Golf Irrigation Product Catalog

GOLF IRRIGATION | *Built on Innovation®*

VOLUME 40

Hunter®

hunterindustries.com/golf

Table of **CONTENTS**

Our Story

Founded in 1981, Hunter Industries is a family-owned, global manufacturer of best-in-class solutions for residential, commercial, municipal, agricultural, and golf course irrigation systems, as well as the outdoor lighting industry. Headed by CEO Greg Hunter, our Global Operations Team provides leadership for the entire company. The core mission of Hunter Industries will always remain the same: to deliver valued products and services backed by unwavering customer support, grow the company conscientiously, and remain true to the culture that makes our employees proud to work at Hunter. **Learn more at hunterindustries.com**.

Product Highlights

When it comes to ensuring green and playable golf courses, irrigation simply must become more efficient. Achieving this goal requires more than high-performing golf irrigation products that push the boundaries of innovation. You need a trusted partner, from conception to installation and beyond.

Pilot Command Center Software

With cloud database backups, web-based features, and POGO® visual insight integrations, Pilot Cloud lays the foundation for the future of golf course irrigation control. Offering optimized display and functionality and more informed scheduling adjustments using real-time data, this intuitive solution creates more possibilities for third-party integrations and mobile optimization.

TTS-800 Series Golf Rotors

Maximize performance in the field with our top-of-the-line golf rotors. Featuring exclusive PressurePort™ Nozzle Technology for maximum distribution uniformity, no-dig Total-Top-Serviceability for easy maintenance, and the largest flange compartment in the industry, these rotors ensure peak playability and years of reliable operation.

PILOT® CONTROL NETWORK

Pilot CCS

Pilot IHS

TTS Rotors

DEMAND THE BEST.
CHOOSE HUNTER GOLF.

Pilot CCS
Command Center Software

With next-generation Pilot Command Center Software, you can create hydraulically safe and efficient daily course watering plans faster than ever before. Pilot helps manage thousands of individually controlled sprinklers in seconds. It's the ideal management tool for an Integrated Hub System.

Pilot IHS
Integrated Hub System

Integrated Hub Systems help you save time and money from day one. Compared to a Field Controller System, an Integrated Hub System uses less copper wire and requires fewer splices, valve boxes, and concrete pads. This means lower costs, faster installation, and easier system diagnosis and repair, if needed. You can also easily expand the system if desired.

TTS Rotors
with Two-Way Modules

Two-way module (TWM) technology built into every TTS rotor permits highly efficient control of complex irrigation systems. The rotors are connected to the system via low-voltage, direct-burial communication cable.

ICD-HP PROGRAMMER
Communicate Directly with TWMs

Program and troubleshoot Pilot Two-Way Modules with no digging or wires required. The handy device communicates directly through the plastic without barcodes, saving you time in the field.

PILOT® COMMAND CENTER SOFTWARE

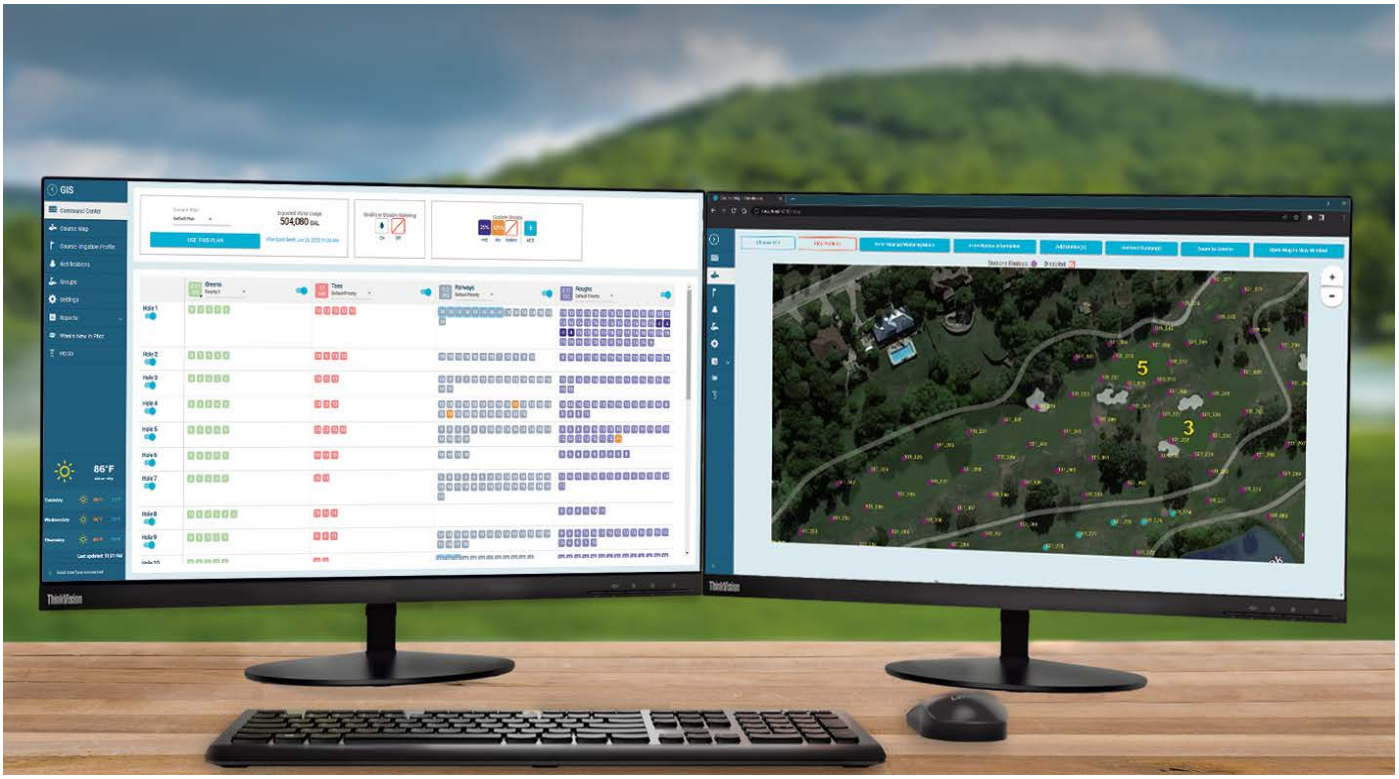
Enjoy simple yet powerful irrigation management and control with revolutionary Pilot CCS.

Pilot Command Center Software (CCS) is easy to use and has all the features you need to reliably water your course. Run times can be adjusted manually or determined automatically using evapotranspiration (ET). You create watering plans directly in the Command Center — a powerful irrigation planning tool that shows you every sprinkler on the course, organized according to your management style.

PILOT SPECIFICATIONS

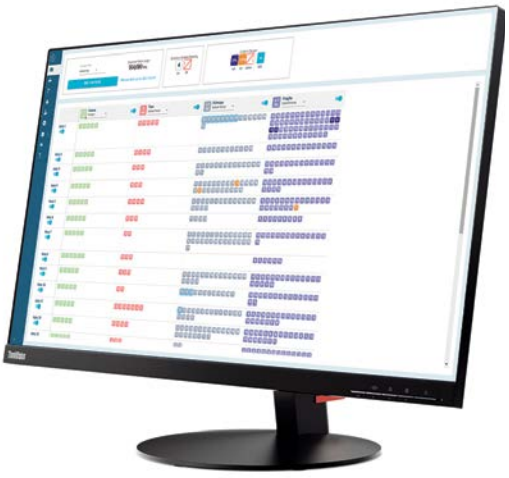
- Operating system: 64-bit Windows®
- Maximum controllers or hubs: about 1,000
- Maximum Two-Way Module stations: about 1 million
- Sprinkler run time options: minutes, inches, or ET
- Hydraulic management: fully customizable down to individual stations
- Mapping: interactive and based on scalable vector graphics (SVG)

Pilot Command Center Software



SET SCHEDULES WITH THE COMMAND CENTER

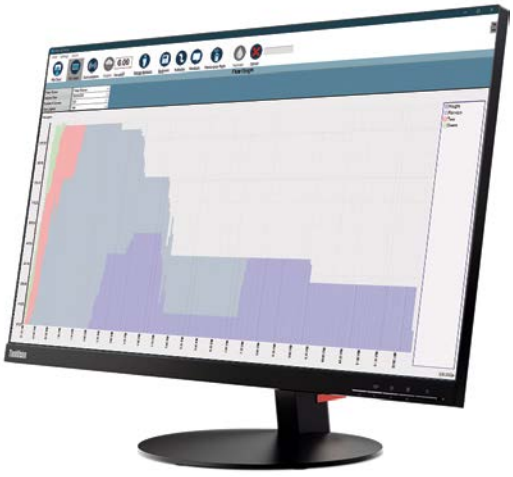
Planning daily watering for your course has never been simpler. The Command Center shows every sprinkler on the course, logically arranged according to your personal management requirements. You can easily make daily adjustments with just a few clicks of the mouse.



