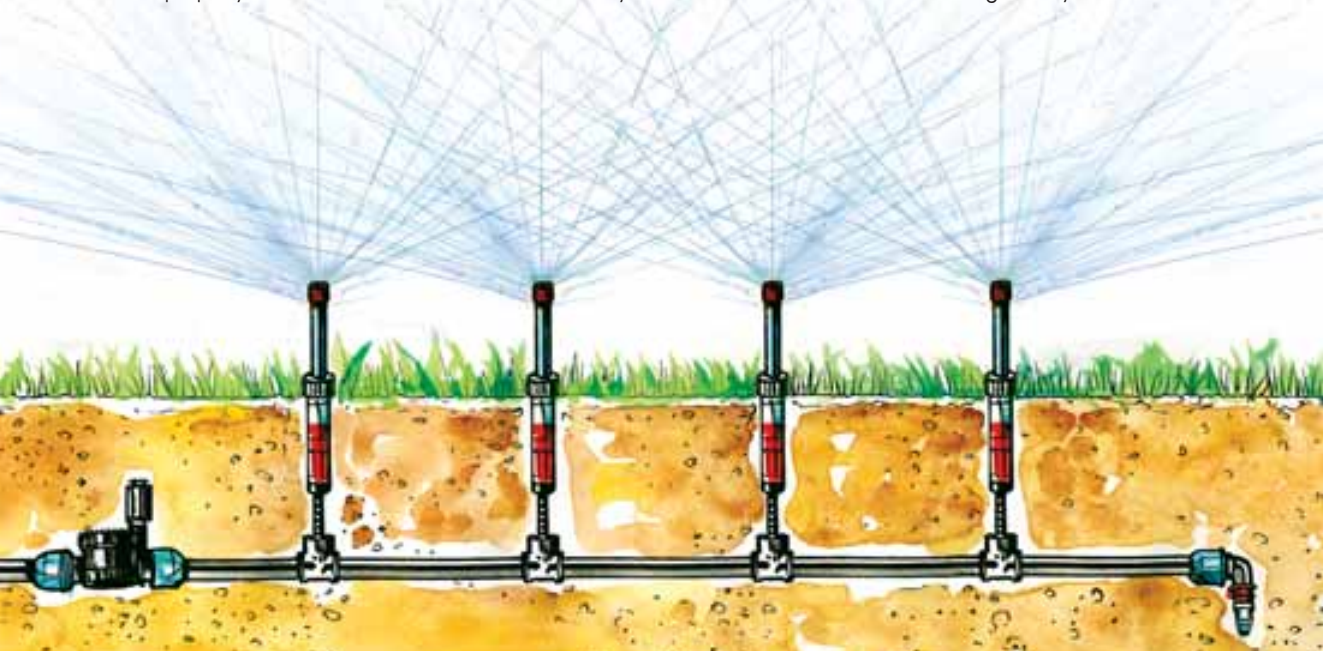


UNDERGROUND IRRIGATION

Reasons for choosing a Claber Rainjet underground irrigation system

There are a lot of good reasons for installing an underground automatic irrigation system:

- the convenience of having your garden automatically watered, even when you're away or on holiday (no need to find someone to come and look after the garden);
- the knowing that all areas of the garden will get the necessary amount of water, without waste, assuring maximum economy;
- no hoses above ground to get in the way of the lawn mower – sprinklers are flush to the level of the lawn and are hardly noticeable;
- silent operation, causing no disturbance to neighbouring homes;
- increased property value – no well-tended lawn can today afford to do without an automatic irrigation system.

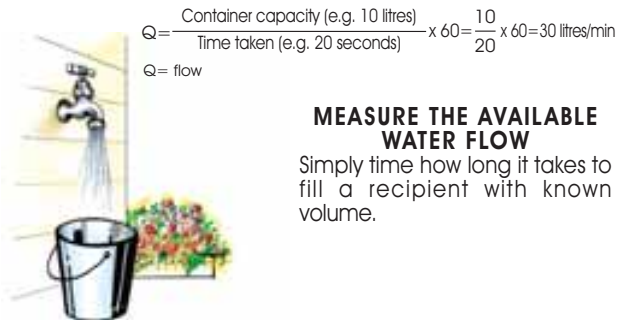


HOW TO PLAN AN UNDERGROUND IRRIGATION SYSTEM

CHECK THE AVAILABILITY OF WATER

MEASURE THE WATER PRESSURE

Close all household taps. Fit a pressure gauge to an outdoor tap, then open it completely (STATIC pressure). Ask your plumber to lend you a pressure gauge, or hire one. Take the measurement at different times during the day and night.



MEASURE THE AVAILABLE WATER FLOW

Simply time how long it takes to fill a recipient with known volume.



PLANNING

Use a compass to mark the circumference or circle sectors reached by each sprinkler, until the entire surface is covered. For best results, position the 90° sprinklers in the corners of patches to be watered, 180° sprinklers along garden strips, and 360° sprinklers in open spaces. The examples given in this booklet show the arrangement necessary to cover long and narrow areas evenly. The circumferences, as seen in the examples, meet to guarantee total coverage of ground and the even distribution of water in all points. When arranging the sprinklers, refer to the recommended spacing indicated in the tables on pages 40 and 41.

DIVIDE THE AREA INTO CIRCUITS

Referring to the sprinkler output table, write in the water consumption (in l/min.) next to each sprinkler. Group the sprinklers into distinct areas (use different colours), summing progressively the water consumption.

Make sure that the water consumption in each area does not exceed the available flow. You should aim at creating a well-balanced system, i.e. each circuit should have the same water consumption.



