



2020-21 Edition



# Irrigation Design for Nursery and Garden Centre



We do hope that this pocket guide is of assistance to you, it is designed to be a 'half-way house' between the components catalogue and a full-scale bespoke irrigation design.

For many smaller projects, design and installation is simple, provided you know what components you need. This is where our pocket guides come in, giving detailed layout drawings and component lists for common projects – and all parts are referenced back to our main components catalogue.

If you need any help or advice, please do not hesitate to give us a call.

Regards

A handwritten signature in blue ink that reads 'M. J. Briley'.

Mike Briley  
Sales Director



## Contents

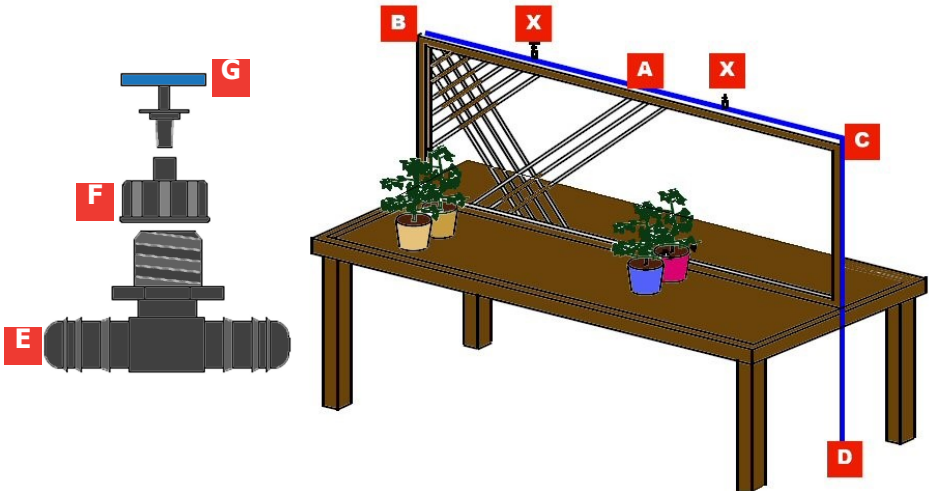
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# i. Centre rail bench watering

## Brief Description

Designed to water the benches discretely, the system consists of a 16mm pipe (A) clipped (see tips) to the top of the centre rail, with sprinkler assemblies (x) spaced every 2m - 2.5m approx down the length.

Fittings at the start of the bench (D) can either be designed to connect to a hose pipe, or a permanent underground supply (see page *xii*)



| Key | Description                   | Part Code                 | Pack Qty | Cat. page            |
|-----|-------------------------------|---------------------------|----------|----------------------|
| A   | 16mm poly pipe                | PA16-50M                  | 1        | 40                   |
| B   | Barbed stop end               | FBSE16-T                  | 10       | 41                   |
| C   | 16mm barbed elbow             | FBE16-T                   | 10       | 41                   |
| D   | Entry fittings                | Several options available |          | Guide page <i>xi</i> |
| E   | 16mm barbed tee               | FBT16-2-T                 | 10       | 41                   |
| F   | 1/2" threaded cap             | KECP2-T                   | 10       | 38                   |
| G   | Sprinkler nozzle<br>Mini-spin | Several sizes available   | 10       | 10                   |

### Tips!

To clip the pipe to the bench there are two choices on page 40. Pipe clips are quicker and cheaper, but need a top rail approx 50mm wide. Pipe clamps have a hole in the centre, so can be used on narrower centre rails.

For longer benches, the feed pipe can be brought up in the centre rather than the end. In this case barbed tees (FBT16-T) will be needed rather than elbows.

Page 10 lists various suitable sprinklers. For each sprinkler there is information on the output and also how far it will cover.

## ii. High level watering

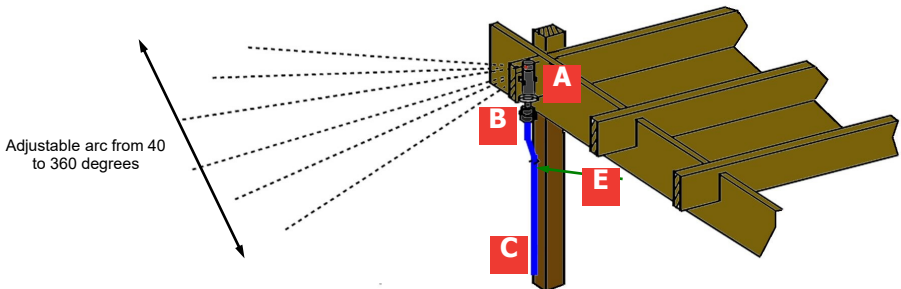
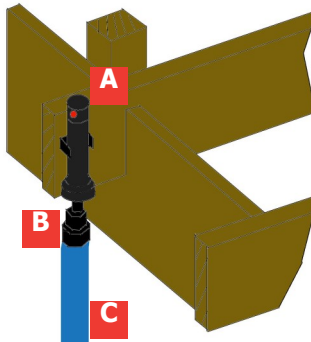
### Brief Description

For large display areas overhead sprinklers allow the bench layout to be kept very flexible. These are normally clipped to posts or a pagoda.