Command Center

SPEND LESS TIME RUNNING YOUR PUMP

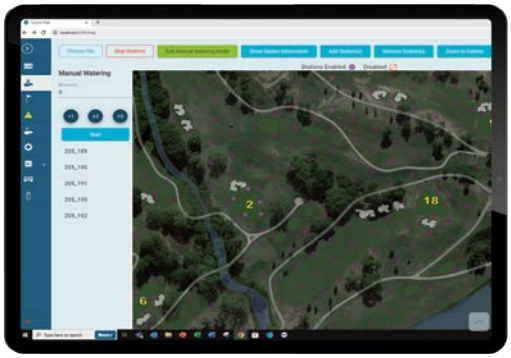
Pilot CCS uses your electrical and hydraulic data to efficiently balance sprinkler demand while maintaining flow at safe velocities. To protect your pump station and maintain optimal sprinkler uniformity, you can gradually step up irrigation in safe increments.



Flow Optimization

ACCESS INSIGHTS FROM ANYWHERE WITH PILOT CLOUD

Bring powerful irrigation control and monitoring to your fingertips with Pilot Cloud. Web-based features enable optimized display and functionality from any location on any device, while third-party integrations save time and resources with more informed scheduling adjustments using real-time data. Plus, cloud-based backups ensure peace of mind if the computer ever needs to be restored.



Maps

PILOT® FIELD CONTROLLER SYSTEMS

The sleek, clean design of Pilot Field Controllers makes them easy to install, use, and maintain.

KEY BENEFITS

- Five languages
- Up to 80 station outputs in 10-station increments
- Up to three Hunter golf Valve-in-Head Technology rotors per station output
- Up to 20 simultaneous Hunter golf Valve-in-Head Technology rotors active per controller
- 32 automatic schedules with eight start times per schedule
- Exclusive Safe-Toggle™ Technology for mechanical on-off-auto station switches
- 1 to 31 day skip-day scheduling
- One-touch rain shutdown up to 30 days or indefinitely
- One-touch Safe-Pause™ Technology with 30-minute safety timer
- 1% to 300% run time seasonal adjustment
- Seasonal start time adjustment is used to quickly change all start times plus or minus 30 minutes
- PilotFCP Utility enables remote scheduling from a computer or tablet for basic course irrigation management

Pilot-FC Plastic Pedestal
Height: 39"
Width: 24"
Depth: 17"
Weight: 70 lbs

Pilot-FI Field Interface
One is required with any Pilot Network system. It is used to link the central computer to the field equipment. For indoor locations only.

Height: 12"
Width: 11½"
Depth: 3¼"
Weight: 4½ lbs

POWER SUPPLY INPUT

Two voltage settings:

- 120 VAC nominal voltage at 60/50 Hz (100 to 132 VAC)
- 230 VAC nominal voltage at 50/60 Hz (200 to 260 VAC)

Current requirement:

- 1 A under load at 110 VAC
- 0.7 A under load at 230 VAC

For additional information, see electrical data on **page 64**.

OUTPUT VOLTAGE

- Station: 1 A at 24 VAC
- Hot post: 0.4 A at 24 VAC
- Capacity: Three standard 24 VAC Hunter golf rotors per output; 20 maximum simultaneously running stations

RADIO SYSTEMS

- UHF radio: 450 to 490 MHz; other UHF frequencies available for selected markets

WIRED SYSTEMS

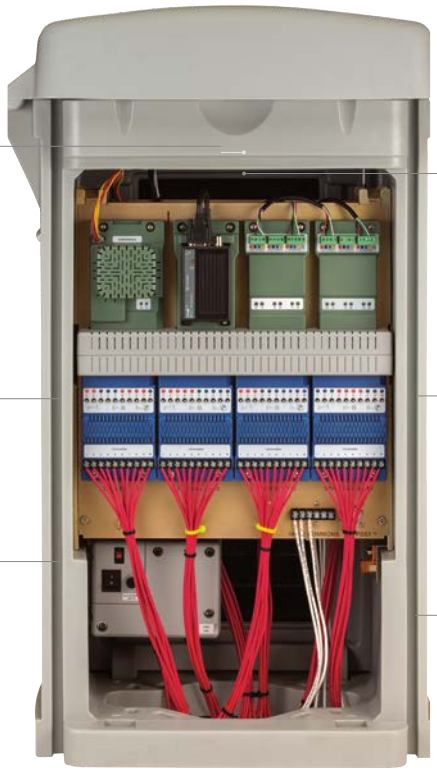
- GCBL: Two twisted pairs of shielded wire, 18 AWG
- GCBLA: Two twisted pairs of shielded and armored wire, 18 AWG

PILOT-FI – SPECIFICATION BUILDER: ORDER 1 + 2 + 3

1 Model	2 Standard Features	3 Communication Options	
Pilot-FI	Plastic pedestal (gray)	**HWR**	Hardwire communications
		UHFA	UHF radio communications (license required)

Examples:
Pilot-FI-HWR = Field Interface with hardwire communications
Pilot-FI-UHFA = Field Interface with UHF radio communications

THE PILOT FIELD CONTROLLER IS ENGINEERED EXCLUSIVELY FOR GOLF COURSE IRRIGATION MANAGEMENT



Water-Resistant Keypad
Large backlit display with convenient function buttons for the most commonly used features. Built-in system diagnostics make troubleshooting your system a breeze.

Safe-Toggle Station Switches and Diagnostic LED Indicators
Standard for all station outputs, these features provide quick troubleshooting and watering tools.

Conveniently Located Dual-Voltage (120/230 VAC) Junction Box
Features heavy-duty surge protection and even includes a spare fuse.

Easy to Service
The only tool required is a Phillips screwdriver, which is included with every controller.

Modular 10-Station Expansion Boards
Color-coded modular components have captured screws. This means no more lost screws, which simplifies assembly and troubleshooting.

Spacious Wiring Area
No exposed circuitry or loose wires. All circuit boards are encapsulated in polyurethane to protect them from moisture, insects, and temperature extremes.

PILOT-FC – SPECIFICATION BUILDER: ORDER 1 + 2 + 3

1 Model	2 Standard Features	3 Communication Options	
Pilot-FC20 (20-station)	Plastic pedestal (gray) 120/230 VAC, 60/50 Hz dual-voltage transformer	**S**	Standalone Field Controller with no central communications
Pilot-FC30 (30-station)		**HWR**	Hardwire communications
Pilot-FC40 (40-station)		**UHFA**	UHF radio communications (license required)
Pilot-FC50 (50-station)			
Pilot-FC60 (60-station)			
Pilot-FC70 (70-station)			
Pilot-FC80 (80-station)			

Examples:
Pilot-FC40-S = 40-station, standalone Field Controller with no central communications
Pilot-FC70-HWR = 70-station Field Controller with wired communications

PILOT® INTEGRATED HUB SYSTEMS

Save money without sacrificing in-field sprinkler control with highly flexible and reliable Pilot Integrated Hub Systems.

Integrated Hub Systems use significantly less wire than conventional systems. This means lower costs, faster installation, and easier system diagnosis and repair if needed. They can be easily expanded — with minimal digging and disruption of turf — by adding more Pilot Two-Way Modules (TWMs) instead of running additional wires.

Pilot Two-Way Modules are available with 1-, 2-, 4-, and 6-station outputs, making it possible to run each head on an entire green with a single device. In all, TWMs let you operate about 1,000 stations up to approximately 1.5 mi from a single hub.

