
4		Reducer 1" x 3/4"	R134	1
5		Rainport Elbow 3/4" male x 25mm	RPMTE2534	1
6		Tube OD 25 mm Class 2 (in meter)	TO252001	55
7		Rainport Adaptor 3/4" x 25mm	RPFTA2534	1
8		Threaded Tee 3/4" male	TT34	1
9		Single Union Valve 25mm x 3/4"	SUV25HFC	2
10		Tool for DripKit 32mm x 7.5mm	TDK3275	1
11		Lateral End Stop "8" Shape 25mm	ESO825	2
12		Tube hold stake "C" Clip 12 mm or 16mm	LTHS12/ LTHS16	65

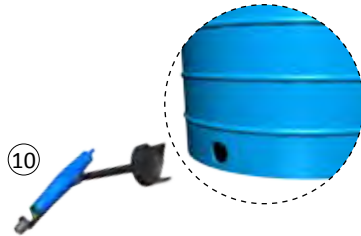
Sr.	Product	Description	Code	Qty
13		Teflon Tape	TT	1
14		Rubber Washer 44 x 27 x 5.5mm	ORSS	1

15		Jain Turbo Excel (in meter)	E12160302250N	850
16		Lateral End Stop "8" Shape 12mm	ESO812	65
17		Take off adaptor male 12x8mm	HTOAB128	65
18		Take off adaptor female 12x8mm	HTOAS128	65
19		Take off plug 12x8mm	HTOAP128	20

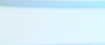
20		Jain Turbo Slim TE Chapin Deluxe (in meter)	TS15916030062700N DLX160620408	850
21		Lateral Straight punch	STP	1
22		Tape lock by Poly take off 16x8 mm	DLTOP1608	65
23		Tape lock End Plug 16mm	DLEP16	20

Step 1 - Main Line Assembly - 1000m²

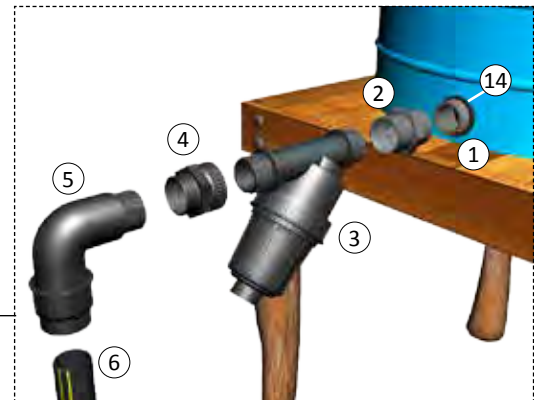
Push centering point on Plastic drum
& rotate the tool TDK 3275, to cut the hole
approx.1" above the bottom of the plastic drum.



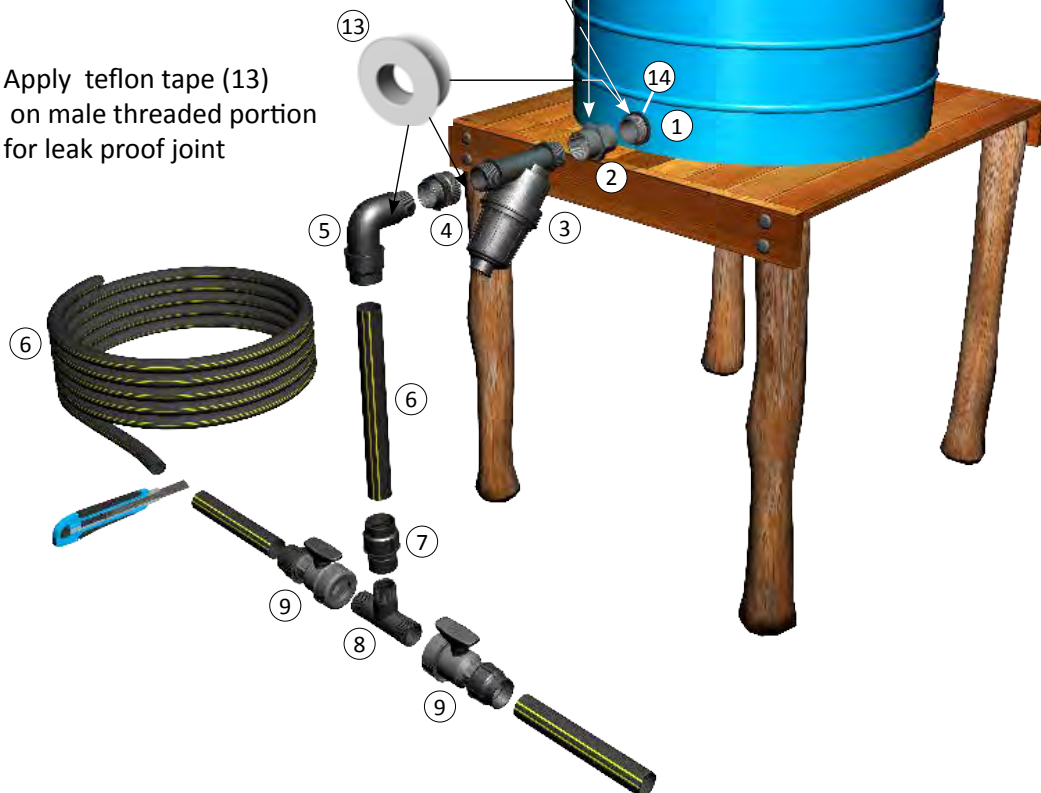
From inside the Drum insert adaptor with washer through hole . Insert washer on adaptor form outside the drum tighten the coupler on adaptor for proper sealing.



The diagram shows a cross-section of a drum with a blue liquid inside. A blue adaptor with a washer is being inserted from the outside into a hole in the drum wall. A red circle with the number '14' is at the bottom right of the diagram.

