



Water ways

MICHAEL BIRD investigates irrigation shutdown procedures

Preparation for the shutting down of a golf course irrigation system should start from the moment the system is turned on in the spring.

As with any piece of equipment that is required to work day in, day out without failure on a seasonal basis, one should be watching out for problems, wear and tear during the complete period that the irrigation system is in full operation. Indeed, faults which do not affect significantly the day to day running of the system, but which may be detrimental in the long term, are usually more easily rectified when the system has been drained down for the winter.

"The majority of problems can be picked up by good forward observation," comments Trevor Neale, technical manager with irrigation consultants, Philip York and Partners, Fordingbridge, Hants. "Our advice is to think and plan ahead so that remedial action can be taken as soon as the system is closed down for the winter months." Mr Neale says that this can be assisted by the establishment of a routine reporting procedure to enable green staff to note faults, problems and changes in system performance as and when they occur during the summer months. Then, when the pumpset is shut down and the system drained at the end of the season, the appropriate work can be carried out to ensure that the system is ready for the following year's start-up. However, ensuring that a sprinkler irrigation system is kept in good working order is more fundamental than simply rectifying problems ready for the new season.

The system must be correctly shut-down and left in a condition which will minimise risk of damage or deterioration over winter. The first action after closing the mains stopcock is to take a reading from the water meter. This reading should match that on the bill from the water authority and one should also ensure that the club is not being charged for sewage disposal based on the volume of water supplied. After all, none of the water applied to a golf course should find its way back into the main drains for treatment.

Any pipework between the main water stopcock and the holding reservoir or tank should be drained. This is particularly important on exposed riser pipes to ball valves, which are highly prone to frost damage. If the pipe is above ground and cannot be fully drained, always ensure that it is properly insulated and protected against the elements.

Insulation has a habit of attracting rodents and other pests, so don't assume that because a pipe was well insulated last year it is still fully protected one year on. A check now can save a great deal of time, money and inconvenience in a few months' time.

The majority of irrigation systems have some form of holding tank located close to the pump house. Unlined steel tanks should be drained and repainted if necessary. Those with a butyl lining should be drained sufficiently to leave the float valve fully open but still contain enough water to

provide tank stability and prevent the majority of the tank drying out. To minimise the risk of frost damage, place a piece of polystyrene, a large floating ball or a plastic container in the tank to absorb expansion caused by freezing.

Where the tank is left with water in, turn off the gate valve between the tank and the pump. If the tank is drained and the mains stopcock closed, this should be left open, as should all other valves in the system to assist drain-down. Maintenance work on the storage tank can usually wait until the rest of the system has been dealt with. However, it is important not to forget to keep the tank clear of leaves and other debris that can enter and on start up.

All too often, the storage reservoir for the system is hidden away out of sight and out of mind. One important item that should be checked regularly during the winter months is the level of the water in the tank. If it rises significantly, water is probably getting in past the mains stop valve and this should be dealt with promptly. Alternatively, if the level falls significantly, check for a leaking valve, or worse still, a perished or holed liner.

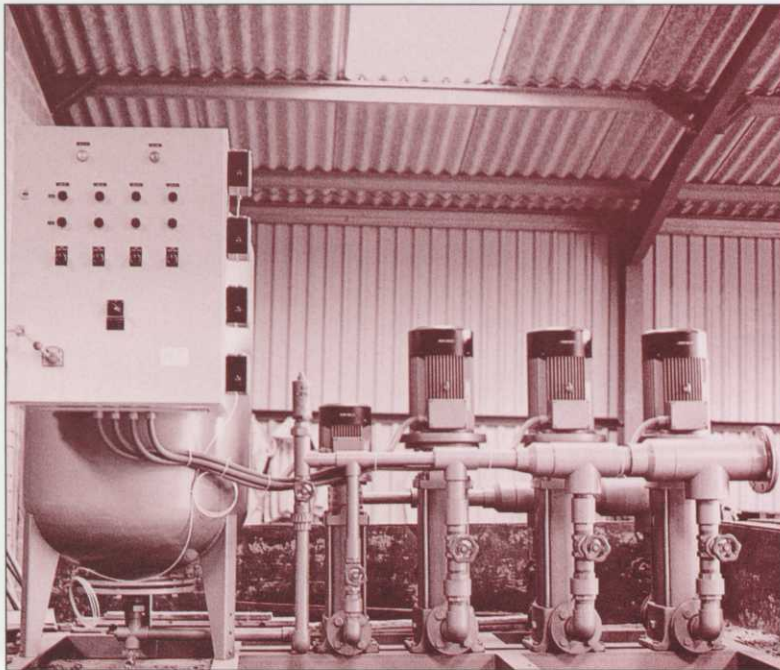
Pumps should be housed in a purpose-designed building complete with suitable insulation and thermostatically-controlled heaters to protect against freezing. In addition to checking that the over-winter protection is in place and functioning correctly, Mr Neale advises greenkeepers to keep the pump house securely locked against pilfering or vandalism – regrettably becoming increasingly