Shrub head sprinklers feature a precise gear drive, allowing the spray arc to be precisely controlled between 40° and 360°

Shrub sprinklers feature a series of interchangeable nozzles (see chart) that will water a radius of between 8.5m and 15.8m, although care should be taken with the larger arcs as they are very thirsty.

| Nozzle | Radius | Flow l/h |
|--------|--------|----------|
| 1.5    | 9.8m   | 380 l/h  |
| 2      | 10.4m  | 470 l/h  |
| 2.5    | 10.7m  | 580 l/h  |
| 3      | 11.9m  | 740 l/h  |
| 4      | 12.2m  | 970 l/h  |
| 5      | 12.8m  | 1240 l/h |
| 6      | 13.1m  | 1470 l/h |
| 8      | 13.7m  | 1950 l/h |



| Key | Description      | Part Code | Pack Qty | Cat. page |
|-----|------------------|-----------|----------|-----------|
| A   | Shrub sprinkler  | KHPGS     | 1        | 11        |
| B   | Compression stud | FLM20-3   | 1        | 42        |
| C   | 20mm pipe        | PEB20-25M | 25m      | 40        |
| D   | Small pipe clamp | FPCM20    | 1        | 40        |

### Tips!

Make sure your water supply is adequate for these sprinklers.

Supply pipe normally needs to be 32mm or 50mm to cope with the high flow rates. To connect to a 32mm pipe use a FLT32-4F tee and a FLM20-4 stud (see page 42).

Allow plenty of overlap between the nozzles as windy conditions will affect the spray pattern. Ensuring the spray comes from several directions also helps minimise problems with the wind.

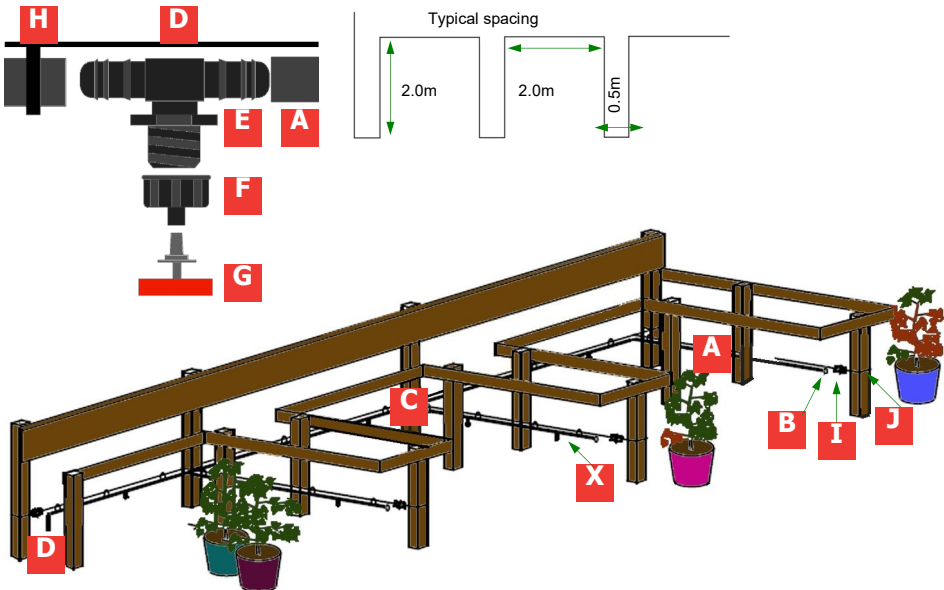
### iii. Tree Bays

#### Brief Description

A 20mm polythene pipe (A) is suspended over the pots using straining wire. Every 1m a small sprinkler nozzle assembly (X) is fitted to water the trees at low level.

Full circle sprinklers are used for double bays. For bays with only a single line of trees half circle nozzles can be fitted.

Fittings at the start of the run (D) can either be designed to connect to a hose pipe, or a permanent underground supply (see page *xii*)



| Key | Description         | Part Code                 | Pack Qty | Cat. page            |
|-----|---------------------|---------------------------|----------|----------------------|
| A   | Supply pipe         | PA20-100M                 | 100m     | 40                   |
| B   | Stop end            | FBSE20-T                  | 10       | 41                   |
| C   | 20mm barbed tee     | FBT20-T                   | 10       | 41                   |
| D   | Entry fittings      | Several options available |          | Guide page <i>xi</i> |
| E   | Barbed - thread tee | FBT20-2-T                 | 10       | 41                   |
| F   | 1/2" threaded cap   | KECP2-T                   | 10       | 38                   |
| G   | Sprinkler nozzle    | KE060-T                   | 10       | 10                   |
| H   | Ratchet strap       | FPC100-H                  | 100      | 47                   |
| I   | Wire strainer       | EWS                       | 1        | 47                   |
| J   | Straining wire      | ESW-1K                    | 25m      | 47                   |

#### Tips!

As a guide, up to 20 sprinklers can normally be operated from one section. For larger areas, divide the system up into several sections.

If there is a wooden cross bar at low level, the pipe can be clipped to this using a 20mm pipe clamp (p40) instead of using straining wire.

Instead of using sprinklers, small drippers can be punched into the supply pipe, so that they drip water over each pot - see page 5 for a suitable dripper.