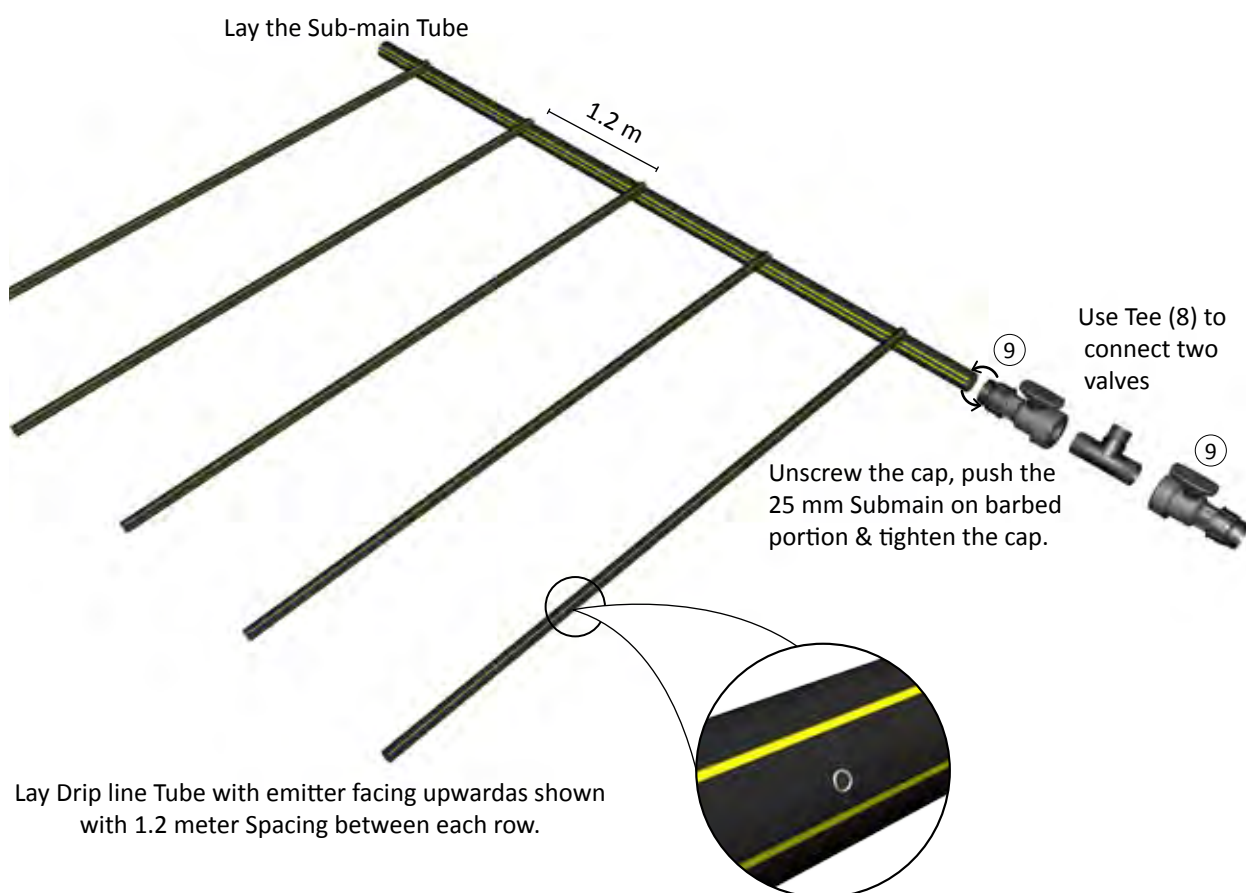


Apply teflon tape (13)
on male threaded portion
for leak proof joint



Keep the tank at minimum 2.5 meter height from ground level

Step 2 - Laying the submain Pipe



Step 3 - Connection of drip tubes & Flushing the system

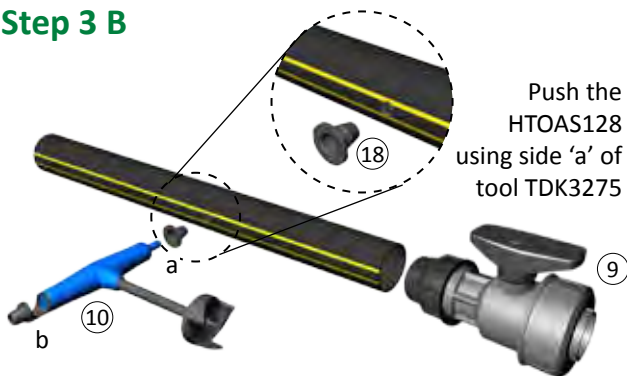
For Jain Turbo Excel

Step 3 A



Punch the hole on 25mm submain
Using side 'b' of tool TDK 3275

Step 3 B



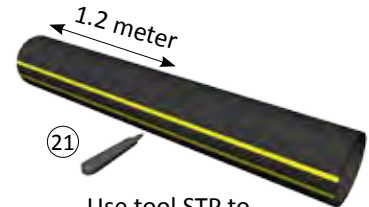
Push the
HTOAS128
using side 'a' of
tool TDK3275

Step 3 C

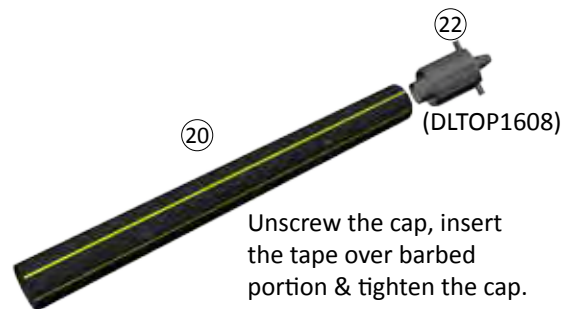


Push 12 mm tube on
Adopter

For Jain Turbo Slim TE & Chapin Tape

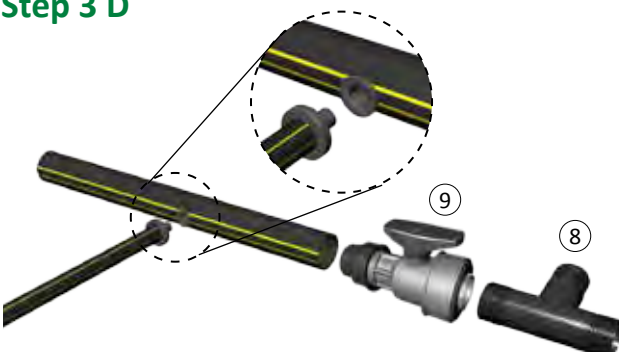


Use tool STP to
punch the hole on
25mm Submain

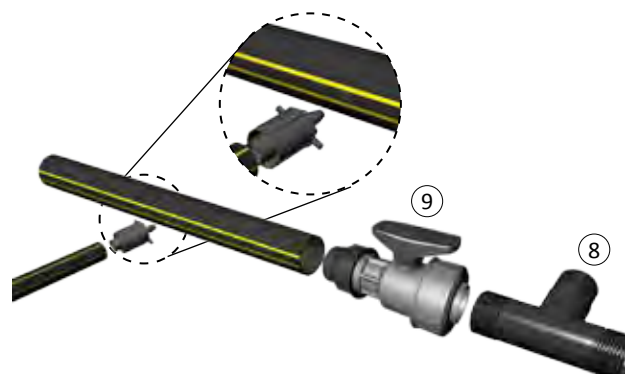


Unscrew the cap, insert
the tape over barbed
portion & tighten the cap.