Clear the debris and grease

17 → common in places which are not under 24 hour observation. "Preventing human entry is one thing, but it is also advisable to protect the building against animals and the cold," he points out. "In summer, ventilation is needed to help keep the pumps cool. In winter, I recommend sealing air bricks and fan housings, not forgetting to remove the seals in the spring." The condition of the pump house also needs to be checked for deterioration to walls, floor, roof and windows which can let in cold, damp or rain, cancelling out the effect of any heaters or insulation.

Preparation for winter storage of the pump or pumps should start with the removal of the drain plugs at the base of each pump and the breather or pressure gauge on the top. This action will encourage the free movement of water out of the casing. If possible, position a container to collect the water or connect a hose to the drain point to prevent the pump house floor becoming flooded. All other drain valves should be opened to ensure that no water remains in the pipework between the gate valve and the pump, or on the delivery side of the pump. The majority of pump systems will incorporate one or more non-return valves. Maintenance staff must ensure that the pipework is drained on both sides of these valves and not trapped upstream.

Winter maintenance for pumps commences with the clearing away of any dirt or debris and lightly greasing of all exposed metal parts. Worn or flaking paint should be sanded down and retouched. Grease should be applied through any nipples fitted until the old grease is pushed from the gland seal. If gate valves are fitted on manifolds or between pump sets, they should not be



Closing down the pump system should be based on individual manufacturers' instructions. Basic drill includes draining inlet and outlet isolation valves, turn power-off but provide some form of 'protective' heating for the pump house.

Pictured: Grundfos pumps for the Toro 650 independent head control system used for the Berkshire club's 36 holes

left fully opened. A half-turn back will normally prevent sticking.

Filters also require attention. Removal, stripping and cleaning or renewal are advised in line with the pump maker's recommendations. Finally, once the pump or pumps have been prepared for over-winter storage, do not lock the door and forget them. A once-a-month check of

the pumphouse is an essential part of the maintenance programme as is the turning of the pumps by hand or by a momentary spin of their electric motors to prevent partial seizure in one position.

Submersible pumps installed in a reservoir should be removed from the water where practicable, drained and lubricated prior to winter storage. Because these are expected to work

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metal parts

Ensure that water has drained from within the head and clear any dirt or debris which may prevent the pop-up from closing properly

continuously during the summer in a hostile environment, it will be worthwhile having them checked over and serviced while they are away from their normal location. The result will provide greater peace of mind following year.

Because many modern motors and control panels contain anti-condensation heaters, it is often necessary to leave the mains electric power switched on over winter. Mr Neale recommends that pumps are isolated by removal of their fuses if they cannot be immobilised without turning off the mains switch. The fuse can then be replaced if the pump needs to be turned over during the winter months.

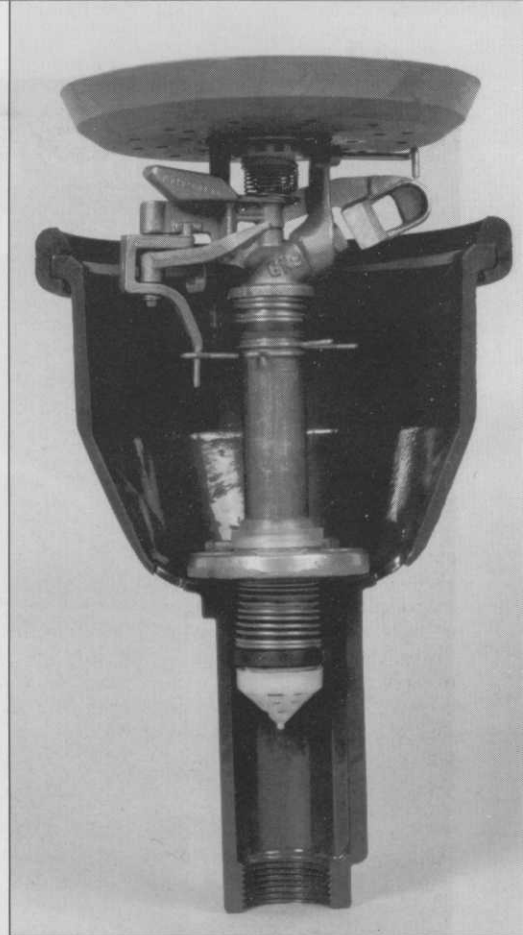
A pressure vessel is often located in the pump to provide a 'buffer' in the system and prevent the switching on when just a small quantity of water is drawn from the pipework, for example, when hand watering a green. The vessel should have its drain opened and this should remain open over winter. Similarly, any pressure relief valve or pressure regulating valve should be drained. Mr Neale points out that staff should be especially careful of pressure regulator valves which usually contain a diaphragm and control pipework in which water can become trapped. "Most regulators have a drain plug to let water out but it may also be necessary to disconnect the pipework to allow water and air to escape," he comments. "At this time, the diaphragm can be checked for cracks, perishing or dirt. After dismantling, it is most important that the assembly is reset to the correct pressure before start-up in the spring.