As a general rule the combined output of the sprinklers on any one 20mm pipe should not exceed 1,000 l/h

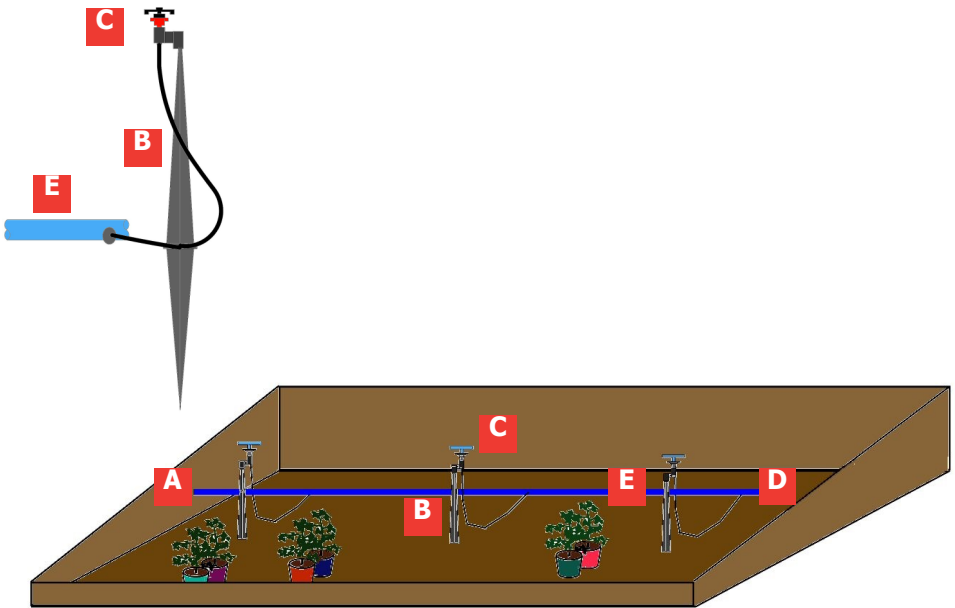
## iv. Frame and narrow bed watering

### Brief Description

Mini-sprinklers are the easiest way to water a frame or narrow standing out area.

Plastic risers are fitted approx 2m apart down the bed. 1m long small bore pipe leads fit to a larger polythene supply pipe (E). Different sized nozzles (C) are available to cover different bed widths.

Fittings at the start of the run (D) can either be designed to connect to a hose pipe, or to a permanent underground supply pipe (see page xii)



| Key | Description                | Part Code                 | Pack Qty | Cat. page      |
|-----|----------------------------|---------------------------|----------|----------------|
| A   | Fold over stop end         | TJ20-T                    | 10       | 41             |
| B   | Bedding spike set          | KRBS-T                    | 10       | 11             |
| C   | Sprinkler nozzle Mini-spin | Several sizes available   | 10       | 10             |
| D   | Entry fittings             | Several options available |          | Guide page xii |
| E   | 20mm poly pipe             | PA20-100M                 | 100m     | 40             |
|     | Punch                      | DPB3                      | 1        | 5              |

### Tips!

To branch the pipe use barbed tee pieces (p41); also available are 90° elbows and straight connectors. A mixed pack of fittings is also available.

A punch is needed to put the small bore fittings into the side of the main pipe.

Page 10 lists various sprinklers, for each sprinkler there is information on its output and how far it will cover.

As a general rule the combined output of the sprinklers on any one 20mm pipe should not exceed 1,000 l/h

## v. Stock bed watering

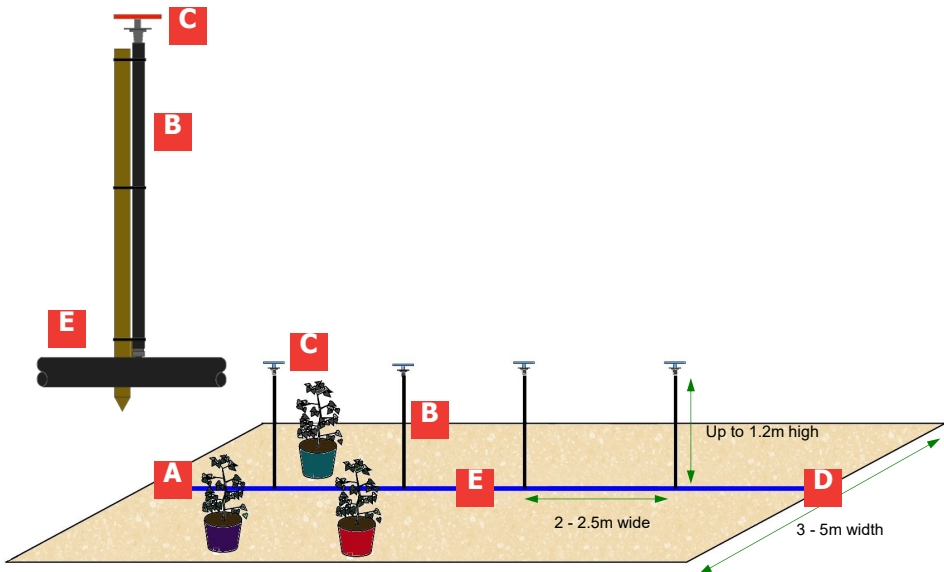
### Brief Description

Stake risers are a low cost way of watering standing out areas. Each run of sprinklers can water a width between 3m and 5m, with several runs being combined to water wider areas.