Step 3 D



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

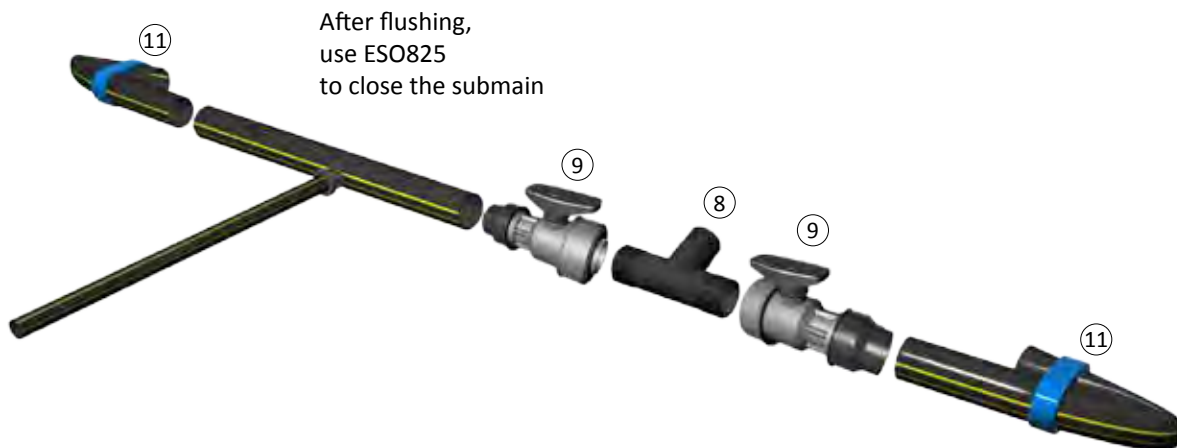


Step 4 - Plugging the submain ends

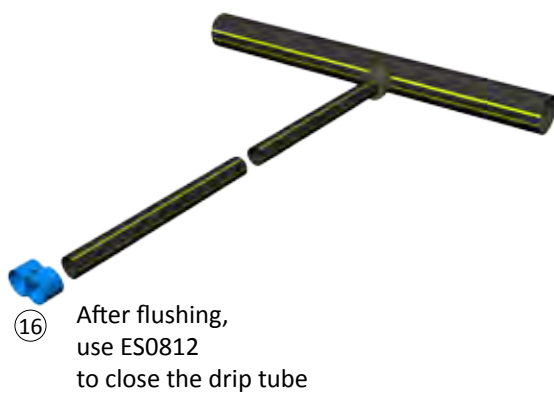
For Jain Turbo Excel

For Jain Turbo Slim TE & Chapin Tape

Step 4 A



Step 4 B

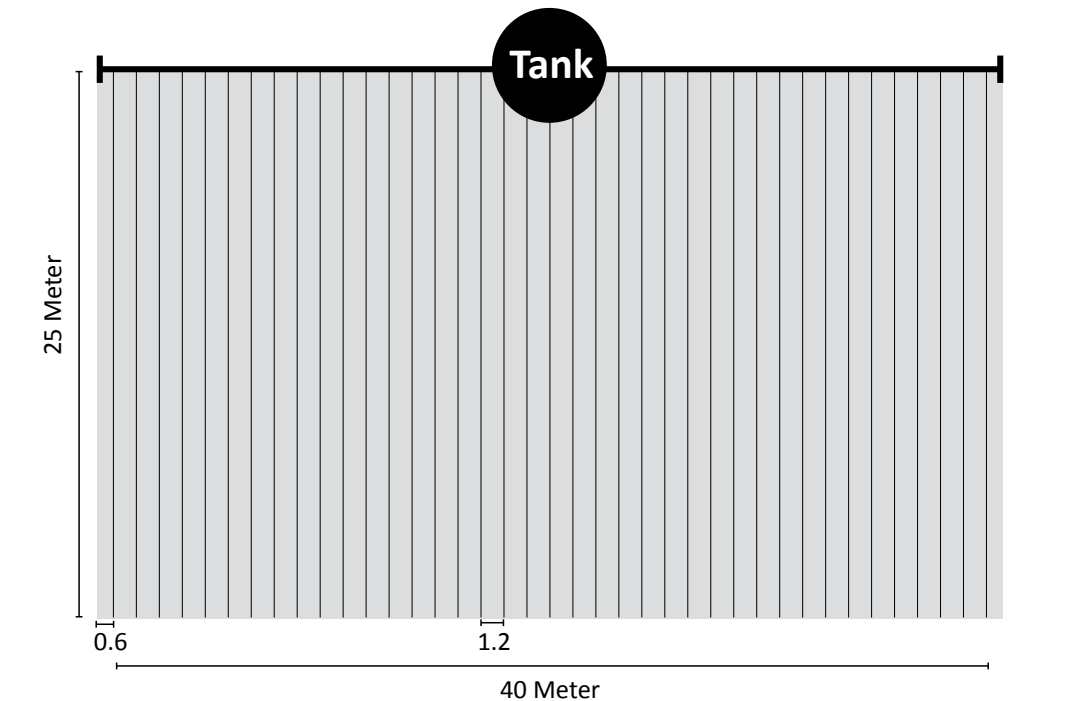


Step 4 C

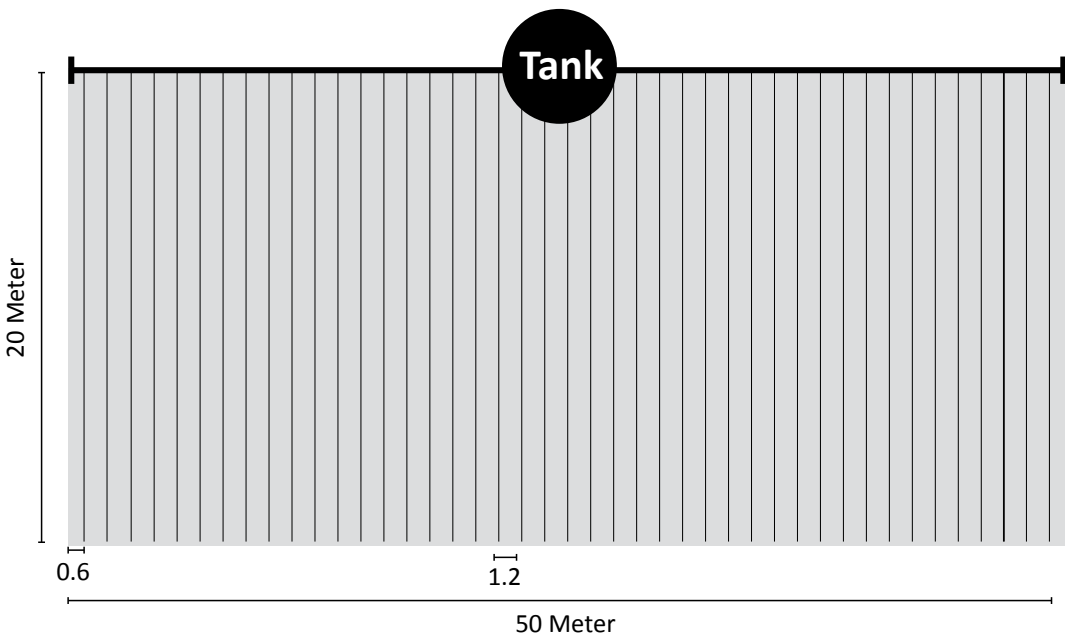


Jain DripKit Layout

With Jain Tubro Excel, Jain Turbo Slim TE & Chapin Tape 1000m²



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

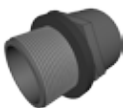


Note : You can lay DripKit 1000m² in different manner also but for better result refer above mentioned layout.

Note : Layout Sample Not to Scale on page

Jain DripKit - 2000m²



Sr.	Product	Description	Code	Qty
1		Jain DripKit Adapter 1"	JDKA1	1
2		Female Threaded Coupler 1"	FTC100	2
3		Jain Super Flow Filter 7m³/hr 1"	JPSF07SC	1
4		Rainport Elbow 1" male x 32mm	RPMTE3201	1
5		Tube OD 32mm Class 1 (in meter)	TO321100	60
6		Rainport Adaptor 1" x 32mm	RPFTA3201	1
7		Threaded Tee 1" male	TT01	1
8		Single Union Valve 25mm x 1"	SUV32HFC	2
9		Tool for DripKit 32mm x 7.5mm	TDK3275	1
10		Oval Hose End cap	OHI052051M137	2
11		Tube hold stake "C" Clip 12 mm or 16mm	LTHS12 / LTHS16	85
12		Teflon Tape	TT	1

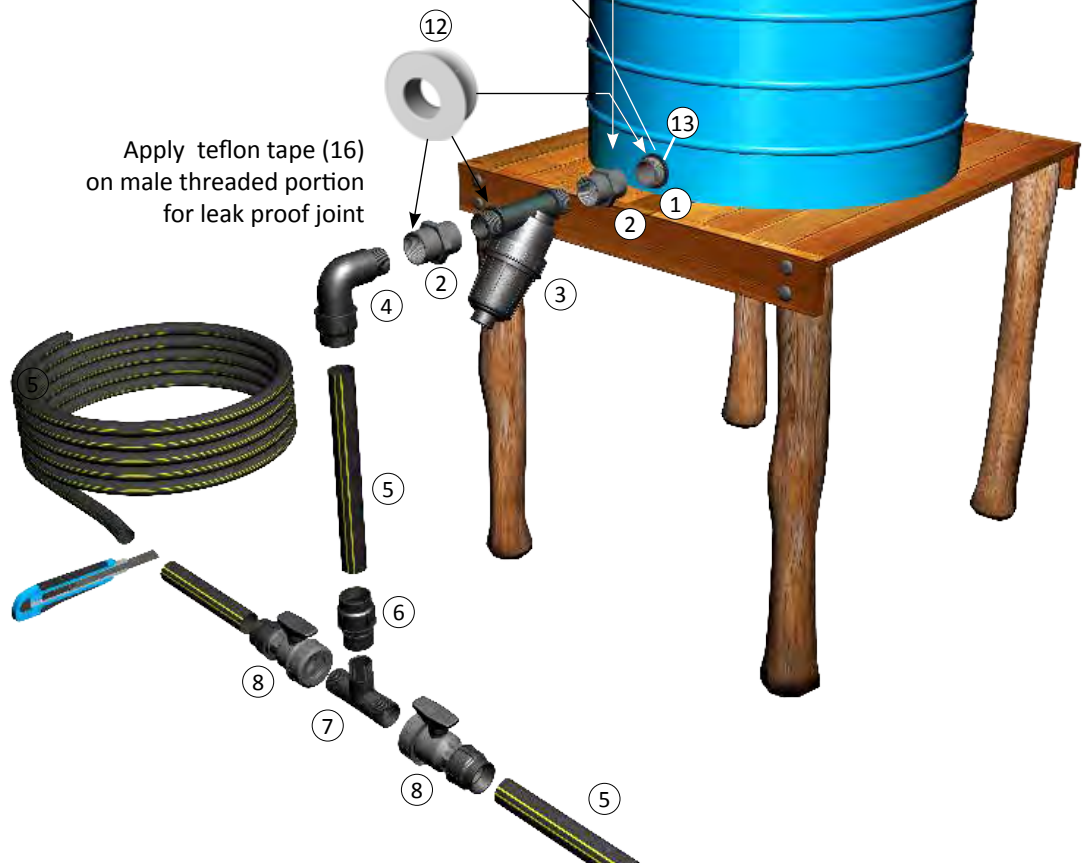
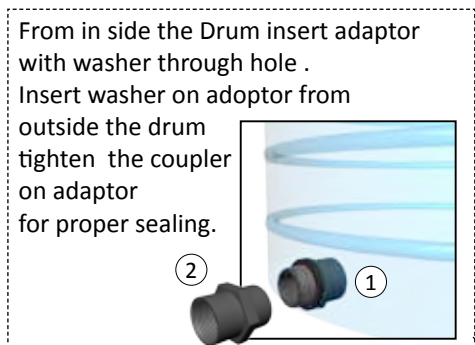
Sr.	Product	Description	Code	Qty
13		Rubber Washer 44 x 27 x 5.5mm	ORSS	1

14		Jain Turbo Excel (in meter)	E121603022500N	1700
15		Lateral End Stop "8" Shape 12mm	ESO812	85
16		Take off adaptor male 12x8mm	HTOAB128	85
17		Take off adaptor female 12x8mm	HTOAS128	85
18		Take off plug 12x8mm	HTOAP128	20

19		Jain Turbo Slim TE Chapin Deluxe (in meter)	TS15916030062700N DLX16063022330	1700
20		Lateral Straight punch	STP	1
21		Tape lock by Poly take off 16x8 mm	DLTOP1608	85
22		Tape lock End Plug 16mm	DLEP16	85

Step 1 - Main Line Assembly - 2000m²

Diagram 9 shows a blue water pump handle and a blue barrel. A dashed circle highlights the connection point between the pump handle and the barrel.