Pilot Two-Way Modules include built-in surge suppression, wirelessly programmable station addresses using the ICD-HP Programmer, and two-way communication with confirmation and status indication. Pilot Surge Suppressors are required when the system is installed with integrated TWMs.

The PilotFCP Utility enables remote scheduling from a computer or tablet for basic course irrigation management. It can be directly connected to a Pilot Integrated Hub, eliminating the need for a Pilot Field Interface and communication module in smaller systems.

TWM Hub

Water-Resistant Keypad
The backlit display and illuminated control panel mean you can easily access the hub, day or night

Diagnostic LED Indicators
For all functions on 250-station output modules

250-Station Output Modules
Enable your Integrated Hub System to expand with your course; start with 250 and grow to 999

Pilot TWMs

1- and 2-station:
Height: 3⅝"
Width: 1½"
Depth: 1"
Weight: 5 oz

4- and 6-station:
Height: 3⅝"
Width: 1¾"
Depth: 1½"
Weight: 9 oz

The distinct yellow design makes it much easier to find the modules in dark valve boxes or buried in the soil.

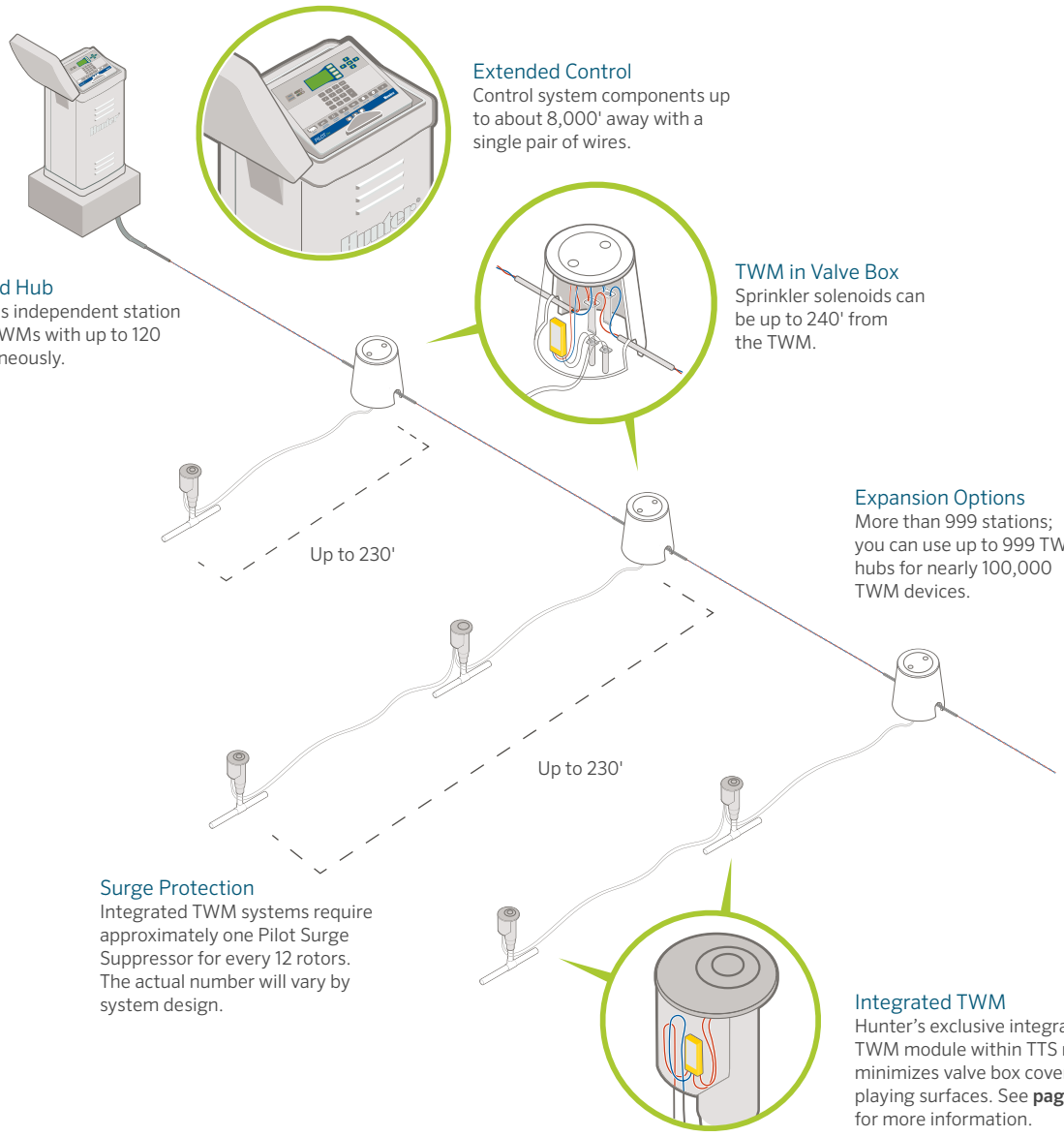
Pilot Surge Suppressor

All integrated TWM rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. Integrated TWM systems require grounding with Pilot Surge Suppressors coupled to an appropriate grounding plate or rod. Hunter recommends a minimum of one Pilot Surge Suppressor for every 12 installed rotors or as per project specification.

PILOT-DH – SPECIFICATION BUILDER: ORDER 1 + 2 + 3

1 Model	2 Standard Features	3 Communication Options
Pilot-DH250 (250-station)		**S** Standalone TWM hub with no central communications
Pilot-DH500 (500-station)	Plastic pedestal (gray)	**HWR** Wired communications
Pilot-DH750 (750-station)	120/230 VAC, 60/50 Hz switching transformer	**UHFA** UHF radio (license required)
Pilot-DH999 (999-station)		

Examples:
Pilot-DH250-S = 250-station, standalone TWM hub with no central communications
Pilot-DH999-HWR = 999-station TWM hub with wired communications



TWM – SPECIFICATION BUILDER: ORDER 1 + 2

1 Model		2 Standard Features
Pilot-100	1-station TWM	Built-in surge suppressor
Pilot-200	2-station TWM	
Pilot-400	4-station TWM	Waterproof DBRY-6 Splice Connectors included
Pilot-600	6-station TWM	
Pilot-SG	Inline surge suppression (for integrated TWM rotor systems)	

Example:
Pilot-100 = 1-station TWM

Wireless Programming

The ICD-HP Programmer is used to test, troubleshoot, and program integrated TWMs. It allows you to wirelessly link directly to TWMs without removing the TTS cover. You can also use it to update the coding inside the TWM's microprocessor.

See the ICD-HP Programmer on **page 13**.

POGO® HARDWARE

Integrate the unmatched hardware and data analysis from POGO with the power and intuition of the Pilot Control Network to save time, maximize resources, and ensure peak playability.