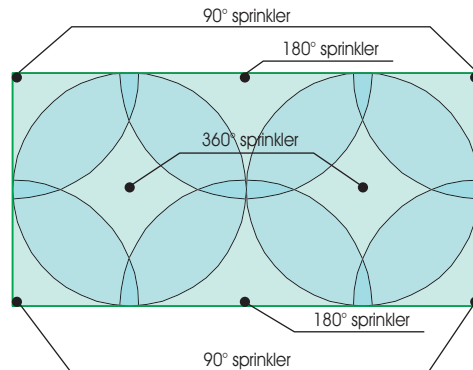
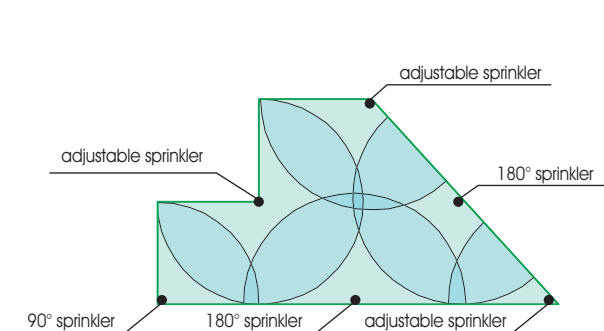


MARK THE LAYOUT OF TUBES

Starting from the point where the solenoid valves controlling each single circuit will be installed, mark in the tube connecting each valve to the sprinklers (previously grouped into areas), thereby drawing independent valve circuits. Since trenches will have to be dug to lay the pipes, mark in straight lines, avoiding as far as possible driveways, terraces and other obstacles.

The diagrams on the following pages give examples of the positioning of sprinklers. Bear in mind that:

- 90° sprinklers should be positioned in garden corners;
- 180° sprinklers should be positioned along garden strips;
- adjustable sprinklers are best used for 270° or irregular angles;
- 360° sprinklers should be positioned in central open spaces.



FLOW RESISTANCE

Don't forget pipe FLOW RESISTANCE: refer to the pressure loss table indicating the values to be subtracted from the original static pressure available.

The DYNAMIC pressure obtained should be sufficient to guarantee correct sprinkler operation.

FLOW RESISTANCE IN 3/4" AND 1" DIAMETER TUBES (IN BAR) FOR EVERY 10 METRE LENGTH

Flow l. / min	Int. diam. 3/4"	Int. diam. 1"
18	0.0592	0.0202
24	0.0997	0.0341
30	0.1493	0.0511
36	0.2078	0.0712
42	0.2747	0.0941



PRACTICAL "DIY" INSTALLATION

Go into the garden and turn your project into an efficiently operating reality. A set of solenoids controls the opening and closing of irrigation circuits.



The water supply line to the valves is subject to the entire amount of static pressure (when the circuit is closed); for this reason it should be made from a watertight metal pipe.



As a rule, the diameter of the tube connecting the valves to the service line should not be less than the diameter of the valves.



It is also a good idea to fit a gate valve upstream to shut off the entire system when necessary, for example when maintenance work is required.

Once the solenoid valves have been connected to the main water supply pipe, take your plan and mark the path of tubes of each sprinkler circuit. Plant a stake at each point where a sprinkler is to be installed. Now join the stakes with string (or with chalk powder on the ground) to trace the line of each circuit tube, from the solenoid valve to the sprinklers.



Unroll the polythene coil, from the valves to the stakes, along the marked path. Put the "T" or connector valves in the position for installation. Straighten the tube properly before cutting it to length (better too long than too short). Use a hacksaw to cut the tube; clean cut ends with a scraper before fitting compression connectors to ensure a completely watertight connection.



To avoid damaging the lawn, heap the dug earth on plastic sheeting, then remove when finished.



Use a spade to dig a trench at least 20-25 cm deep. This won't take much of an effort, and should be enough to protect the pipes against winter frost.

At each stake, place a sprinkler and the threaded bracket extension coupling (before applying the extension, drill a hole in the tube with a 10 mm bit) on the ground.

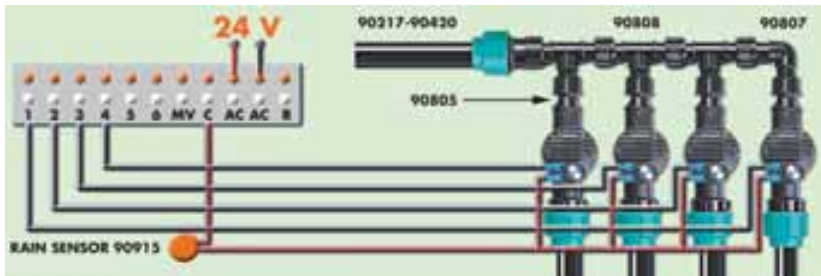




between the sprinklers and the valves. Fix the sprinklers in a vertical position (tie them to the stakes with string), then open the valve (in sequence) to test circuit operation. Shift the sprinklers as required to achieve perfect coverage of the watered ground.



Once the desired coverage is obtained and the circuits have been arranged, lay the tube in the trenches. Make sure that the sprinklers are positioned flush to the terrain surface; the threaded extension supporting the sprinkler can be segmented to adjust sprinkler height. Now connect up all tube lengths



At the end of installation, the circuit should be emptied of all residues and earth. To do so, simply unscrew the head from each sprinkler and open the valves; the water pressure will flush the circuit clean. Screw the heads back on the sprinklers, then fill in the trenches and level to the surrounding area (and the upper edge of the sprinklers). Your irrigation system is now complete and ready for operation, controlled by an automatic watering timer.