

## Hydraulic Irrigation, What's That?

by Matt Springer

Assistant Superintendent, Sunset Ridge C.C.

Sunset Ridge Country Club uses a hydraulic irrigation system with electromechanical satellites which were installed in 1977. The electromechanical controllers use several knobs, pins and gears. The closest comparison is watering putting greens using a lamp and appliance timer. To control nightly irrigation cycles with this type of controller, you must rely on several timers with up to 15 minutes in time variation. Sunset Ridge's irrigation satellites have eleven stations all with individual time adjustments. Over the years Dennis Wilson, Golf Course Superintendent, has adjusted each station time so they all water as close to the same as possible. If for any reason a water time needs to be changed, to water lightly for example, we must change around 372 water time dials. Another drawback to these controllers is the lack of sprinkler head control. In a single satellite, only one head can be run at a time. On a green with four heads, it would take 40 minutes to complete a 10 minute cycle. An irrigation cycle of 10 minutes on a fairway could take one hour and fifty minutes or longer depending on the size of the fairway. It is possible that when the program has finally reached the last station an applied fertilizer may have burned or a pesticide has dried, becoming ineffective. Hydraulic systems are uncommon in the Chicagoland area, and new hydraulic installations are rare. With hydraulic systems there is no control of pressure at the heads. The farther you get away from the pumping station, the lower the head pressure. Another disadvantage is the length of time it takes for a head to come up or go down. This makes water times difficult to program accurately.

When programming an evening schedule on a hydraulic system, the irrigation program must be set up manually, run times must be carefully calculated and start times set not to overlap and exceed pumping station limitations. This is difficult when you are relying on mechanical timers and slow hydraulic valves.

The Network 8000 computerized irrigation system, one of TORO's newest and most advanced irrigation systems, utilizes double row sprinkler heads and uses an IBM 486 computer as its central controller with satellites of precision solid state design.

With the new solid state electric satellites, total control sprinkler operation is achieved. The Network 8000 satellites have control of up to 32 stations which can control two heads each and run 6 stations simultaneously. This is useful for irrigating fertilizer applications or cooling hot greens in the summer sun. If a green needed a fertilizer watered in for 10 minutes, it would only take ten minutes if you ran all the heads at one time. Allowing a complete green could be watered before an approach shot is hit.

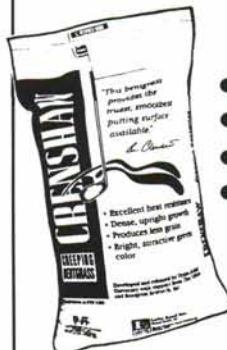
All the controllers have a digital display clock which have the time, day and month. The stations can be individually adjusted from 0 to 900% for perfect watering times. One important point about the precision programming of these satellites is the exact water time of the sta-

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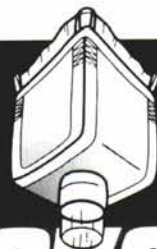
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(Hydraulic Irrigation continued)

tions. If a station is programmed to run for 5 minutes it will run for 5 minutes at exactly the time you set it to run. An electrically controlled head turns on the instant the electric signal is sent and also have a pressure relating spring which controls pressure and avoids having heads far from the pump house weeping. Electronically controlled heads are easy to run in pairs for shorter cycle times by just combining the wires at the satellite. The heads are also easier to repair and can be turned on and off at the head.

With the newer TORO computerized systems, pump station limitations are preset and the computer will keep you from exceeding them. For example, to water greens and tees for a set time you would set a start time for each and the computer will do the rest. Irrigation programming can also be set up according to plant materials, soil conditions, terrain and superintendent requirements. A computerized irrigation system with electrically controlled sprinkler heads will greatly improve course conditions. During heat stress periods there would be greener rough and less dormant areas. Irrigated roughs would improve rough lies and give you greater mowing variations. Irrigation would be more even, having less wet spots and dry spots.

After using a computerized irrigation system over the past four years, and have come to use Sunset Ridge's hydraulic system, it is hard to believe how little control we actually have with our system.



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