Risers (B) are fitted to a 25mm<sup>2</sup> wooden stake (not supplied) approx 2.5m apart down the bed. Different sized nozzles (C) are available to cover different bed widths.

Fittings at the start of the run (D) can either be designed to connect to a hose pipe, or to a permanent underground supply pipe (see page xii)

**A complete stock bed watering kit is available on page 7**



| Key | Description        | Part Code                 | Pack Qty | Cat. page      |
|-----|--------------------|---------------------------|----------|----------------|
| A   | Fold over stop end | TJ20-T                    | 10       | 41             |
| B   | Stake riser        | KRSR-T                    | 10       | 11             |
| C   | Sprinkler nozzle   | Several sizes available   | 10       | 10             |
| D   | Entry fittings     | Several options available |          | Guide page xii |
| E   | 20mm poly pipe     | PA20-100M                 | 100m     | 40             |
|     | Punch              | DPB3                      | 1        | 5              |

### Tips!

Risers are 1.2m high, but they can be cut down with a pair of secateurs.

To branch the pipe use barbed tee pieces (p41); also available are 90° elbows and straight connectors. A mixed pack of fittings is also available.

A punch is needed to put the stake riser fittings into the side of the main pipe.

Page 10 lists various sprinklers, for each sprinkler there is information on its output and how far it will cover.

As a general rule the combined output of the sprinklers on any one 20mm pipe should not exceed 1,000 l/h

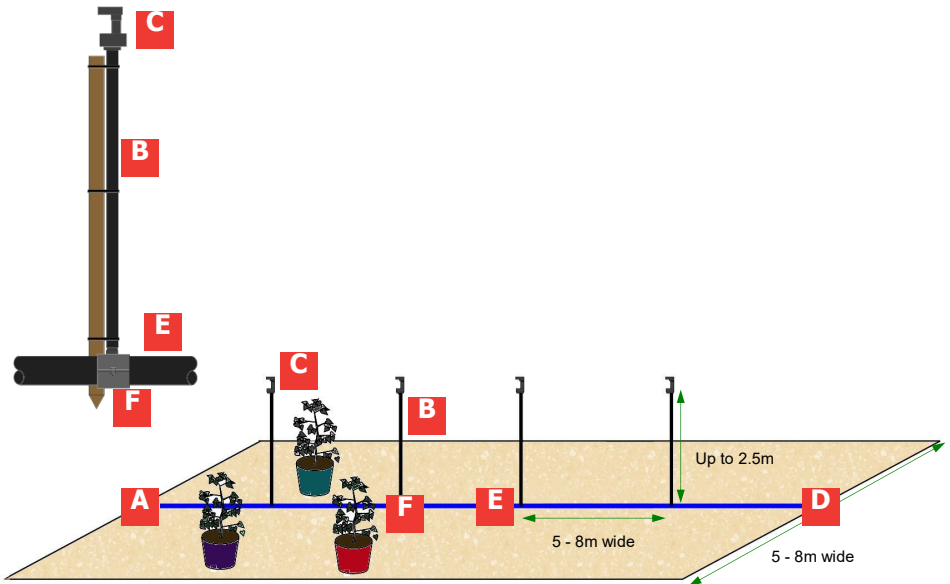
## vi. Large stock bed watering

### Brief Description

Stake risers are a low cost way of watering standing out areas. Each run of sprinklers can water a width between 5m and 8m, with several runs being combined to water wider areas.

Risers (B) are fitted to a 25mm<sup>2</sup> wooden stake (not supplied) approx 5 - 8m apart down the bed.

**A complete stock bed watering kit (using 20mm pipe) is available on page 7**



| Key | Description      | Part Code                 | Pack Qty | Cat. page             |
|-----|------------------|---------------------------|----------|-----------------------|
| A   | Male stud        | FLM20-4                   | 1        | 42                    |
|     | Cap              | FMC4                      | 1        | 42                    |
| B   | Stake riser      | KRSR-T                    | 10       | 11                    |
| C   | Sprinkler nozzle | KN5-200                   | 1        | 12                    |
| D   | Entry fitting    | Several options available |          | Guide page <i>xii</i> |
| E   | 25mm poly pipe   | PA25-100M                 | 100m     | 40                    |
| F   | Pipe saddle      | FS25-3                    | 1        | 42                    |

### Tips!

Risers are 1.25m high, but they can be cut down with a pair of secateurs.

Each sprinkler uses 200 l/h so ensure there is a good water supply.

It is recommended that the lateral pipe is permanently connected to the irrigation ring main.

Provided there is an adequate water supply this design is suitable for up to 8 sprinklers on a 64m run. On long runs a larger diameter pipe lateral may be needed.