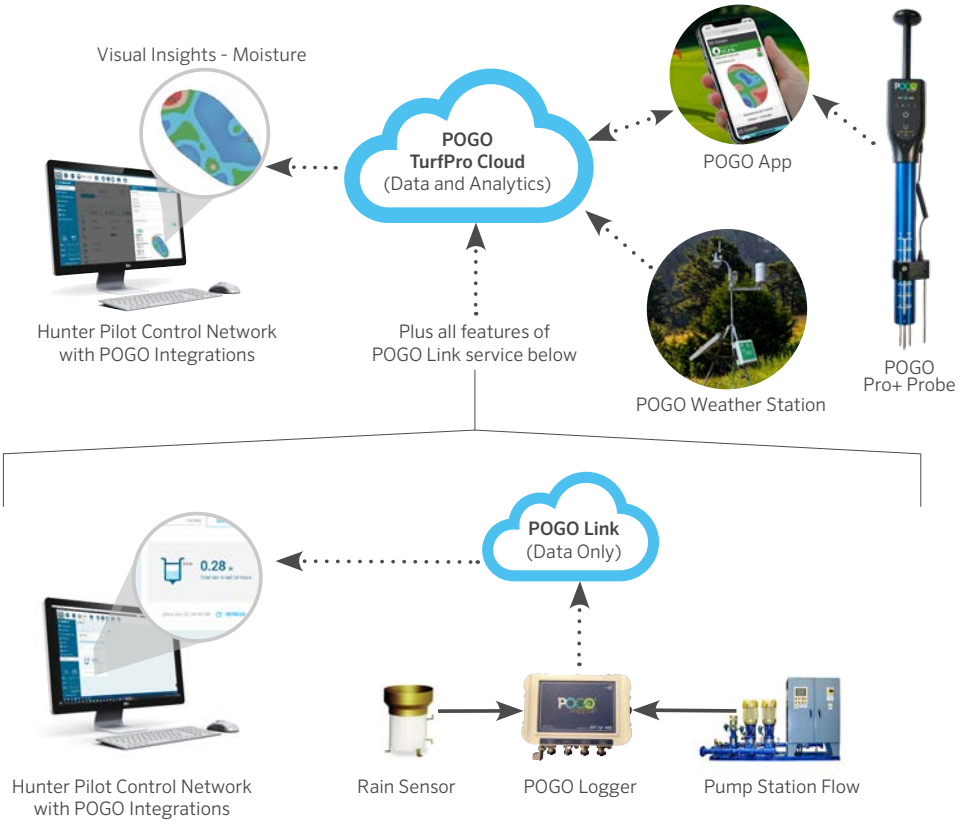
MANAGE YOUR WAY

Subscribe to the all-inclusive **POGO TurfPro Cloud** or the sensor-based **POGO Link** service to gain better visibility of your golf course irrigation efficiency.

- Achieve optimum irrigation efficiency with more informed scheduling adjustments using real-time soil moisture, salinity, and temperature data
- Better understand turfgrass performance between irrigation cycles
- Identify and address problem areas with color-coded graphics that highlight turf in need of immediate attention — often before symptoms appear

1 POGO TurfPro Cloud – Data and Analytics with Advanced Visual Insights
Proactively drive improved, consistent playability by knowing the exact conditions of your turf.

2 POGO Link Service – Data Only
Make more informed irrigation adjustments by monitoring key environmental data in real time.



POGO HARDWARE	
Catalog Number	**Part Description**
POGO-PRO-PLUS	POGO Pro+ Tool with Temperature Sensor. Active TurfPro Cloud subscription* required.
POGO-PRO-PLUS-KIT	POGO Pro+ Tool with Temperature Sensor, Case, Cart Mount, and Replacement Sensor. Active TurfPro Cloud subscription* required.
POGO-LOGGER	POGO Data Logger with cellular communication for use with other sensors. Active data plan subscription* required.
POGO-RAIN-CAN	POGO Rain Can - 6" Tipping Precipitation Gauge for use with POGO Logger
POGO-SOIL-SENSOR	POGO Soil Sensor - Buried Hydraprobe Root Zone Sensor for use with POGO Logger
POGO-WEATHER	POGO Weather Station with cellular communication. Mounting sold separately. Active TurfPro Cloud subscription* required.
POGO-TRI-POD	POGO Tripod Mount for Weather Station

*Go to pogoturfpro.com to set up a subscription.

MAINTENANCE RADIO

Save time and money with seamlessly integrated remote radio control.

KEY BENEFITS

- Hunter's innovative StraightTalk™ Technology enables wireless remote control at ranges up to 2 miles whether or not the central computer is turned on
- Instant control of stations, blocks, and programs
- Instant audio confirmation of commands
- Easy commands that show in display before sending
- Compact size, industrial construction
- Suitable for two-way voice communication with crews and office
- High signal output: 2 W, UHF (450 to 490 MHz)*

* License required

TRNR Radio
Height: 4"
Width: 2"
Depth: 1¼"
Weight: 7 oz

ICD-HP PROGRAMMER

Gain wireless, handheld programming and diagnostic capabilities for Pilot Two-Way Modules.

KEY BENEFITS

- Wirelessly program TWM addresses
- Program TWM station numbers in any order or skip stations for future expansion
- Turn stations on and view solenoid status, current in milliamps, and more
- Built-in voltmeter for testing communication path
- Communicates with TWMs directly through plastic case; wireless electromagnetic induction saves waterproof connectors
- Communicates through-the-top of integrated TWM rotor cases; no cover removal required

ICD-HP Programmer
Height: 8¼"
Width: 3⅞"
Depth: 2"

Packaged in an outdoor carrying case, this complete kit includes probes, an induction cup, cable, a USB power cable for bench use, and four AA batteries for fieldwork.

ICD-HP PROGRAMMER

ROTOR SOLUTIONS
FOR EVERY GOLF COURSE

TTS-800 SERIES: THE MOST ADVANCED ROTORS IN THE GOLF INDUSTRY

Over the last four decades, Hunter Industries has built a longstanding reputation for innovation in the golf industry. Some of our revolutionary inventions include the first Windows-based central control system, the first Total-Top-Service (TTS) rotors, the first Decoder-in-Head (DIH) rotors with integrated Pilot Two-Way Modules, and the powerful and water-efficient G-85 Gear Drives.

Our newest products in this groundbreaking lineup are the TTS-800 Series Golf Rotors — the most innovative and technologically advanced rotors in the industry. Combining accuracy and power, they provide maximum uniformity and longevity in the field. They also reduce the challenges of reclaimed water use or poor water quality, thanks to their high-torque gear drives. The fast-access flange compartment is the golf sector's largest, and it can accommodate full-sized DBRY-6 Splice Connectors. Even routine maintenance is a breeze with Total-Top-Serviceability, which allows solenoid and pressure regulator servicing without mainline depressurization.

Whether your golf rotor needs fall into our budget-conscious B Series, the advanced G-800 Series, or our top-of-the-line TTS-800 Series, Hunter Industries offers a full range of solutions that will exceed your expectations and ensure beautiful, playable courses for years to come.

GOLF ROTORS

Look for this icon. *All Hunter Golf rotors are 100% water-tested to ensure reliable operation once installed.*

UNIFORMITY **YOU CAN COUNT ON**

Playability and water efficiency go hand-in-hand when it comes to golf course management. This means great distribution uniformity and proper irrigation scheduling are crucial to ensuring world-class performance and beautiful results.

Healthy, playable turf starts with top-level irrigation products — like Hunter's ultra-reliable TTS-800 Series Golf Rotors with their superior distribution uniformity. Couple this with the best support team in the business, and Hunter's golf solutions are second to none.

At Hunter Golf, we pride ourselves on providing products that set the standard in efficiency. Each year, we work directly with golf course superintendents worldwide to conduct comprehensive irrigation system audits that maximize water savings, reduce operating costs, and enhance the golf experience for players and course managers alike.

Choose Hunter Golf irrigation products for best-in-class performance and enhanced playability.

BEST-IN-CLASS GEAR DRIVES
THAT SET THE STANDARD FOR PLAYABILITY

TTS-800 Series Golf Rotors

GT-880

GT-884

GT-885

LEADING THE WAY WITH POWER, PERFORMANCE, AND VERSATILITY

We've spent decades of research and millions of dollars to develop the best gear drives in the golf industry. When we introduced the G-85 Gear Drive, it quickly earned the respect of golf superintendents for its powerful performance and unmatched reliability. It also became known for its exceptional versatility, which boosted its popularity even more. That's because the adjustable arc drive with triple forward-facing nozzles can be adjusted not only to a non-reversing, full-circle rotation. It also can be configured at the factory as a G-84 Gear Drive in an opposing-nozzle, full-circle configuration.

But we didn't stop there. Next, we added the direct-drive G-80 — a hybrid version that blends the G-85's outstanding platform with the proven G-80 Gearbox to create the best full-circle drive for the golf sector. Today, this revolutionary gear drive technology powers our full range of TTS-800 Series, G-800 Series, and B Series Golf Rotors. No matter which rotor is best for your golf irrigation needs, you can rest assured knowing that the most powerful gear drives in the industry will deliver long-lasting performance in every application.

GREATER FLEXIBILITY WITH DUAL-TRAJECTORY NOZZLES

Standard Nozzles

Low-Angle Nozzles

To ensure precise distribution uniformity, we created a dedicated set of short- and mid-range nozzles to complement our gear drives. When combined with the primary nozzles that the G-80, G-84, and G-85 share, they deliver precise targeting for any application.

Choose from a wide assortment of wind-fighting 22.5° standard trajectory nozzles or 15° low-angle trajectory nozzles. For maximum throw, uniform distribution, and reliable performance under any condition, Hunter gear drives offer everything you need.