The majority of underground pressure mains feeding sprinkler irrigation systems are installed below 600mm depth, which will normally be ade-

quate to prevent freezing in all but the most Arctic of winters. Nevertheless, pipes do rise to the surface throughout the system so draining is vital if frost damage is to be avoided. Drain cocks should be positioned at the lowest points of the underground pipe system and these should be located (using the architect's installation plan if necessary) and opened to allow the water to escape. This can take quite a time and will produce a great deal of water when one considers that a typical irrigation system covering the greens, tees and approaches on an 18 hole course can consist of 7,000 metres of 80mm or 100mm diameter pipe. The total outflow could be more than 20,000 litres. As a result, Trevor Neale says it is important to check that the water can get away freely without causing a flood.

To clear the underground mains completely of water, compressed air can be blown through the pipework, although this will need to be done with care at various points around the system. Hand watering point valves - normally located in the control boxes - must also be opened to drain local water. Lever valves should not be left fully open to prevent water lodging in the valve mechanism and freezing. Similarly, solenoid valve boxes are extremely vulnerable to frost but can normally be drained completely, because they are installed at a shallower depth than the underground pipework.

One area which concerns Mr Neale is the construction and condition of the valve box chamber. "It is vital that the area be kept clean and free from water," he comments. "All too often we find installations with inadequate drainage below the solenoid valve. As a result, the solenoid and cable



joints may be sitting in water for much of the year." He says that the winter months are a good time to dismantle the chamber and install a drainage pipe and suitable drainage medium, such as gravel, beneath valve assemblies susceptible to flooding. Unless suspect or showing signs of wear and tear, the wiring to the → 22



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IRRIGATION CHECKLIST Your guide to manufacturers, dealers and distributors throughout the UK