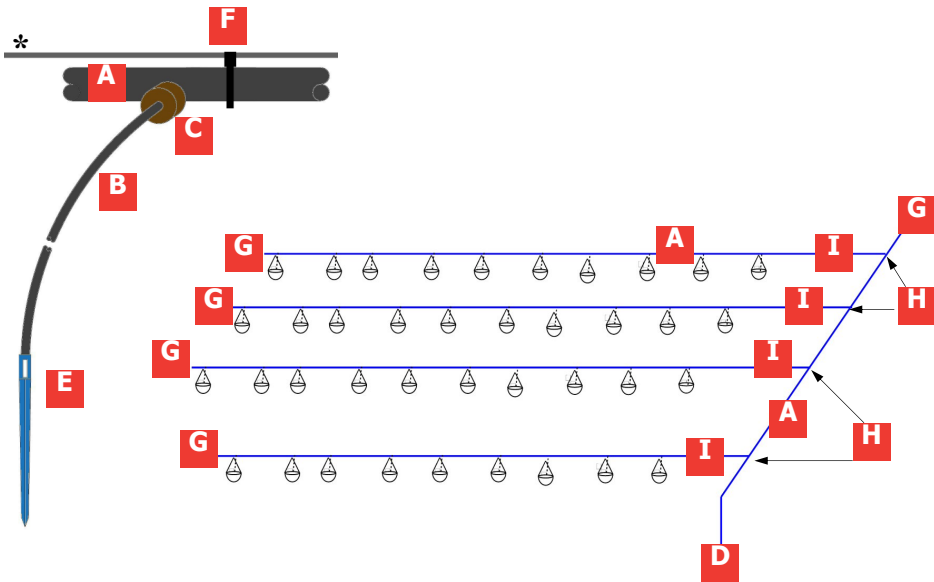
## vii. Hanging Basket (production)

### Brief Description

An adaptor and filter (D) fits onto the tap. A 20mm diameter supply pipe (A) takes water to each of the 20mm lateral pipes. Pipe work is either clipped to the support above the baskets or to a separate straining wire(\*).

An isolating valve (I) is placed at the start of each run to allow unused lines to be turned off.

At each basket, the supply pipe is punched and a dripper inserted (C). A small bore dripper lead (B) then goes down into the basket, where an anchorage stake (E) holds the pipe in place.



| Key | Description      | Part Code | Pack Qty | Cat. page |
|-----|------------------|-----------|----------|-----------|
| A   | 20mm supply pipe | PA20-100M | 100m     | 40        |
| B   | Dripper pipe     | P13-20M   | 20m      | 27        |
| C   | Dripper          | D2PCJ-H   | 100      | 5         |
| D   | Entry fittings   | FBK20-3F  | 1        | 41        |
|     | Filter           | P67       | 1        | 48        |
| E   | Dripper stakes   | DAS-H     | 100      | 27        |
| F   | Ratchet strap    | FPC200-H  | 100      | 47        |
| G   | Stop Ends        | FBSE20-T  | 10       | 41        |
| H   | Barbed Tee       | FBT20-T   | 10       | 41        |
| I   | Isolating valve  | FBV20     | 1        | 41        |
|     | Punch            | DPB3      | 1        | 5         |

### Tips!

20mm pipe systems can cope with up to 600 drippers on them. For larger production houses divide the baskets up into sections.

Clip the pipe to the underside of the support bar or alternatively purchase straining wire (p49) and clip to this.

Instead of purchasing the dripper, pipe and stake separately, it can be purchased as a pre-assembled unit (see p3)

Ideally the system should be automated, as baskets require watering 'little and often'. With a multi-zone controller, different areas can be provided with separate watering regimes.

## viii. Canopy or shade house

### Brief Description

Overhead 25mm uPVC (D) pipes run the length of the shade house, with sprinklers assemblies (J) fitted every 2.5m down the lateral.

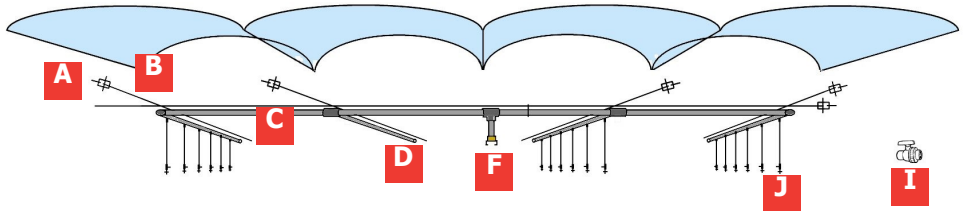
Laterals are spaced between 3m and 4.5m apart and are joined together by 32mm uPVC pipe (C).

Water is fed into the system using a filter with 'geka' style fitting (F).

Depending on the available water flow some or all of the lines can be operated at once.



Canopy or shade house



| Key | Description  | Part Code                                       | Pack Qty             | Cat. page            |
|-----|--|---|----------------------|----------------------|
| A   | Wire strainer  | EWS   | 1                    | 47                   |
| B   | Straining wire<br>Ratchet straps                                       | ESW-2.5K<br>FPC150-H                            | 64m<br>100           | 47<br>47             |
| C   | 32mm uPVC pipe   | PM32-5M   | 1                    | 46                   |
| D   | 25mm drilled pipe  | PM25-2.5A                                       | 1                    | 46                   |
| E   | 32mm uPVC tee  | FMT32   | 1                    | 46                   |
| F   | Filter pack  | LUPF  | 1                    | 46                   |
| G   | 32mm uPVC elbow  | FME32   | 1                    | 46                   |
| H   | 25mm connector<br>1" end cap   | FMK25-4<br>FMC4                                 | 1<br>1               | 46<br>46             |
| I   | On/Off valve   | EVLU25  | 1                    | 46                   |
| J   | Pipe adaptor<br>Downtube<br>Drip-stop valve<br>Mini-spin tunnel nozzle | L04-T<br>L41-0.3-T<br>KENV-T<br>Various outputs | 10<br>10<br>10<br>10 | 47<br>47<br>47<br>47 |

### Tips!

On wooden canopies the straining wire can be substituted with pipe clamps (see p40).