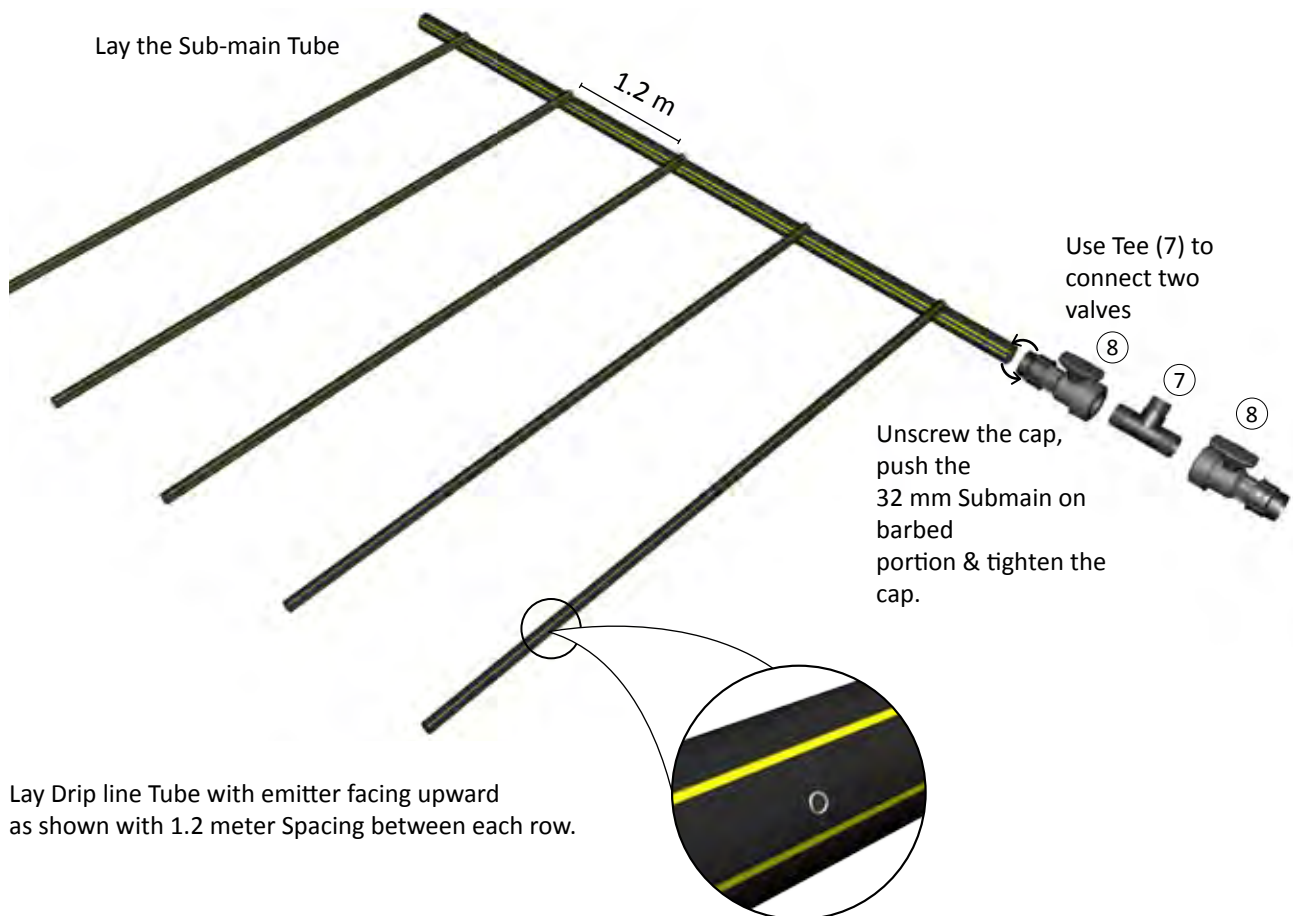


2000m²

Step 2 - 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

1.2 m

Use Tee (7) to connect two valves (8)

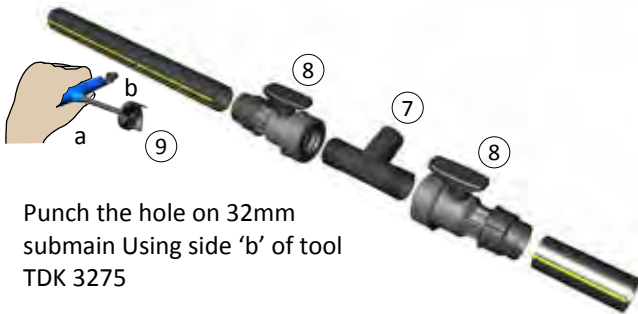
Unscrew the cap, push the 32 mm Submain on barbed portion & tighten the cap.

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

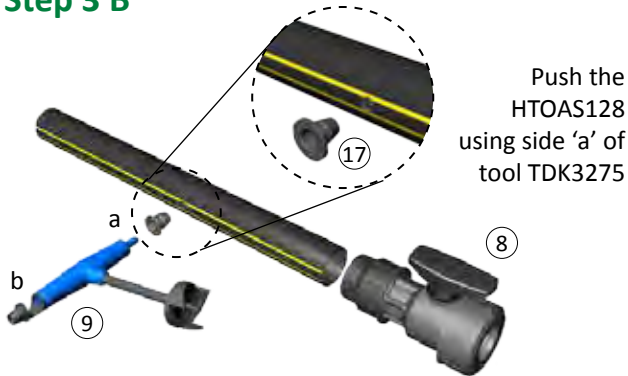
Step 3 - Connection of drip tubes & Flushing the system

For Jain Turbo Excel

Step 3 A



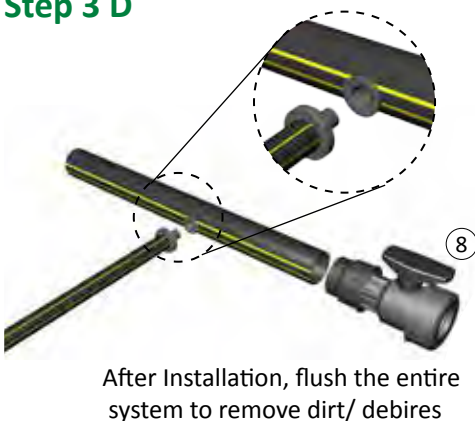
Step 3 B



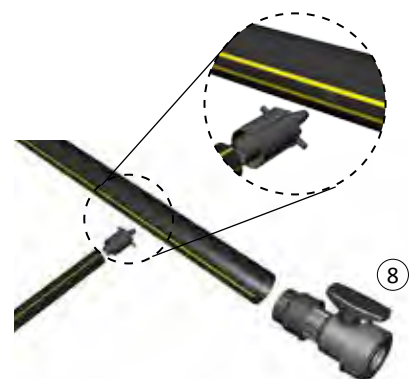
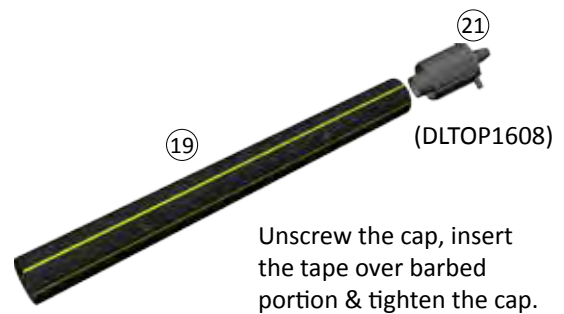
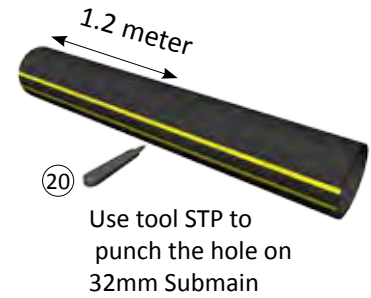
Step 3 C