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|---|---|--------------|--------------------|--|---|--------|----------------------------|---|
| MJ Abbott Ltd | Buckner | | | South West | | ✓ | ✓ | 0722 716 361. Bratch Lane, Dinton, Salisbury, Wilts SP3 5EB |
| Arden Lea Irrigation Ltd | All types, inc. Toro, Rainbird, Hunter | ✓ | ✓ | All areas | Europe | ✓ | ✓ | 0772 812433. 160 Moss Lane, Hesketh Bank, Preston PR4 6AE |
| Aquaflow (Irrigation Systems & Service) | Weathermatic | ✓ | ✓ | W. London/Home Counties | | ✓ | ✓ | 0831 380627. 43 Ludlow, Bracknell Berks RE12 4BZ |
| Aquaplast | Prime Watermen and Javelin | | ✓ | Bucks/Berks/Oxon UK mainland | | ✓ | ✓ | 0772 813571. 109 Chapel Road, Hesketh Bank, Preston PR4 6RU |
| Aqua Pump Services | Toro | | ✓ | | Eire | ✓ | ✓ | 1-337777. 26 Casino Rd, Marino, Dublin 3, Eire |
| Bell Turf Irrigation Services | Toro supplied Others serviced | | ✓ | East Midlands Lincs/Leics/Notts/Humb | | ✓ | ✓ | 0777 817410. Milners Holt, Everton Doncaster DN10 5DR |
| British Overhead | Pop-up sprinklers (Buckner, Hunter, Toro) | | ✓ | All areas | | ✓ | ✓ | 0932 788301. Upper Halliford Green Shepperton, Middlesex TW17 8SB |
| | CIC 1 and 4 Zone controllers/decoders | ✓ | ✓ | | | | | |
| | Hard-wire controllers | | ✓ | | | | | |
| | Self-travelling sprinklers | ✓ | | | | | | |
| C.I. Irrigation (Drilling) Ltd | Toro | | ✓ | Channel Islands | | ✓ | ✓ | 0534 57013. Wayside, Rue de Samare, St Clement, Jersey |
| Flanderblade Ltd | Irrigation lagoons, Impact sprinklers | | ✓ | Southern | | ✓ | ✓ | 0903 724545. 20 Whiteacre, Littlehampton W. Sussex BN17 7JA |
| GB Irrigation | Gear driven. 2 wire, 3 wire control systems | | ✓ | All areas | Spain/Italy/Germany Greece/Turkey/Hungary | ✓ | ✓ | 0425 473329. 20 Market Place, Ringwood, Hants BH24 1AW |
| Glen Heat & Irrigation | Buckner/Hunter | | ✓ | All areas | | ✓ | ✓ | 0775 722327. Spalding Rd, Pinchbeck, Spalding, Lincs PE11 3UE |
| Hortech Systems Ltd | All systems | | ✓ | All areas | | ✓ | ✓ | 0406 26513. Station St, Holbeach, Spalding, Lincs PE12 7LF |
| ILS Irrigation Systems | Watermation/other | | ✓ | S. England/Mids/E. Anglia | | ✓ | ✓ | 0832 272450. Oundle Rd, Lutton, Peterborough PE8 5ND |
| Irrigation Technical Services | Toro/Hunter/Weathermatic | | ✓ | All areas | Europe Scandinavia | ✓ | ✓ | 0202 874216. Moulin, 43 Pinehurst Rd, West Moors, Dorset BH22 0AH |
| Irri-Serve Irrigation Systems | Toro | | ✓ | N. West | Europe | ✓ | ✓ | 0772 601534. Unit 9, Twin Lakes Ind. Pk, Bretherton Rd, Croston, Preston PR5 7RF |
| Irritec Ltd | Rainbird/Hunter | | ✓ | Ireland | | ✓ | ✓ | 01 8404033. Lissenhall, Swords, Co. Dublin, Ireland |
| ISS (Irrigation Contracts) | Toro | | ✓ | South/S.West/Home Counties Channel Islands | | ✓ | ✓ | 0722 412510. Unit 6, The Bourne Centre, Salisbury Business Park, Salisbury, Wilts SP1 2NY |
| Landscape Irrigation Systems | Any automatic system | | ✓ | All areas | | ✓ | ✓ | 0425 473790. River View, Salisbury Rd, Ringwood, Hampshire BH24 1AS |
| Jersey Farmers Trading Union | Toro | | ✓ | Channel Islands | | ✓ | ✓ | 0534 33277. 20 Commercial Bldgs, St Helier, Jersey. |
| Midland Irrigation Systems | All systems | | ✓ | All areas | | ✓ | ✓ | 021 358 1246. 2 Fairdene Way, Great Barr, Birmingham B43 5JS |
| Mist Irrigation | Own 2 wire system | ✓ | ✓ | All areas | | ✓ | ✓ | 0425 474614. Unit 18 Hightown Ind Est, Ringwood, Hants BH24 1ND |
| System Controls Ltd | Wright Rain/others | | ✓ | Midlands/N. West/Central, N. Wales/Lake Dist. | | ✓ | ✓ | 0785 812706. Ivy Mill, Longton Rd, Stone, Staffs ST15 8TL |
| North Staffs Irrigation Co. | Watermation/Rolland/Toro/Hunter | | ✓ | All areas | Ireland | ✓ | ✓ | 0460 41939. Higher Burrow, Kingsbury, Martlock, Somerset |
| OCMIS UK Ltd | OCMIS/others | ✓ | ✓ | All areas | | ✓ | ✓ | 0765 602175. Unit 18, Camp Hill Close, Dallamires La, Ripon HG4 1TT |
| Par 4 Irrigation Ltd | Toro | | ✓ | N.E. England/N. Lincs/N. Mids | | ✓ | ✓ | 050 278 481. Wangford, Beccles, Suffolk NR34 8AX |
| Prime Watermen Ltd | Weathermatic | | ✓ | All areas | | ✓ | ✓ | 51-77659. 16 Ballinakill Court, Ballinakill, Co. Waterford, Eire |
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| Sports Turf Services | Toro | | ✓ | Scotland | | ✓ | ✓ | 0425 476261. Unit 7 Millstream Tr. Est, Ringwood, Hants |
| T.I.L. Irrigation Ltd | Toro | | ✓ | All areas | Europe/Africa Middle East | ✓ | ✓ | 0477500255. Love La, Betchton, Sandbach, Cheshire CW11 0TS |
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| Sprinkler & Controls Ltd | Weathermatic | ✓ | ✓ | All areas | Europe/Middle East | ✓ | ✓ | 0425 472251. Ringwood, Hants BH24 3AS (Head Office) |
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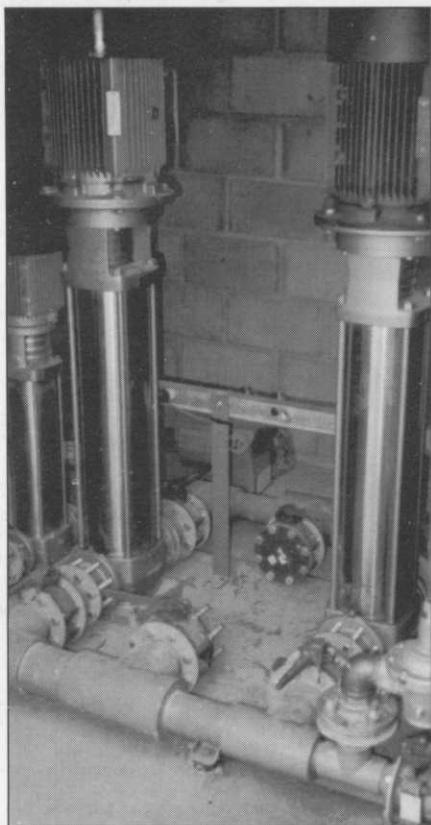
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Keep controller unit warm