Lateral pipes should be no more than 45m long, otherwise the pressure drop will be too much.

The entry fitting can be changed to allow a permanent connection.

### Choose the correct Mini-spin Tunnel nozzle

Lateral spacing 3.0m use 070 l/h nozzle  
Lateral spacing 3.2m use 105 l/h nozzle  
Lateral spacing 4.0m use 120 l/h nozzle  
Lateral spacing 5.0m use 160 l/h nozzle

## ix. Standpipe - underground

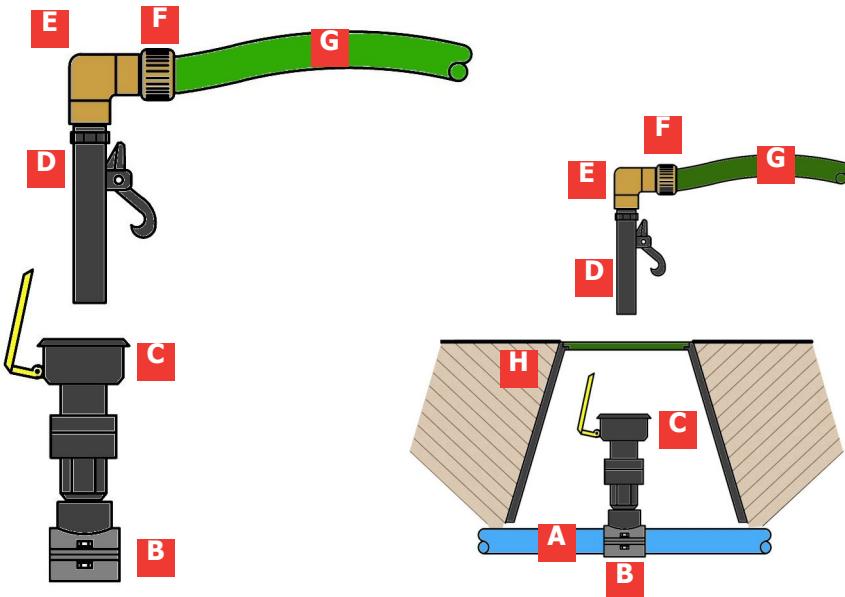
### Brief Description

To provide discreet but useable water supplies in paved areas, underground hydrants are best.

Pipe work (A) runs underground to the hydrant box (H), with a quick take off valve (C) located under the green cover.

MDPE polythene pipe would bring water to the hydrant, connected via a saddle (B)

To operate, the hydrant cover is removed and the take off valve (D) plugged in - this automatically turns on the water supply.



| Key | Description          | Part Code  | Pack Qty | Cat. page |
|-----|----------------------|------------|----------|-----------|
| A   | 32mm supply pipe     | PEB32-100M | 100m     | 40        |
| B   | Pipe Saddle          | FS32-3     | 1        | 42        |
| C   | Quick coupling valve | EVQC       | 1        | 45        |
| D   | Take off             | EVQCTO     | 1        | 45        |
| E   | Brass swivel elbow   | FQCBE3     | 1        | 18        |
| F   | Brass quick coupling | FQCBH3     | 1        | 18        |
| G   | 3/4" Tricoflex hose  | PHT3-25M   | 25m      | 16        |
| H   | 10" hydrant box      | KHB10      | 1        | 48        |

### Tips!

Only use thick walled MDPE pipe underground with compression fittings. Pipe can be radiused around corners, or elbows (p41) can be used.

On very long pipe runs, or if several take-off points are to be used at once, use 50mm MDPE pipe.

If the hydrant boxes are in public areas be aware of the tripping hazards when in use.

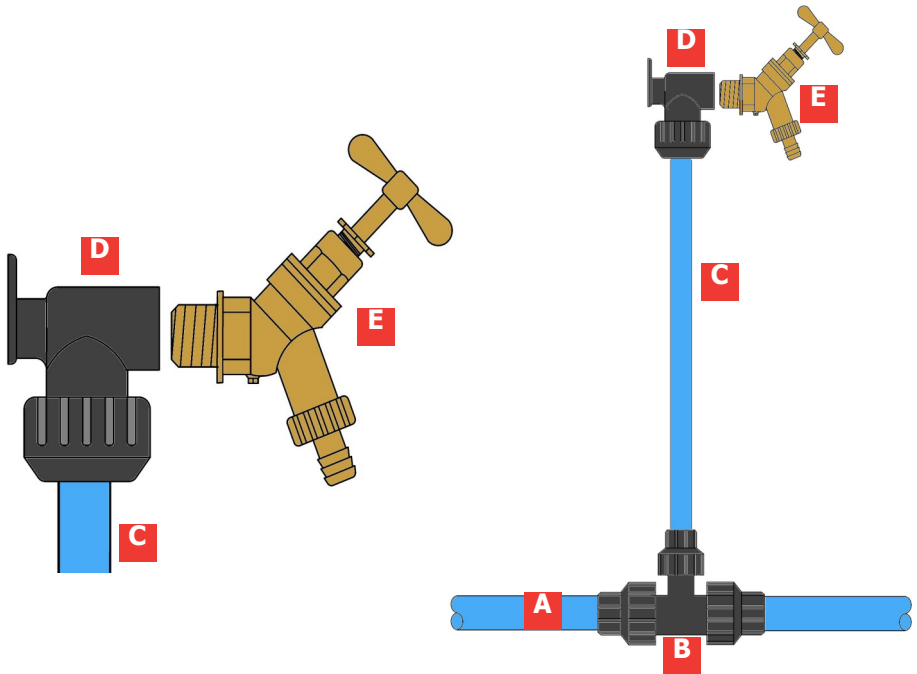
## x. Standpipe - above ground

### Brief Description

The ideal standpipe for hand watering, this would normally be mounted on a post or wall.