Step 3 D



For Jain Turbo Slim TE & Chapin Tape

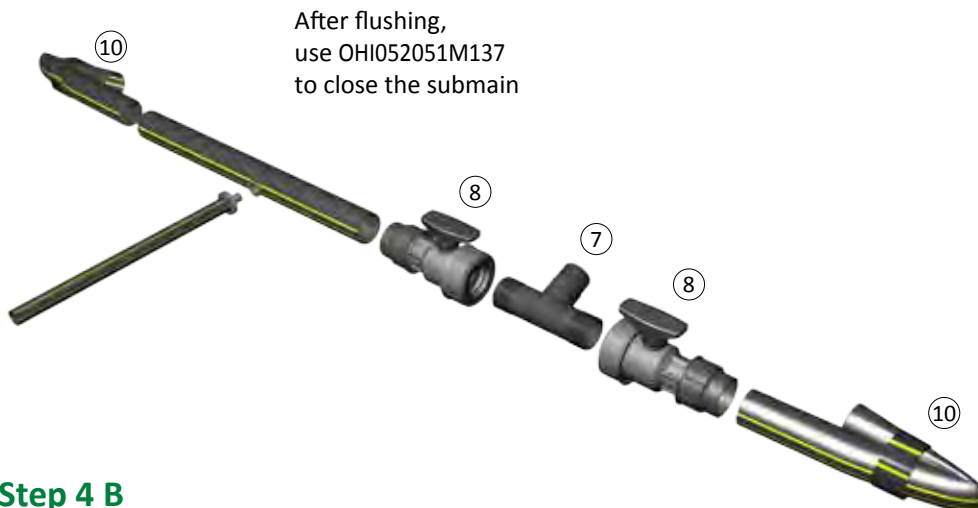


Step 4 - Plugging the submain ends

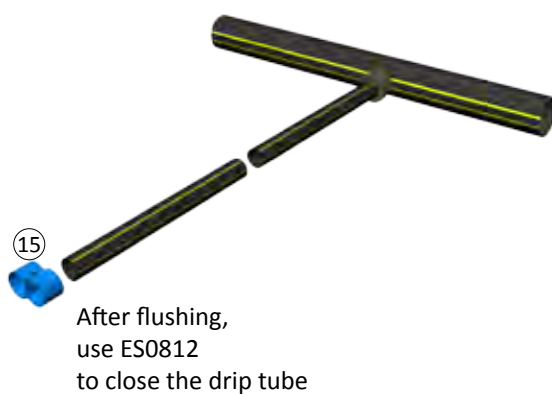
For Jain Turbo Excel

For Jain Turbo Slim TE & Chapin Tape

Step 4 A



Step 4 B

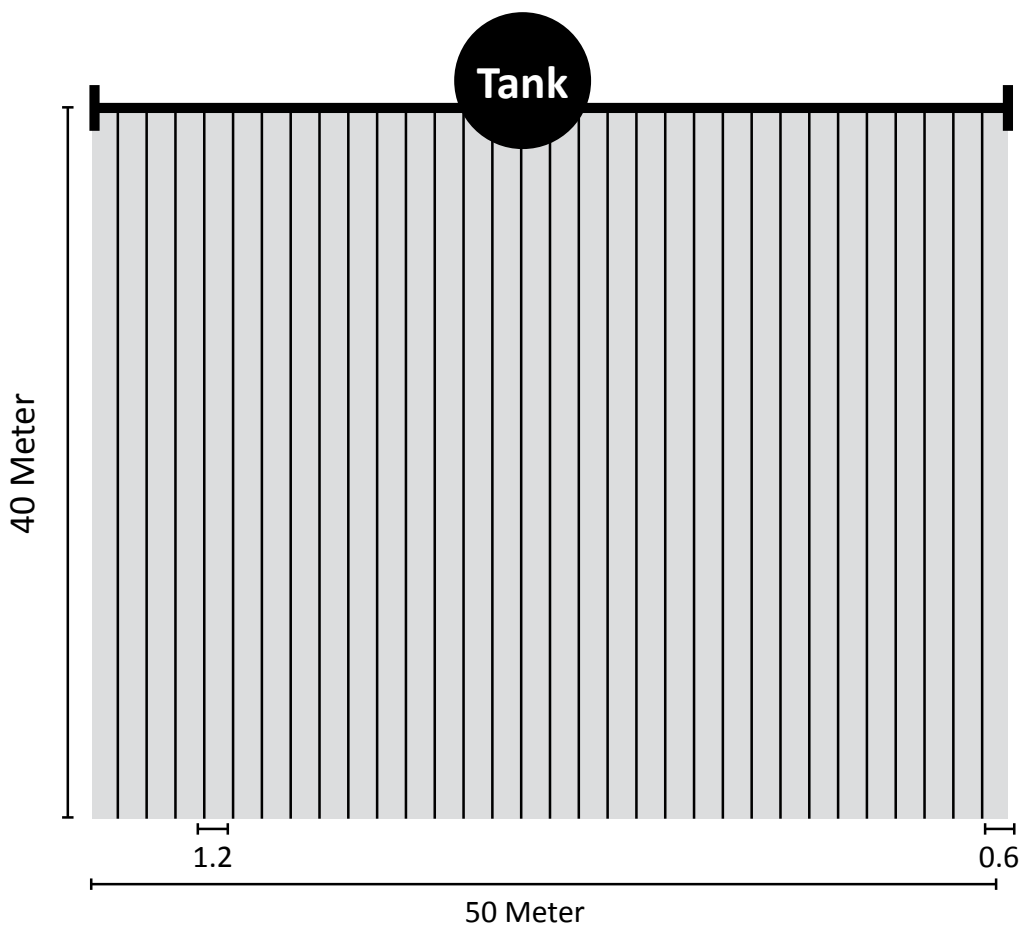


Step 4 C



Jain DripKit Layout

With Jain Tubro Excel, Jain Turbo Slim TE & Chapin Tape 2000m²



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

Layout Sample Not to Scale

Operational Guidelines



Guidelines for proper usage of DripKit

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.
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.

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

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.



Online DripKit System



Online DripKit system

Online DripKit System is also one simple package that is the foundation of your garden that best meets your particular garden needs to distribute the water to your planting.

Online DripKit System is used to water number of small plants over a wide area or can be used together to water up to few trees or large shrubs. The kit includes the online emitters (J Turbo Key Plus, 4 lph), which can easily be taken apart to clean debris. Online DripKit is available in 250 m², 500 m², 1000 m² and 2000 m². You can also get a special kit as per your need.

J Turbo Key Plus



Procedure

1. Connections for mainline and submain are same as mentioned for Inline DripKit System.
2. In Online DripKit system we need to start by making a hole in the lateral tubing with the 2.9 mm punch.
3. To fix a hole made in the wrong location, simply use a goof plug to repair the mistake.
4. Push the barbed end of Online Emitter into the punched hole until you hear or feel a pop. If a plant is too far away from the mainline tubing a simple line can be run from the online emitter to reach your plant.
5. Run the tubing to the desired area and cut the tubing where needed. Insert End Stop at the end of lateral to close the lateral end.

Note : If you are using this system for orchards, add emitters to each trees as per crop water requirement.

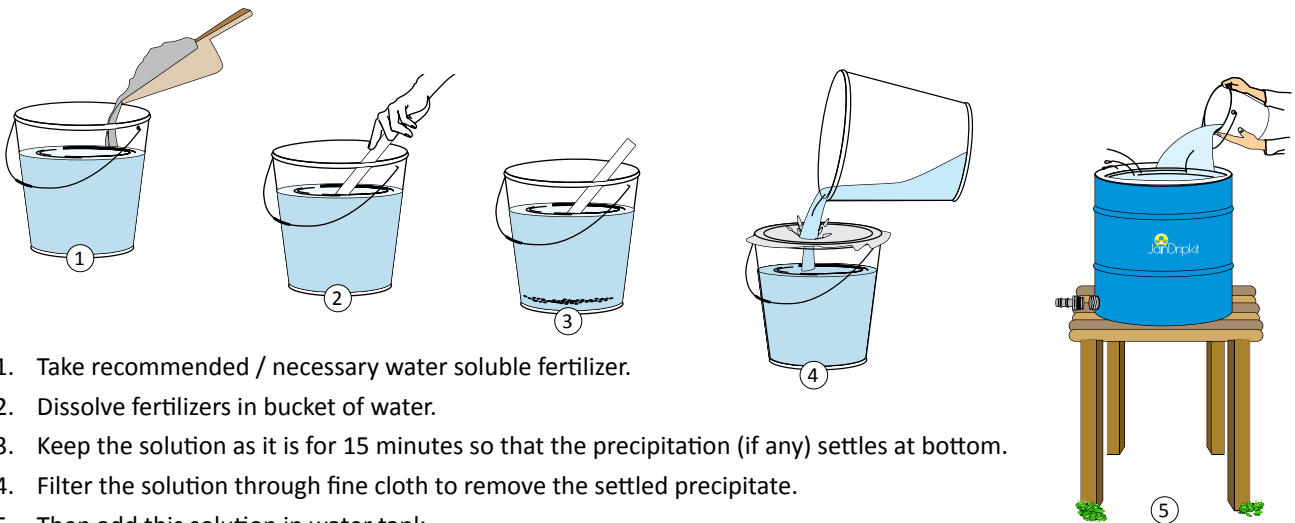
Fertigation system



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



1. Take recommended / necessary water soluble fertilizer.
2. Dissolve fertilizers in bucket of water.
3. Keep the solution as it is for 15 minutes so that the precipitation (if any) settles at bottom.
4. Filter the solution through fine cloth to remove the settled precipitate.
5. Then add this solution in water tank.

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 Jain DripKit 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 to 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

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. 2)
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.

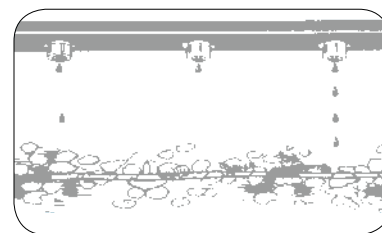


Figure 1

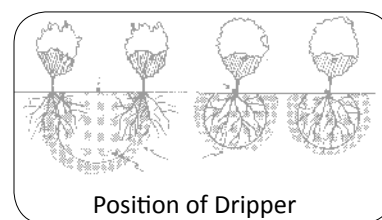


Figure 2

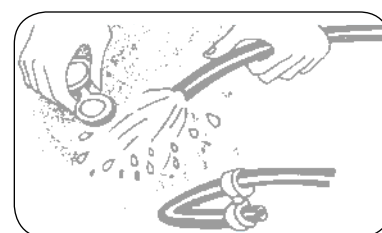


Figure 3

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. Sulphuric 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 Jain DripKit 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 Jain DripKit 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

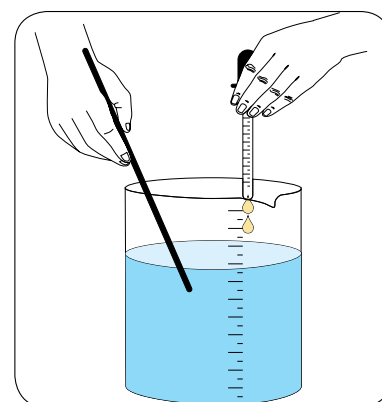


Figure 6



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 / Inline s 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 Jain DripKit 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.

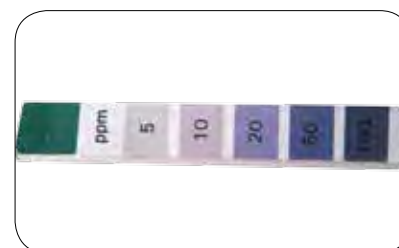


Figure 9



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 equipments 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.	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.
3	Reduced flow of water from emitter.	1. Caked filter 2. Pipe leakage 3. Open end cap	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.	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	1. Water contains high quantity of salts in the form of white crustation. 2. Laterals/ Inline are not flushed for a long time.	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.	1. Water contains algae and excess iron and sulphides. 2. Laterals/ Inline are not flushed for a long time.	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.

Jain DripKit with Add on Features



Jain DripKit overhead tank can be filled with water using Hand Pump or Paddle operated Foot Pump as illustrated below.