TTS-800 SERIES GOLF ROTORS
ADVANCED FEATURES

With Total-Top-Service (TTS) Technology

Access Everything Through the Top

This no-dig solution is appreciated by golfers, management, and especially the superintendent

Large and Flexible Yardage Marker Capabilities

Oversized marker plates with standard black or red, white, blue, and purple options

Largest Flange VIH Compartment in the Industry

Spacious cavity with enough room for full-sized DBRY-6 Splice Connectors

Unitized Inlet Valve Design Includes Serviceable Components

Contamination damage is quickly resolved with replaceable valve seat and seat seal

Easy Access and Servicing of Solenoid and Pressure Regulators

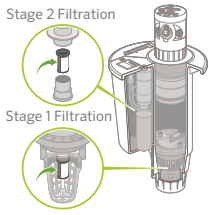
Color-coded components are removed and replaced without mainline depressurization

Exclusive Inlet Valve Includes Self-Cleaning Capabilities

Proprietary Filter Sentry® Mechanism wipes debris from the stainless steel screen with every activation

Single-Point Fast Access to Flange Compartment

Extra-thick compartment lid is retained with stainless steel ¼-turn fastener



Two-Stage Serviceable Filtration in Valve Circuitry

Oversized stainless steel screens at inlet valve and pilot valve are easily cleaned or replaced

Heavy-Duty Flanged and Ribbed Body Design

Impact-resistant and ultra-durable design includes extra-strength PVC Acme inlet

Three Cable Entry Ports at Base of Flange Compartment

Makes splice and cable connections fast, easy, and organized

Low-Bounce Rubber Cover Kit

Impact-absorbing design reduces ball ricochet around the greens

No-Bounce Turf Cup Kit

Recessed turf cup design is aesthetically clean and eliminates ball ricochet

Access Everything, Including Two-Way Modules, Through the Top

This no-dig solution is appreciated by golfers, management, and especially the superintendent

Largest Flange DIH Compartment in the Industry

Spacious cavity with enough room for Pilot Two-Way Modules and full-sized DBRY-6 Splice Connectors

Two-Way Modules Are Housed in the DIH Rotor's Spacious Flange Compartment

Improves playability and eliminates unsightly enclosures around the course

Programming Two-Way Modules Wirelessly From the Surface with No Disassembly

Quick and easy to program and perform diagnostics before or after installation with ICD-HP Programmer

TTS-800 SERIES GOLF ROTORS
ADVANCED FEATURES

With Integrated Two-Way Modules

Individual Two-Way Module and Solenoid Components Within Flange Compartment

Isolated/separated configuration minimizes yearly maintenance costs

Two-Station DIH Rotor Option

Perfect cost-effective solution for back-to-back heads around greens

State-of-the-Art Surge Suppression

Earth grounding is easily added with the Pilot Surge Suppressor

DIH Rotors Include All the Unique Features and Benefits of TTS Rotors

Makes splice and cable connections fast, easy, and clean

Seamless, No-Splice Connection Between Two-Way Module and Solenoid

Maintains ongoing electrical continuity with no connectors required

Durability, Efficiency, and Reliability from the Makers of the Industry's First TTS and DIH Rotors

Peace of mind from the world's leading producer of gear-driven rotors

TTS-800 SERIES

These rotors have Total-Top-Serviceability, powerful high-torque gear drives, and the largest flange compartment in the industry to accommodate all Pilot® Two-Way Module components.

KEY BENEFITS

- Dedicated, true full-circle model distinguished by a black collar
- Extra-large, fast access flange compartment to accommodate full-size DBRY-6 Splice Connectors and an integrated Pilot Two-Way Module
- Solenoid and pressure regulator are serviceable without system depressurization
- Exclusive PressurePort™ Nozzle Technology optimizes incoming pressure at each nozzle to increase consistency and maximize distribution uniformity
- High-torque gear drive is the strongest in the industry to mitigate the challenges of debris infiltration
- Proprietary Filter Sentry™ Mechanism cleans the filter with every opening and closing cycle
- All TTS-800 Series Golf Rotors advanced features listed on **pages 18 to 21**

GT-880
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

OPERATING SPECIFICATIONS

- Radius: 49' to 97'
- Flow: 14.2 to 58.5 GPM
- Pressure range: 50 to 100 PSI
- All TTS rotors are pressure rated at 150 PSI
- Nozzle range: 15 to 53
  - 10 standard trajectory (22.5°) nozzles
  - 9 low-angle trajectory (15°) nozzles

OPTIONS

- C – Check-O-Matic Technology checks up to 25' in elevation change and readily converts to normally open hydraulic operation with through-the-top connections
- D – Decoder Valve-in-Head Technology with all "E" specifications below*
- DD – Two-station Decoder Valve-in-Head Technology with all "E" specifications below*
- E – Electric Valve-in-Head Technology with adjustable pressure regulation, on off-auto selector, 190 mA (350 mA inrush) solenoid with captive plunger and internal downstream bleed

* All DIH rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. See **page 11** for critical recommendations on grounding DIH rotors.

GT-880 – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Regulation
GT-880 = Full-circle	**C** = Check-O-Matic Technology* **D** = Decoder Valve-in-Head Technology **DD** = Two-station decoder Valve-in-Head Technology **E** = Electric Valve-in-Head Technology **Converts to N.O. hydraulic Valve-in-Head Technology*	**15 to 53** = Installed G-880 nozzle	**P5** = 50 PSI (nozzles 15 to 18) **P6** = 65 PSI (nozzles 18 to 25) **P8** = 80 PSI (nozzles 25 to 53)

Example:
GT-880-E-48-P8 = GT-880 full-circle electric Valve-in-Head Technology, installed 48 nozzle, 80 PSI regulation

GT-880 NOZZLE PERFORMANCE DATA*

Nozzle Set			Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
● Tan 803611	15 White	● Gray 315317	50	49	14.2	0.57	0.66
			60	51	15.7	0.58	0.67
			65	52	16.4	0.58	0.67
			70	53	17.0	0.58	0.67
			80	55	18.2	0.58	0.67
● Tan 803611	18 Orange	● Gray 315317	50	56	17.2	0.53	0.61
			60	58	18.8	0.54	0.62
			65	59	19.7	0.54	0.63
			70	60	20.0	0.53	0.62
			80	61	21.2	0.55	0.63
● Tan 803611	20 Brown	● Gray 315317	50	57	18.4	0.55	0.63
			60	59	20.3	0.56	0.65
			65	61	21.4	0.55	0.64
			70	63	21.6	0.52	0.60
			80	64	22.7	0.53	0.62
● Tan 803611	23 Green	● Lt. Blue 315311	50	63	21.6	0.52	0.60
			60	65	23.0	0.52	0.61
			65	66	24.0	0.53	0.61
			70	67	24.9	0.53	0.62
			80	68	26.6	0.55	0.64
● Tan 803611	25 Blue	● Lt. Blue 315311	65	71	28.6	0.55	0.63
			70	73	29.7	0.54	0.62
			80	74	31.7	0.56	0.64
			90	75	33.7	0.58	0.67
			100	77	35.8	0.58	0.67
● Tan 803611	33 Gray	● Lt. Blue 315311	65	74	30.9	0.54	0.63
			70	75	32.0	0.55	0.63
			80	77	34.2	0.56	0.64
			90	79	36.2	0.56	0.64
			100	81	38.2	0.56	0.65
● Tan 803611	38 Red	● Lt. Blue 315311	65	77	35.1	0.57	0.66
			70	79	36.6	0.56	0.65
			80	82	38.9	0.56	0.64
			90	84	41.3	0.56	0.65
			100	87	43.6	0.55	0.64
● Tan 803611	43 Dk. Brown	● Blue 315315	-	-	-	-	-
			70	83	41.3	0.58	0.67
			80	85	43.6	0.58	0.67
			90	87	46.3	0.59	0.68
			100	89	48.8	0.59	0.68
● Dk. Brown 803610	48 Dk. Green	● Dk. Blue 833500	-	-	-	-	-
			70	90	46.9	0.56	0.64
			80	92	48.9	0.56	0.64
			90	94	50.5	0.55	0.63
			100	96	53.5	0.56	0.65
● Dk. Brown 803610	53 Dk. Blue	● Dk. Blue 833500	-	-	-	-	-
			70	91	49.8	0.58	0.67
			80	93	52.2	0.58	0.67
			90	95	55.5	0.59	0.68
			100	97	58.5	0.60	0.69

● = Nozzle plug P/N 315300 installed in the front side of the nozzle housing.