The check valve tap (E) screws back to a wall plate (D). 20mm polythene pipe (C) is taken from an underground 32mm supply (A) using compression fittings (B).

For higher flows you may need to use 32mm supply and 25mm pipe riser.



| Key | Description        | Part Code | Pack Qty | Cat. page |
|-----|--------------------|-----------|----------|-----------|
| A   | 25mm supply pipe   | PE25-50M  | 50m      | 40        |
| B   | Compression tee    | FLT32-4F  | 1        | 42        |
|     | Compression stud   | FLM20-4   | 1        | 42        |
| C   | 20mm pipe          | PEB20-25M | 25m      | 40        |
| D   | Wall plate         | EWP20-2   | 1        | 45        |
| E   | ½" check valve tap | ETBC2     | 1        | 45        |

### Tips!

If the water is to be taken direct from the mains, then blue pipe must be used for the underground pipe work. This must be buried 750mm deep. If the water comes from a break tank, then black pipe should be used.

Protect the bib tap from frost, or drain down in winter to prevent frost damage.

Only use thick walled MDPE pipe underground with compression fittings. Pipe can be radiused around corners, or elbows (p42) can be used.

On very long pipe runs, or if several standpipes are to be used at once, use 50mm MDPE pipe.

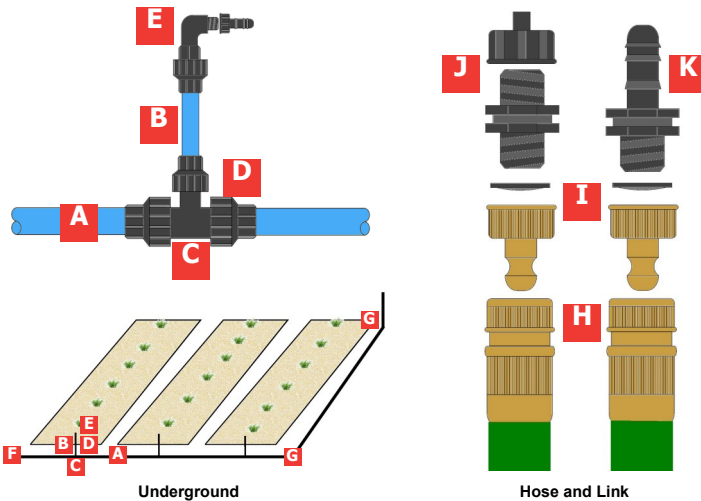
# xi. Connecting beds

## Brief Description

Sometimes it is not convenient to connect directly to a tap, or there may be several beds that need connecting. Provided there is enough water flow, several beds can be linked together.

The underground system links beds back to the tap or a controller.

The hose option allows a 3/4" hose to be brought to the bed.



Connecting beds together and connecting to small bore and 16/20mm pipe

| Key | Description                               | Part Code                 | Pack Qty | Cat. page |
|-----|---|---------------------------|----------|-----------|
| A   | 32mm supply pipe                          | PEB32-50M                 | 50m      | 40        |
| B   | 20mm supply pipe                          | PEB20-25M                 | 25m      | 40        |
| C   | Compression tee                           | FLT32-4F                  | 1        | 42        |
| D   | Compression stud                          | FLM20-4                   | 1        | 42        |
| E   | Compression elbow<br>Barbed connector     | FLE20-3M<br>FBK16/20-3F   | 1<br>1   | 42<br>41  |
| F   | Stopend                                   | FLM32-4<br>FMC4           | 1<br>1   | 42<br>42  |
| G   | Compression elbow                         | FLE32                     | 1        | 42        |
| H   | Brass quick coupling                      | FQCBH3                    | 1        | 18        |
| I   | Brass tap connector<br>Filter             | FQCBT3<br>P67             | 1<br>1   | 18<br>48  |
| J   | Threaded nipple<br>Threaded cap           | FPTN3<br>KECP3-T          | 1<br>1   | 39<br>38  |
| K   | Barbed connector for<br>16mm or 20mm pipe | FBK16-3-T<br>Or FBK20-3-T | 10       | 41        |

### Tips!

If you want the pipe work to continue straight up out of the ground rather than run at ground level (eg. for bench watering), replace fitting (E) with a male stud FLM20-3.

This method of connecting beds is suitable for medium traffic environments if the pipe is buried 300mm deep. For heavy traffic environments bury the pipe 500mm deep.

For larger beds such as the 'large stock bed watering system' larger pipe work will be required.