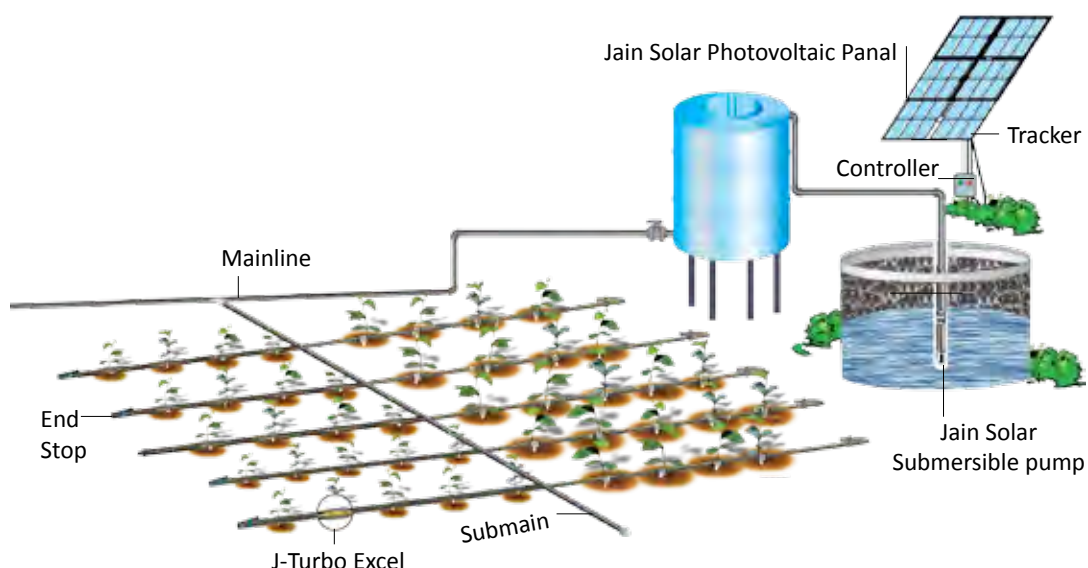
DripKit with Solar Pump

A revolution is taking place in how water is being pumped in remote locations beyond the reach of electric power lines. Solar-electric, or Photovoltaic, power has proven to be an ideal way to lift water for drinking, sanitation, stock tanks, and irrigation. Photovoltaic (PV) panel is one of the the simplest possible way to generate electricity beyond the reach of power lines. They have no moving parts and last for decades with virtually no maintenance. Solar power is no longer an expensive, experimental energy source.

Jain Irrigation Systems Ltd. offers an effective solution: “Jain Solar Powered Drip irrigation system” especially designed for farmers, who do not have access to conventional power and small land holding. The solar pumps have Brushless DC motors which receive power from the PV panels. This system does not have any batteries. Hence the solar pumps start early in the morning & continue to work till late evening.

Key features

1. Solar pumps are available in surface & submersible types.
2. One can optionally use solar trackers, with which the discharge can increase by around 20 to 25%
3. Solar energy is available in abundance. It is the most reliable source of energy.
4. Solar powered pump will give freedom from the power cuts and load shedding.
5. Cost of conventional energy is high and it is becoming dearer.
6. No manpower required to operate the system. System starts automatically with the first ray of sun and shuts off when sun sets.
7. No power and /or fuel cost to operate pump/drip system.
8. Minimum of 20% additional output can be obtained by using Solar Trakers.



Schematic layout of Solar Powered Jain DripKit sourced through submersible pump in open well / borewell.

DripKit with Foot Pump

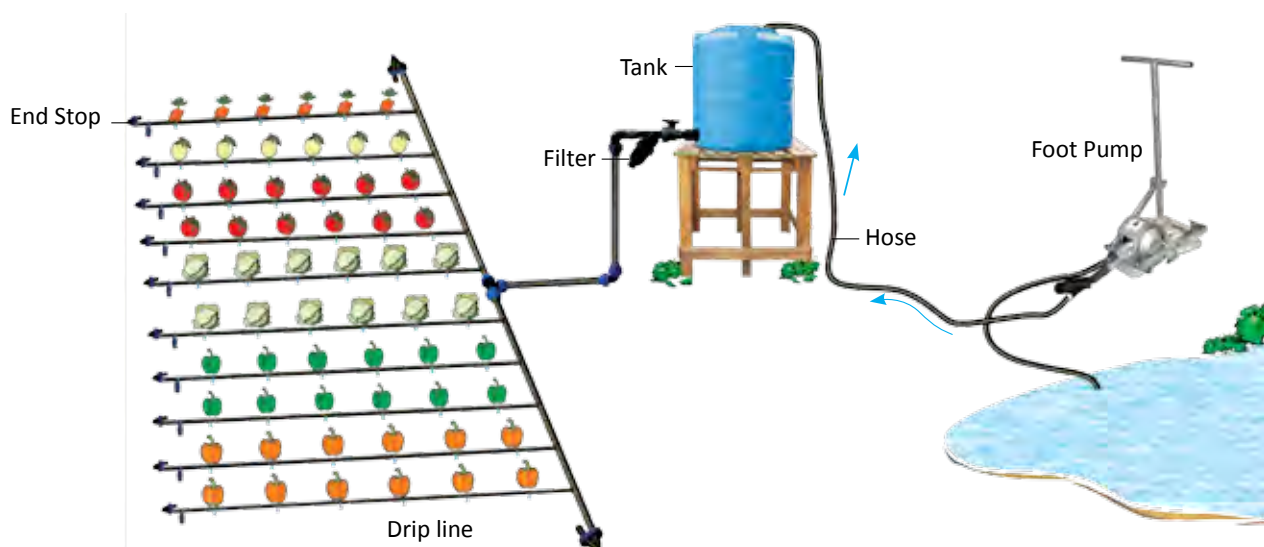
Foot Pump is a foot operated water lifting device that can pump water to fill tanks to irrigate small plots of small land holders. A low cost system, simple in design and easily manageable. For the poor farmers constrained by the small size of the landholdings, Foot pump technology acts as a land augmenting intervention. Capable of pumping water from 5000 litres of water per hour.

The treadle pump can greatly increase the income that farmers generate from their land by increasing the number of growing seasons, by expanding the types of crops that can be cultivated, and improving on the quality of grown crops.

Pumping is activated by stepping up and down on treadles which drive pistons, creating cylinder suction that draws groundwater to the surface. Treadle pumps free farmers from dependence on rain-fed irrigation, provide capacity to raise crops in two growing seasons per year, and help farmers maximize return on their small plots of land.

Key features

1. Operated by leg muscles in a comfortable walking motion
2. Can be operated by one or two adults or two or more children.
3. Flexibility in installation and can be moved from one location to another.
4. Maintenance of the pump is economical in all aspects.



Schematic of Foot Pump Powered Jain DripKit sourced through farm pond.

DripKit with Hydraulic Ram Pump

Pumping water without electricity: especially for hilly areas. If there is water flowing within several hundred yards of where you need it that has a minimum of a two-foot drop from the intake source to the pump, then the Hydraulic Ram can dependably and consistently pump a portion of that flow uphill.

The Hydraulic Ram uses the force of falling water to pump water uphill to where you need it...without using any additional source of energy and with only a few moving parts!

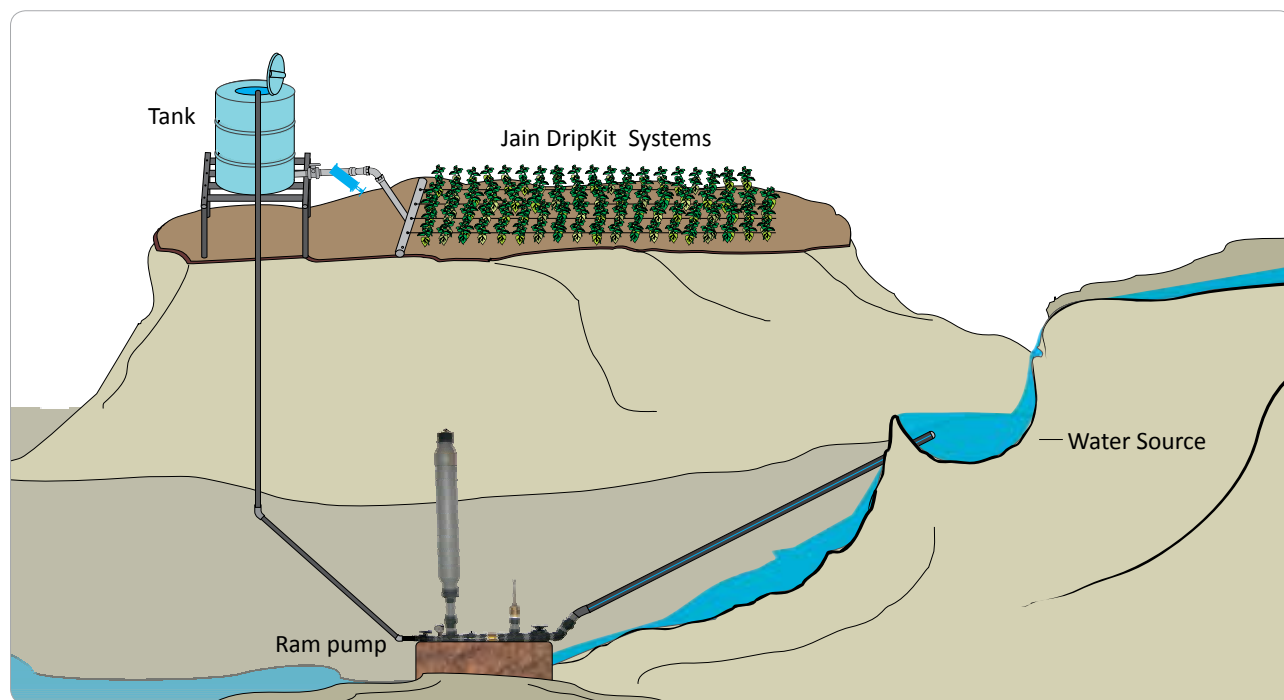
With a Hydraulic Ram and a suitable stream, spring or artesian well nearby, you can supply your homestead's water needs, irrigate your garden or water your orchard...all without the use of any outside source of energy with Jain DripKit.