* Complies to ASAE standard. All precipitation rates calculated for 360° operation. All triangular rates are equilateral.

GT-880 STANDARD NOZZLES

GT-880 LOW-ANGLE NOZZLES**

** Low-angle nozzles reduce the radius by 15%.

Easy-Access Servicing

An extra-thick compartment lid is retained with a ¼-turn, stainless steel, single-point fastener.

Spacious Flange Compartment

The largest and deepest compartment in the industry offers plenty of room for full-sized DBRY-6 Splice Connectors.

TTS-800 SERIES

These rotors have Total-Top-Serviceability, powerful high-torque gear drives, and the largest flange compartment in the industry to accommodate all Pilot® Two-Way Module components.

KEY BENEFITS

- Adjustable model distinguished by a gray collar that comes factory set in a true full-circle configuration
- Extra-large, fast access flange compartment to accommodate full-size DBRY-6 Splice Connectors and an integrated Pilot Two-Way Module
- Solenoid and pressure regulator are serviceable without system depressurization
- Exclusive PressurePort™ Nozzle Technology optimizes incoming pressure at each nozzle to increase consistency and maximize distribution uniformity
- High-torque gear drive is the strongest in the industry to mitigate the challenges of debris infiltration
- Proprietary Filter Sentry™ Mechanism cleans the filter with every opening and closing cycle
- All TTS-800 Series Golf Rotors advanced features listed on **pages 18 to 21**

GT-884
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

OPERATING SPECIFICATIONS

- Radius: 49' to 97'
- Flow: 14.2 to 58.5 GPM
- Pressure range: 50 to 100 PSI
- All TTS rotors are pressure rated at 150 PSI
- Nozzle range: 15 to 53
  - 10 standard trajectory (22.5°) nozzles
  - 9 low-angle trajectory (15°) nozzles

OPTIONS

- C – Check-O-Matic Technology checks up to 25' in elevation change and readily converts to normally open hydraulic operation with through-the-top connections
- D – Decoder Valve-in-Head Technology with all "E" specifications below*
- DD – Two-station Decoder Valve-in-Head Technology with all "E" specifications below*
- E – Electric Valve-in-Head Technology with adjustable pressure regulation, on-off-auto selector, 190 mA (350 mA inrush) solenoid with captive plunger and internal downstream bleed

* All DIH rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. See **page 11** for critical recommendations on grounding DIH rotors.

GT-884 – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Regulation
GT-884 = Full-circle (convertible to forward-facing adjustable arc rotor)	**C** = Check-O-Matic Technology* **D** = Decoder Valve-in-Head Technology **DD** = Two-station decoder Valve-in-Head Technology **E** = Electric Valve-in-Head Technology ** Converts to N.O. hydraulic Valve-in-Head Technology*	**15 to 53** = Installed G-880 nozzle	**P5** = 50 PSI (nozzles 15 to 18) **P6** = 65 PSI (nozzles 18 to 25) **P8** = 80 PSI (nozzles 25 to 53)

Example:
GT-884-E-48-P8 = GT-884 full-circle electric Valve-in-Head Technology, installed 48 nozzle, 80 PSI regulation

GT-884 NOZZLE PERFORMANCE DATA*

Nozzle Set			Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
● Tan 803611	15 White	● Gray 315317	50	49	14.2	0.57	0.66
			60	51	15.7	0.58	0.67
			65	52	16.4	0.58	0.67
			70	53	17.0	0.58	0.67
			80	55	18.2	0.58	0.67
● Tan 803611	18 Orange	● Gray 315317	50	56	17.2	0.53	0.61
			60	58	18.8	0.54	0.62
			65	59	19.7	0.54	0.63
			70	60	20.0	0.53	0.62
			80	61	21.2	0.55	0.63
● Tan 803611	20 Brown	● Gray 315317	50	57	18.4	0.55	0.63
			60	59	20.3	0.56	0.65
			65	61	21.4	0.55	0.64
			70	63	21.6	0.52	0.60
			80	64	22.7	0.53	0.62
● Tan 803611	23 Green	● Lt. Blue 315311	50	63	21.6	0.52	0.60
			60	65	23.0	0.52	0.61
			65	66	24.0	0.53	0.61
			70	67	24.9	0.53	0.62
			80	68	26.6	0.55	0.64
● Tan 803611	25 Blue	● Lt. Blue 315311	65	71	28.6	0.55	0.63
			70	73	29.7	0.54	0.62
			80	74	31.7	0.56	0.64
			90	75	33.7	0.58	0.67
			100	77	35.8	0.58	0.67
● Tan 803611	33 Gray	● Lt. Blue 315311	65	74	30.9	0.54	0.63
			70	75	32.0	0.55	0.63
			80	77	34.2	0.56	0.64
			90	79	36.2	0.56	0.64
			100	81	38.2	0.56	0.65
● Tan 803611	38 Red	● Lt. Blue 315311	65	77	35.1	0.57	0.66
			70	79	36.6	0.56	0.65
			80	82	38.9	0.56	0.64
			90	84	41.3	0.56	0.65
			100	87	43.6	0.55	0.64
● Tan 803611	43 Dk. Brown	● Blue 315315	-	-	-	-	-
			70	83	41.3	0.58	0.67
			80	85	43.6	0.58	0.67
			90	87	46.3	0.59	0.68
			100	89	48.8	0.59	0.68
● Dk. Brown 803610	48 Dk. Green	● Dk. Blue 833500	-	-	-	-	-
			70	90	46.9	0.56	0.64
			80	92	48.9	0.56	0.64
			90	94	50.5	0.55	0.63
			100	96	53.5	0.56	0.65
● Dk. Brown 803610	53 Dk. Blue	● Dk. Blue 833500	-	-	-	-	-
			70	91	49.8	0.58	0.67
			80	93	52.2	0.58	0.67
			90	95	55.5	0.59	0.68
			100	97	58.5	0.60	0.69

● = Nozzle plug P/N 315300 installed in the front side of the nozzle housing.

* Complies to ASAE standard. All precipitation rates calculated for 360° operation. All triangular rates are equilateral.

GT-884 STANDARD NOZZLES

GT-884 LOW-ANGLE NOZZLES**

** Low-angle nozzles reduce the radius by 15%.

Room to Spare

Adding a Pilot® Two-Way Module does not reduce flange compartment space. The exclusive configuration provides extra room for full-sized DBRY-6 Splice Connectors and multiple cables.

TTS-800 SERIES

These rotors have Total-Top-Serviceability, powerful high-torque gear drives, and the largest flange compartment in the industry to accommodate all Pilot® Two-Way Module components.

KEY BENEFITS

- Adjustable model distinguished by a gray collar that comes factory set in a part-circle configuration (60° to 360°)
- Extra-large, fast access flange compartment to accommodate full-size DBRY-6 Splice Connectors and an integrated Pilot Two-Way Module
- Solenoid and pressure regulator are serviceable without system depressurization
- Exclusive PressurePort™ Nozzle Technology optimizes incoming pressure at each nozzle to increase consistency and maximize distribution uniformity
- High-torque gear drive is the strongest in the industry to mitigate the challenges of debris infiltration
- Proprietary Filter Sentry™ Mechanism cleans the filter with every opening and closing cycle
- All TTS-800 Series Golf Rotors advanced features listed on **pages 18 to 21**

GT-885
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

OPERATING SPECIFICATIONS

- Radius: 37' to 94'
- Flow: 8.9 to 59.6 GPM
- Pressure range: 50 to 100 PSI
- All TTS rotors are pressure rated at 150 PSI
- Nozzle range: 10 to 53
  - 12 standard trajectory (22.5°) nozzles
  - 9 low-angle trajectory (15°) nozzles

OPTIONS

- C – Check-O-Matic Technology checks up to 25' in elevation change and readily converts to normally open hydraulic operation with through-the-top connections
- D – Decoder Valve-in-Head Technology with all "E" specifications below*
- DD – Two-station Decoder Valve-in-Head Technology with all "E" specifications below*
- E – Electric Valve-in-Head Technology with adjustable pressure regulation, on-off-auto selector, 190mA (350mA inrush) solenoid with captive plunger and internal downstream bleed

* All DIH rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. See **page 11** for critical recommendations on grounding DIH rotors.