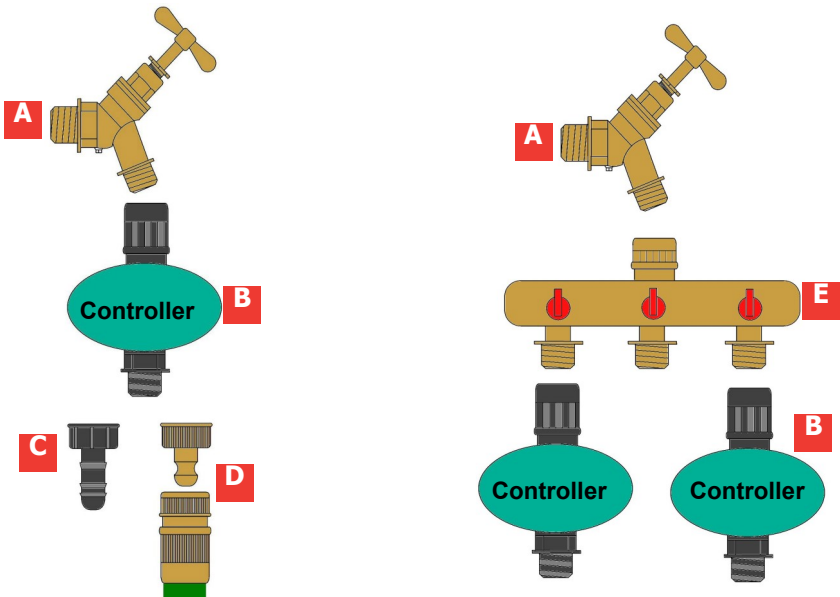
## xii. Automation - simple systems

### Brief Description

For simple systems, a tap mounted controller is the simplest to install.

Choose the fitting beneath the controller (C) or (D) to suit your watering system.

If two watering zones are needed, then the 3 way manifold (E) can be used.



| Key | Description                            | Part Code               | Pack Qty | Cat. page |
|-----|--|-------------------------|----------|-----------|
| A   | ½" check valve tap                     | ETBC2                   | 1        | 45        |
| B   | Galconette controller                  | EPAGT<br>or EPAGD       | 1        | 28        |
| C   | Barbed connector for 16mm or 20mm pipe | FBK16-3F<br>or FBK20-3F | 1        | 41        |
| D   | Brass tap connector                    | FQCBT3                  | 1        | 18        |
|     | Brass quick coupling                   | FQCBH2                  | 1        | 18        |
| E   | 3 way manifold                         | ET3M3                   | 1        | 18        |

### Tips!

If you purchased a complete kit, the fitting (C) or (D) would generally have been included.

If you have designed the system yourself, rather than using a kit, make sure you select the correct threaded fitting to fit the pipe you are using.

The tap (A) has a double check valve built in. This makes it ideal for replacing existing outdoor taps that do not comply with the Water Regulations.

# xiii. Designing a watering system

## The first step

Like all projects, good planning is the key to success. With irrigation, the first step is to draw up a scale plan of the area to be watered. This will allow the accurate placement of any sprinklers, and also the accurate measurement of pipe lengths.

It is also a good idea to start with more simple projects, as this will provide valuable experience of fittings and sprinkler types.

## Drawing a plan

Get a sheet of graph paper (preferably A3). Measure the widest and longest lengths of the area to be watered, then work out a suitable scale.

Draw the perimeter of the area first, then draw in the features such as glasshouses and tunnels. Lastly mark on areas that need watering. If you are planning to dig trenches, also look for manhole covers etc. as these will hide obstructions.

## Water Supply

It may seem obvious, but it is amazing how many people do not think about where the water is going to come from. Normally water is supplied directly from the water mains. Other sources include rivers and rain water catchment. These can provide big savings in terms of water costs, but will require investment in pumps, tanks and control equipment.

The mains water supply needs to be measured, as this will set a limit on how much watering can be done in one go. Instructions on how to do this are on page 37 (in this guide all numerical page references refer to the 2017-18 catalogue. Roman numerals refer to pages in this guide). Alternatively a water storage tank and pump can be installed to provide greater flows.

## How much can I water?

Once the available water limit is known, this sets the maximum amount that can be watered at any one time. In the catalogue, all drippers and sprinklers have an output in litres per hour (l/h).

Simply add together the outputs of all drippers and sprinklers you plan to use to give the total water requirement. Ensure this figure does not exceed the amount available. If it does, then the watering needs to be split into zones. An automatic controller can then be used to water the zones one after the other.

## Ways of Watering

Hanging baskets and production trees are normally

watered using drippers which bring water directly into the container.

Tunnels and standing out areas are normally watered using mini-sprinklers or larger scale sprinklers.

Display areas can either be watered with pipe work mounted on the benches, or with large sprinklers covering the entire area.

## Designing the system

Once you have decided how you are going to water the different area, mark these up on the plan, and mark on each section how much water it will use. If the water requirement is less than you have available, areas can be grouped together. If it is more, then the section will need to be split into more than one zone.

If you are connecting the areas using underground pipe, then also mark on where the pipes will run. They will all need to go back to where the controller is located.

## Water Regulations

Generally Nurseries and Garden Centres require a 'type A' air break, normally achieved by using a pump and tank.

If the watering system is connected to the mains water supply, then back flow prevention is required. These vary depending on the type of watering system installed.

## Ordering

Once you have designed the watering system, list all of the parts you require. Double check the list, adding a few spares, then send it to Access. We will then process your order and send you all of the parts.

## Help

At Access we have over 50 years of experience designing irrigation systems. If you have a question, please do not hesitate to call us.