If you have a water supply (spring, brook or river) below the point where you need the water, and the source is higher than the lowest part of the property, then a hydraulic ram pump may be the solution. Hydraulic ram pumps are powered by a portion of the water running through it. If the cost of a commercial pump puts you off, or the water volume is too little to operate the pump, you can make one to suit your conditions at very little cost

Drip irrigation may be used in conjunction with the RAM pump. The discharge hose of the RAM pump is connected directly to the drip irrigation tank and feeds the system.

Key features

1. Inexpensive
2. Very simple construction and easy to install yourself.
3. Does not consume petrol, diesel or electricity.
4. Minimum maintenance.
5. Pollution free.
6. Quiet pumping 24 hours per day.
7. Automatic, continuous operation requires no supervision or human input.



Schematic of Ram Pump Powered Jain DripKit sourced through Water Fall

Specifications



Specification	Jain DripKit					
Area Coverage (m²)	30	100	250	500	1000	2000
Types of Emitter	Chapin (CH)	Chapin (CH)	J-Turbo Excel (JTA), J-Turbo Slim (JTS), Chapin (CH)	J-Turbo Excel (JTA), J-Turbo Slim (JTS), Chapin (CH)	J-Turbo Excel (JTA), J-Turbo Slim (JTS), Chapin (CH)	J-Turbo Excel (JTA), J-Turbo Slim (JTS), Chapin (CH)
Emitter Flow (lph/1kgcm²)	CH: 0.96	CH: 0.96	JTA: 1.6	JTA: 1.6	JTA: 1.6	JTA: 1.6
			JTS: 1.6	JTS: 1.6	JTS: 1.6	JTS: 1.6
			CH: 0.96	CH: 0.96	CH: 0.96	CH: 0.96
No. of Emitters (outlets) /Lateral (Nos.)	CH: 30	CH: 20	JTA: 41	JTA: 83	JTA: 84	JTA: 133
			JTS: 41	JTS: 83	JTS: 84	JTS: 133
			CH: 62	CH: 125	CH: 200	CH: 200
Emitter Spacing (cm)	CH: 20	CH: 20	JTA: 30	JTA: 30	JTA: 30	JTA: 30
			JTS: 30	JTS: 30	JTS: 30	JTS: 30
			CH: 20	CH: 20	CH: 20	CH: 20
Type of Lateral	LLDPE	LLDPE	LLDPE	LLDPE	LLDPE	LLDPE
Lateral Length (m)	15	10	12.5	25	25	40
No. of Laterals (Nos.)	2	10	20	20	34	42
Lateral Spacing (m)	1	1	1	1	1.2	1.2
Sub-Main Size (mm)	8	16	25	25	25	32
Sub-main Length (m)	2.5	10	20	20	40	50
Filter (inch)	1/2"	1/2"	1	1	1	1
Operating Head (m)	1.5	1.5	2	2	2.5	3
Code	JDKBC160966030	JDKC160966100	JTA: JDKA12162250	JTA: JDKA12162500	JTA: JDKA121621000	JTA: JDKA121622000
			JTS: JDKS159166250	JTS: JDKS159166500	JTS: JDKS1591661000	JTS: JDKS1591662000
			CH: JDKC160966250	CH: JDKC160966500	CH: JDKC1609661000	CH: JDKC1609662000
Type of crops	Vegetables, Flowers and other closely spaced crops like Onion, Garlic, Cotton etc.					

Opportunities



Interested in starting a low cost-low risk "Jain Drip Kit Project"

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!

Jain Irrigation Systems Limited "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

Jain Irrigation pioneered and is in service of agriculture and farming community since four decades providing technological solutions to grow more and more with less input cost to needy small and marginal farmers worldwide through small-scale drip/sprinkler irrigation technologies.

Customer Care

Tel: + 91-257-2258011; Toll Free: 18002 095264

E-mail : sales@jains.com; Visit us: www.jains.com

Plants in India

Jalgaon (Maharashtra)

Jain Plastic Park

Tel: 0257-2258011/22,
E-mail: jisl@jains.com

Jain Agri Park, Jain Hills

Tel: 0257-2260011/22, 2260288,
E-mail: agripark@jains.com

Jain Food Park, Jain Valley

Tel: 0257-2260033/44, 2260288,
E-mail: foodpark@jains.com

Jain Green Energy Park

Tel: 0257-2260033/44, 2260288,
E-mail: Solar@jains.com

Bhavnagar (Gujarat)

Tel: 02846-294222/225503
E-mail: jainbhavnagar@jains.com

Chittoor (Andhra Pradesh)

Tel: 08572-202022, 273703,
E-mail: foodchittoor1@jains.com

Hyderabad (Andhra Pradesh)

Tel: 08685-277302, 3,
E-mail: hyderabadplant@jains.com

Udumalpet (Tamil Nadu)

Tel: 04252-278401/2,
E-mail: jainudumalpet@jains.com

Vadodara (Gujarat)

Tel: 02662-267281, 267400.
E-mail: jainbaroda@jains.com

Alwar (Rajasthan)

Tel: 0144-2881173, 74, 75, 99
E-Mail: jainalwar@jains.com

Offices in India

Maharashtra

Ahmednagar

Tel : 0241-2415481
E-mail: jainahmednagar@jains.com

Amravati

Tel : 0721-2674737; 2671486
E-mail : jainamravati@jains.com

Aurangabad

Tel : 0240 - 2345136.
E-mail : jainaurangabad@jains.com.

Buldhana

Tel : 07262-244801
E-mail : jainbuldhana@jains.com

Jalgaon

Tel : 0257-2220077 / 78

Latur

Tel : 02382-224098.
E-mail : dongre.suhas@jains.com

Mumbai

Tel : 022-22109090, 22610011
E-mail : jainmumbai@jains.com.

Nagpur

Tel : 07104 - 645025
E-mail: jainnagpur@jains.com.

Nanded

Tel : 02462-274046
E-mail : jainnanded@jains.com

Nasik

Tel : 0253-2620101, 2620252
E-mail : jainnasik@jains.com

Pandharpur

Tel : 02186-227328; 9422773390

Pune

Tel : 020-26057777 / 78
E-mail : jainpune@jains.com

Ratnagiri

Tel : 02352 - 230033
E-mail : jainratnagiri@jains.com

Sangli

Tel : 0233-2422100
E-mail : jainsangli@jains.com

Solapur

Tel : 0217- 2357395
E-mail : jainsolapur@jains.com

Thane

Tel : 022-25443992,
E-mail : jainthane@jains.com

Andhra Pradesh

Adilabad

Tel : 9440797805
E-mail : jainadilabad@jains.com

Anantapur

Tel : 08554-274226;
E-mail : jainanantapur@jains.com

Chittoor

Tel : 08572-226562, 213108, 226561.
E-mail : jainachittoor@jains.com

East Godavari

Tel : 09440797845
E-mail : jaineastgodavari@jains.com

Guntur

Tel : 09440797839
E-mail : jainguntur@jains.com

Hyderabad

Tel : 040- 27611706, 27612593;
E-mail : jainhyderabad@jains.com

Karimnagar

Tel : 9440797808
E-mail : jainkarimnagar@jains.com

Khammam

Tel. : 09440797816, 09440797818
E-mail : jainkhammam@jains.com

Kurnool

Tel. : 9440797821
E-mail : jainkurnool@jains.com

Kadapah

Tel. : 08562-254334, 09440797829

Mahaboobnagar

Tel. : 09440797820
E-mail : jainmahabubnagar@jains.com

Medak

Tel. : 09440797811
E-mail : jainmedak@jains.com

Nellore

Tel. : 094407-97835
E-mail : jainnellore@jains.com

Nalgonda

Tel. : 094407-97806
E-mail : jainnalgonda@jains.com

Nizamabad

Tel. : 09440797817
E-mail : jainnizamabad@jains.com

Parawada

Tel. : 09440797833

Pulivendula -

Tel-fax : 08568-280163; 09440797868
E-mail : jainpulivendula@jains.com

Sreekakulam

Tel. : 09440797867
E-mail : jainsreekakulam@jains.com

Tirupathi

Tel. : 09440797881
E-mail: jainwestgodavari@jains.com

Vishakhapatnam

Tel. : 9440797870

Vijayanagaram

Tel. : 9490611008
E-mail : jainvijayanagaram@jains.com

Vijaywada

Tel : 0866-2081558, 09440797806
E-mail : vijaywadadepot@jains.com

Warangal

Tel. : 09440797813
E-mail: jainwarangal@jains.com

West Godavari

Tel. : 09440797851
E-mail: jainwestgodavari@jains.com

Assam

Tel. 0376-2341030(R), 09435199998
E-mail : jainne@jains.com

Bihar

Patna

Tel : 0612-6560266; 9431800782
E-mail : jainpatna@jains.com;