GT-885 – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Regulation
GT-885 = Full-/part-circle, 60° to 360° arc range	**C** = Check-O-Matic Technology*	**10 to 53** = Installed G-885 nozzle	**P5** = 50 PSI (nozzles 10 to 18)
	D = Decoder Valve-in-Head Technology		**P6** = 65 PSI (nozzles 18 to 25)
	DD = Two-station decoder Valve-in-Head Technology		**P8** = 80 PSI (nozzles 25 to 53)
	E = Electric Valve-in-Head Technology		
	**Converts to N.O. hydraulic Valve-in-Head Technology*		

Example:
GT-885-E-48-P8 = GT-885 full-/part-circle electric Valve-in-Head Technology, installed 48 nozzle, 80 PSI regulation

GT-885 NOZZLE PERFORMANCE DATA*

Nozzle Set			Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
Orange	10	Dk. Green	50	37	8.9	0.63	0.72
			60	39	9.8	0.62	0.72
			65	41	10.2	0.58	0.67
803603		315312	-	-	-	-	-
●	Lt. Green	●	-	-	-	-	-
Orange	13	White	50	47	11.4	0.50	0.57
			60	48	12.3	0.51	0.59
			65	49	12.9	0.52	0.60
803603		315314	-	-	-	-	-
●	Lt. Blue	●	-	-	-	-	-
Orange	15	White	50	52	12.9	0.46	0.53
			60	52	14.5	0.52	0.60
			65	53	14.9	0.51	0.59
803603		315314	70	53	15.5	0.53	0.61
●	White	●	80	54	16.5	0.54	0.63
Orange	18	Lt. Green	50	57	16.6	0.49	0.57
			60	58	17.8	0.51	0.59
			65	59	18.6	0.51	0.59
803603		315313	70	60	19.4	0.52	0.60
●	Orange	●	80	61	20.5	0.53	0.61
Orange	20	Lt. Green	50	59	17.9	0.49	0.57
			60	61	19.5	0.50	0.58
			65	62	19.8	0.50	0.57
803603		315313	70	63	20.6	0.50	0.58
●	Tan	●	80	64	22.1	0.52	0.60
Orange	23	Lt. Green	50	65	20.2	0.46	0.53
			60	66	22.1	0.49	0.56
			65	67	23.9	0.51	0.59
803603		315313	70	67	24.2	0.52	0.60
●	Green	●	80	69	25.9	0.52	0.60
Red	25	Green	65	71	28.3	0.54	0.62
			70	72	29.3	0.54	0.63
			80	73	31.5	0.57	0.66
803602		315310	90	74	33.4	0.59	0.68
●	Blue	●	100	75	35.4	0.61	0.70
Red	33	Green	65	72	30.6	0.57	0.66
			70	73	31.6	0.57	0.66
			80	75	33.9	0.58	0.67
803602		315310	90	77	35.8	0.58	0.67
●	Gray	●	100	79	37.9	0.58	0.67
Red	38	Green	65	76	34.9	0.58	0.67
			70	78	36.2	0.57	0.66
			80	80	39.1	0.59	0.68
803602		315310	90	82	41.2	0.59	0.68
●	Red	●	100	84	43.5	0.59	0.69
Red	43	Green	-	-	-	-	-
			70	81	41.2	0.60	0.70
			80	83	43.5	0.61	0.70
803602		315310	90	86	46.2	0.60	0.69
●	Dk. Brown	●	100	89	48.7	0.59	0.68
Dk. Red	48	Dk. Green	-	-	-	-	-
			70	83	46.3	0.65	0.75
			80	85	48.4	0.64	0.74
803601		315312	90	89	51.7	0.63	0.73
●	Dk. Green	●	100	91	54.5	0.63	0.73
Dk. Red	53	Dk. Green	-	-	-	-	-
			70	87	50.7	0.64	0.74
			80	89	53.1	0.65	0.75
803601		315312	90	92	56.4	0.64	0.74
●	Dk. Blue	●	100	94	59.6	0.65	0.75

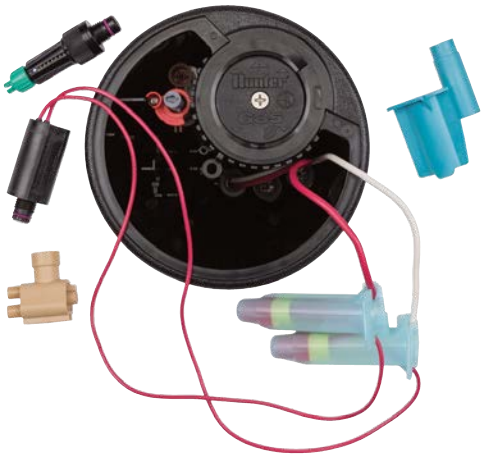
● = Nozzle plug P/N 315300 installed in the back side of the nozzle housing.

* Complies to ASAE standard. All precipitation rates calculated for 360° operation. All triangular rates are equilateral.

GT-885 STANDARD NOZZLES

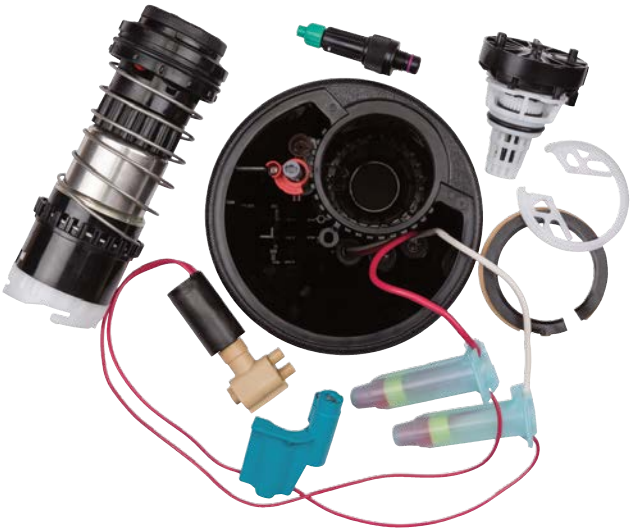
GT-885 LOW-ANGLE NOZZLES**

** Low-angle nozzles reduce the radius by 15%.



Reduced Downtime

There is no need to depressurize the mainline for solenoid and pressure regulator servicing.



Total-Top-Service Solution

From the originators of TTS Technology, Hunter's no-dig TTS-800 Series Golf Rotors provide total-top-servicing of every serviceable component.

TTS-800 SERIES

These rotors have Total-Top-Serviceability, shorter-radius, lower-flow internals, and the largest flange compartment in the industry to accommodate all Pilot® Two-Way Module components.

KEY BENEFITS

- Adjustable, shorter-radius model (50° to 360°)
- Extra-large, fast access flange compartment to accommodate full-size DBRY-6 Splice Connectors and an integrated Pilot Two-Way Module
- Solenoid and pressure regulator are serviceable without system depressurization
- Proprietary Filter Sentry™ Mechanism cleans the filter with every opening and closing cycle
- All TTS-800 Series Golf Rotors advanced features listed on **pages 18 to 21**

GT-835
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

OPERATING SPECIFICATIONS

- Radius: 18' to 50'
- Flow: 1.9 to 12.8 GPM
- Pressure range: 40 to 65 PSI
- All TTS rotors are pressure rated at 150 PSI
- Nozzle range: 2 to 12

OPTIONS

- C – Check-O-Matic Technology checks up to 25' in elevation change and readily converts to normally open hydraulic operation with through-the-top connections
- D – Decoder Valve-in-Head Technology with all "E" specifications below*
- DD – Two-station Decoder Valve-in-Head Technology with all "E" specifications below*
- E – Electric Valve-in-Head Technology with adjustable pressure regulation, on-off-auto selector, 190 mA (350 mA inrush) solenoid with captive plunger and internal downstream bleed

* All DIH rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. See **page 11** for critical recommendations on grounding DIH rotors.