Use the winter months to remove and service system components which have shown signs of wear and tear or reduced performance. Pipework left exposed should be sealed against dirt and moisture.

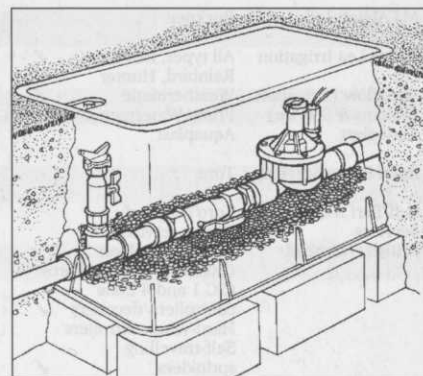
Picture: Cumulus Pump Sets

19 → solenoid valves should remain untouched.

Sprinkler heads normally require little maintenance. If problems do occur, they usually happen during the watering season and will need to be attended to immediately. One point which is often overlooked is the fact that the sprinkler head usually includes a non-return valve to retain water and prevent lateral pipework draining down when the pressure drops.

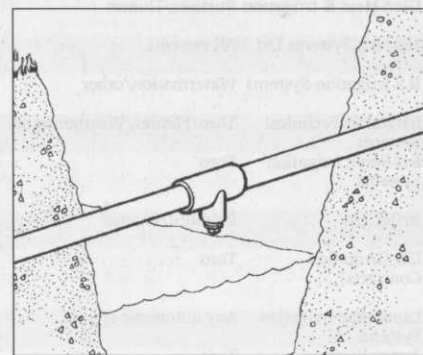
"This retained water will not drain out when the system drain cocks are opened," Neale points out. "There may be a risk that it will freeze and damage the sprinkler head." There are two possible courses of action. One is to unscrew the sprinkler head to allow the water to escape. This will require a great deal of time and labour. The other is to feed low pressure compressed air into the system. Connection points can be fitted to a smaller system later, usually within the pump house, but a large system split into two or more separate circuits may require several inlet points around the course. The consequence is that most greenkeepers keep their fingers crossed and hope that if it does freeze, no damage results.

One part of the irrigation system which must be left for the attention of the supplier or installer is the controller. The unit must be kept dry and warm, ensuring that heaters are functioning properly. Apart from occasionally running the controller through its cycle during the winter months, check with the supplier as to any specific shut-down advice for the unit. The same applies to the rest of the system. All reputable suppliers and installers should provide a plan of the installation together with suitable information for its winter close-down and start-up in the spring. Most will also offer a contract to carry out these operations each year. It is in the greenkeeper's interests not only to become familiar with his system and its components and capabilities, but to ensure also that the supplier and installer provides full guidance on its operation and maintenance.



For maximum over-winter protection, it is recommended that the top of electrical solenoid valves be removed complete with soil assembly, diaphragm and spring, wrapping the parts in polythene.

Illustration: Wright Rain Ltd



Open all drain valves in the underground pipework, not forgetting those crossing streams or ditches which are highly susceptible to freezing.

Illustration: Wright Rain Ltd

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