Chhattisgarh

Raipur

Tel : 0771-6535987; 9406805850
E-mail : jainraipur@jains.com

Delhi

Tel : 011-26691569, 26691829,
E-mail : jainnewdelhi@jains.com

Gujarat

Ahmedabad

Telefax : 079-26421704,
E-mail : jainahmedabad@jains.com

Bardoli

Tel : 02622-221238; 09426511404
E-mail : jainbardoli@jains.com

Bhavnagar

Tel : 02846-294222/225503
E-mail : jainbhavnagar@jains.com

Bhuj

Tel : 02832-257624; 9427118963
E-mail : jainbhuj@jains.com

Deesa

Tel. : 02744 - 221022; 09426724541
E-mail : jaindeesa@jains.com

Vadodara

Tel : 0265-2356727, 2356737,
E-mail : jaingujarat@jains.com

Haryana

Yamuna Nagar

Tel : 9416400201
E-mail : jainharyana@jains.com

Sirsa

Tel. : 09416400207
E-mail : jainsirsa@jains.com

Chandigarh

Tel : 0172-2600901; 09417202115
E-mail : jainchandigarh@jains.com

Himachal Pradesh

Bilaspur

Tel : 01978-221646; 09459135908
E-mail : jainbilaspur@jains.com

Chamba

Tel : 01899-220031; 09459046807
E-mail : jainchamba@jains.com

Poanta Sahib

Tel : 01704-224193; 09459135906
E-mail : jainpoantasahib@jains.com

Hamirpur

Tel : 01972-222240. 09318519394
Email : jainhamirpur@jains.com

Solan

Tel : 01792 - 229073; 09418016133
E-mail : jainsolan@jains.com

Sundarnagar

Tel. : 01907-265621; 09418169333
E-mail : jainsundarnagar@jains.com

Palampur

Tel. : 01894 - 234152; 09418016033
E-mail : jainpalampur@jains.com

Kullu

Tel. : 01902-201311; 09418073923
E-mail : jainkullu@jains.com

Shimla

Tel. : 0177-2672513; 09418171333
E-mail : jainshimla@jains.com

Una

Tel : 01975-228272; 09418944441
E-mail : jainuna@jains.com

Jharkhand

Ranchi

Tel : 0651-2532240; 09470590437

Karnataka

Bangalore

Tel : 080-25361257, 25548920;
E-mail : jainbangalore@jains.com

Bijapur

Telefax : 08352-265411; 09448286500
E-mail : jainbijapur@jains.com

Belgaum

Tel : 0831-2450022, 09448286508
E-Mail :- jainbelgaum@jains.com

Shiggaon

Tel & fax : 08378 - 256198
E-mail : jainshiggaon@jains.com

Madhya Pradesh

Indore

Tel : 0731-4265112 to 24, 6456832,
E-mail : jainindore@jains.com

Rajasthan

Jaipur

Telefax : 0141-2203515, 6571402
E-mail : jainjaipur@jains.com

Bikaner

Tel : 0151-2233130; 09413342148
E-mail : jainbikaner@jains.com

Sanchoe

Tel : 02979-285730; 09413340047

Udaipur

Tel : 09413340047
E-mail : kara.tarun@jains.com

Tamil Nadu

Chennai

Tel: 044-22200500
E-mail: jainchennai@jains.com

Cochin

Tel: 0484- 2307642

Coimbatore

Tel: 0422 2457318
E-mail: jaincoimbatore@jains.com

Madurai

Tel: 0452-2381491

Trichi

Tel : 0431- 4060601

Tirunelveli

Tel : 09443315945

Uttar Pradesh

Lucknow

Tel : 0522-4021067
E-mail : jainlucknow@jains.com

Uttaranchal

Deharadun

Tel : 0135-2669865; 9412050730
E-mail : jaindeharadun@jains.com

West Bengal

Kolkata

Tel : 033-24198646; 09433047499
Email : jainkolkata@jains.com

Srinagar

Tel : 09797927458

Office in overseas

Jain (Americas) Inc. [Columbus, OH]

Tel : +1-888-473-7539 or (614) 850-9400
Email : info@jainamericas.com
E-mail : murali@jainamericas.com

Jain Irrigation Inc. [Ontario, CA]

Tel : 1-800-695-7171 or (559)-485-7171
Email : info@jainsusa.com

Jain(Europe) Limited,

Tel : +44 20 8326 5900

Australia

Tel : +61296032718,
E-mail : bedekar.sanjay@jains.com

Egypt

Tel : +20-2-454-6043, +20-12-212-7547,
E-mail : drhanafy@mist.net.com,
dr.hanafy@jains.com

Singapore (Silastan)

Tel. : +65-64576852 (O),
+65-98710036 (M)

Sri Lanka

Tel : +94-777-586411; +94112852610
E-mail : srbala@jains.com

Turkey

Office Tel : +90 212 269 8585
Web : www.jains.com.tr

Taiwan

Tel : +86 693 3295430.

Nairob

Tel : +254 732 040000,
+91 9403770668

France [Toulouse] - NDJ

Tel : +33-5-61998509
E-mail : contact@naandanjain.fr

Italy [Milano] - NDJ

Tel : +390-255603877;
E-mail : info@naandanjain.it

Mexico - NDJ

Tel : +52-5959-251240/1;
E-mail : info@naandan.com.mx

Peru [Lima] - NDJ

Tel : +51-14402322
E-mail : mauricio@naandanjain-peru.com.

Romania - NDJ

Tel : +40-21-3694055
E-mail : ileana-stanciu@naandanjain.ro

Overseas Plant

Jain Irrigation Inc. [Fresno, California]

Tel : 1-800-695-7171 or (559)-485-7171
Email : info@jainsusa.com;
Web : www.jainsusa.com.,

Jain Irrigation Inc. [Winter Haven, Florida]

Tel : +1-800-848-8153; or (863)-294-1900;

Jain Irrigation Inc. [Ontario, CA]

Tel : +1-909-3955200; +1-800-828-9919;

Chapin Watermatics, Inc.

[Watertown, New York]

Tel : +1-800-242-7467; or (315)-782-1170;
E-mail : ngupta@chapindrip.com
Web : www.chapindrip.com.

Cascade Specialties Inc. [Onion Plant]

Tel : +1-541-481-2522
E-mail : info@cascadespec.com
Web : www.cascadespec.com

NuCedar Mills Inc. [Chicopee, MA]

Tel : + 1-866-393-8883 or (413) 593-8883
Email : info@nucedar.com
Web : www.nucedarmills.com

Sleaford Quality Foods Ltd. [UK]

Tel : +44-1529305000,
E-mail : enquiries@sleafordqf.com
Web : www.sleafordqf.com

Thomas Machines SA

Phone : +41-24-423-5050,
Email : info@the-machines.ch
Web : www.the-machines.ch

Israel - NDJ

Tel: +972-8-9442180
E-mail: mkt@naandanjain.com

Australia - NDJ

Tel: +61-3-976-71222;
E-mail: marketing@naandanjain.com.au

Brazil - NDJ

Tel: +55-1-935-714646;
E-mail: alfredo@naandan.com.br

Spain - NDJ

Tel: +34-9-505-82121;
E-mail: pedros@naandanjain.es

Notes

[illegible]

Notes

[illegible]

THERE IS MORE TO JAIN IRRIGATION THAN IRRIGATION



Onion & Vegetable Dehydration



Fruit Processing



Jain Tissue Culture



Jain Green House



Bio Energy



PVC Sheet



Jain PVC Pipes



Jain PE Pipes



B-Sure SWR Pipes & Fittings



Jain Solar Appliances & Lighting



Jain Solar Water Heaters



Jain Solar Pumping Systems



Jain Irrigation Systems Ltd.

Small Ideas. Big Revolutions®

Jain Plastic Park, Jalgaon - 425001, MS - India.

Tel: +91-257-2258011; Fax: +91-257-2258111; E-mail jjsl@jains.com



THE COMPANY



Jain Plastic Park, Jalgaon

Jain Irrigation Systems Ltd. is a diversified entity with turnover in excess of Rs. 4250 crores. We have a Pan-India & Global Presence with 26 manufacturing bases spread over 4 continents. Our products are supplied to over 116 countries with able assistance from more than 6700 Dealers and Distributors worldwide.

We are the second largest Micro Irrigation company in the world. Our businesses include Complete range of Micro Irrigation Systems and Components, PVC and PE Piping Systems, PVC and Polycarbonate Sheets, Solar Water Heaters and Solar Lighting, Processed Fruit & Vegetable, Tissue-Culture, Green Houses etc.

We have the distinction of being the largest processor of Thermoplastic Piping in India. We annually process over 300,000 MT of various polymers. We extrude and injection mold PVC, PE, PP along with other engineering polymers like Polycarbonate, Polyamide, PBT, ABS etc. in our ISO 9001, ISO 14001 & BS OHSAS 18001 certified manufacturing facilities.

We have an enviable track record as a 'Total Solution Provider' for various Piping Systems for Water, Sewerage, Drainage, Sub-Soil Drainage, SWR, HSC, Lift / Drip / Sprinkler Irrigation, Effluents, Chemicals, Ash / Slurry, Offshore / Marine Outfall, Gas & Cable Ducting etc.

Our unending efforts in the pursuit of excellence with ongoing Research and Development have earned the Company the highest R & D awards of the country apart from numerous other awards and recognition for our performance in Exports, Fair Business Practices, Quality, Excellence, Innovation, Environment, Product development etc.

We take pride in processing plastic so much, so far and so well under one roof !

The information given about Jain Irrigation Systems Ltd.'s (JISL) products is without any obligation. The technical data concerning JISL's products are typical values subject to alteration. JISL reserves the right to re-design or modify their products without incurring further liability. The actual use of the products by the purchaser / customer is beyond the control of JISL and JISL can not be held responsible for any loss and/or any consequential liability arising out of incorrect or faulty or mis-use of the products.