GT-835 – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Regulation
GT-835 = Full-/part-circle, 50° to 360°	**C** = Check-O-Matic Technology Technology* **D** = Decoder Valve-in-Head Technology **E** = Electric Valve-in-Head Technology **Converts to N.O. hydraulic Valve-in-Head Technology*	**6** = Installed G-835 nozzle (includes 8-nozzle rack)	**P5** = 50 PSI (nozzles 18 to 25) **P6** = 65 PSI (nozzles 18 to 25)

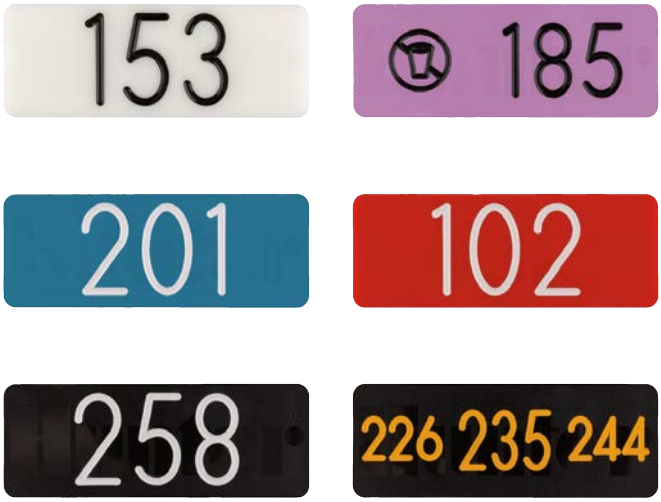
Example:
GT-835-6-P5 = GT-835 full-/part-circle electric Valve-in-Head Technology, installed 6 nozzle, 50 PSI regulation

GT-835 NOZZLE PERFORMANCE DATA*

Nozzle	Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
2 Yellow	40	18	1.9	0.56	0.65
	50	20	2.1	0.51	0.58
	60	22	2.4	0.48	0.55
	65	23	2.6	0.47	0.55
3 Yellow	40	23	3.0	0.55	0.63
	50	25	3.2	0.49	0.57
	60	27	3.5	0.46	0.53
	65	28	3.6	0.44	0.51
4 Yellow	40	25	3.9	0.60	0.69
	50	28	4.1	0.50	0.58
	60	30	4.4	0.47	0.54
	65	31	4.6	0.46	0.53
5 Yellow	40	29	4.7	0.54	0.62
	50	32	5.0	0.47	0.54
	60	33	5.3	0.47	0.54
	65	35	5.4	0.42	0.49
6 Yellow	40	32	6.0	0.56	0.65
	50	35	6.3	0.50	0.57
	60	37	6.6	0.46	0.54
	65	39	6.8	0.43	0.50
8 Yellow	40	36	7.8	0.58	0.67
	50	39	8.0	0.51	0.58
	60	42	8.3	0.45	0.52
	65	43	8.5	0.44	0.51
10 Yellow	40	39	9.7	0.61	0.71
	50	43	10.1	0.53	0.61
	60	45	10.3	0.49	0.57
	65	47	10.5	0.46	0.53
12 Yellow	40	44	12.0	0.60	0.69
	50	47	12.2	0.53	0.61
	60	48	12.5	0.52	0.60
	65	50	12.8	0.49	0.57

* Complies to ASAE standard. All precipitation rates calculated for 360° operation. All triangular rates are equilateral.

GT-835 NOZZLES



Optional Yardage Marker Colors

Extra-large, snap-in marker plates are available in standard black as well as optional red, white, and blue to meet every golf course preference. Or choose the purple plate for identification when courses are using reclaimed water.

Low-Bounce Rubber Cover Kit - P/N 987200SP

Reduce the incoming bounce from balls hitting rotors that are surrounding the greens.

No-Bounce Turf Cup Kit - P/N 987100SP

Eliminate errant bounces from balls hitting rotors that surround greens with this subsurface rotor-mounting solution.

G-800 SERIES

These rotors feature convenient no-dig Total-Top-Serviceability and a powerful, high-torque gear drive.

KEY BENEFITS

- Dedicated, true full-circle model distinguished by a black collar
- Exclusive PressurePort™ Nozzle Technology optimizes incoming pressure at each nozzle to increase consistency and maximize distribution uniformity
- High-torque gear drive is the strongest in the industry to mitigate the challenges of debris infiltration
- Proprietary Filter Sentry™ Mechanism cleans the filter with every opening and closing cycle

OPERATING SPECIFICATIONS

- Radius: 49' to 97'
- Flow: 14.2 to 58.5 GPM
- Pressure range: 50 to 100 PSI
- All TTS rotors are pressure rated at 150 PSI
- Nozzle range: 15 to 53
  - 10 standard trajectory (22.5°) nozzles
  - 9 low-angle trajectory (15°) nozzles

OPTIONS

- C – Check-O-Matic Technology checks up to 25' in elevation change and readily converts to normally open hydraulic operation with through-the-top connections
- D – Decoder Valve-in-Head Technology with all “E” specifications below*
- DD – Two-station Decoder Valve-in-Head Technology with all “E” specifications below*
- E – Electric Valve-in-Head Technology with adjustable pressure regulation, on-off-auto selector, 190 mA (350 mA inrush) solenoid with captive plunger and internal downstream bleed

* All DIH rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. See **page 11** for critical recommendations on grounding DIH rotors.

G-880C
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

G-880E
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

G-880 – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Regulation
G-880 = Full-circle	**C** = Check-O-Matic Technology* **D** = Decoder Valve-in-Head Technology **DD** = Two-station decoder Valve-in-Head Technology **E** = Electric Valve-in-Head Technology **Converts to N.O. hydraulic Valve-in-Head Technology*	**15 to 53** = Installed G-880 nozzle	**P5** = 50 PSI (nozzles 15 to 18) **P6** = 65 PSI (nozzles 18 to 25) **P8** = 80 PSI (nozzles 25 to 53)

Example:
G-880-E-33-P8 = G-880 full-circle electric Valve-in-Head Technology, installed 33 nozzle, 80 PSI regulation

G-880 NOZZLE PERFORMANCE DATA*

Nozzle Set			Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
● Tan 803611	15 White	● Gray 315317	50	49	14.2	0.57	0.66
			60	51	15.7	0.58	0.67
			65	52	16.4	0.58	0.67
			70	53	17.0	0.58	0.67
			80	55	18.2	0.58	0.67
● Tan 803611	18 Orange	● Gray 315317	50	56	17.2	0.53	0.61
			60	58	18.8	0.54	0.62
			65	59	19.7	0.54	0.63
			70	60	20.0	0.53	0.62
			80	61	21.2	0.55	0.63
● Tan 803611	20 Brown	● Gray 315317	50	57	18.4	0.55	0.63
			60	59	20.3	0.56	0.65
			65	61	21.4	0.55	0.64
			70	63	21.6	0.52	0.60
			80	64	22.7	0.53	0.62
● Tan 803611	23 Green	● Lt. Blue 315311	50	63	21.6	0.52	0.60
			60	65	23.0	0.52	0.61
			65	66	24.0	0.53	0.61
			70	67	24.9	0.53	0.62
			80	68	26.6	0.55	0.64
● Tan 803611	25 Blue	● Lt. Blue 315311	65	71	28.6	0.55	0.63
			70	73	29.7	0.54	0.62
			80	74	31.7	0.56	0.64
			90	75	33.7	0.58	0.67
			100	77	35.8	0.58	0.67
● Tan 803611	33 Gray	● Lt. Blue 315311	65	74	30.9	0.54	0.63
			70	75	32.0	0.55	0.63
			80	77	34.2	0.56	0.64
			90	79	36.2	0.56	0.64
			100	81	38.2	0.56	0.65
● Tan 803611	38 Red	● Lt. Blue 315311	65	77	35.1	0.57	0.66
			70	79	36.6	0.56	0.65
			80	82	38.9	0.56	0.64
			90	84	41.3	0.56	0.65
			100	87	43.6	0.55	0.64
● Tan 803611	43 Dk. Brown	● Blue 315315	-	-	-	-	-
			70	83	41.3	0.58	0.67
			80	85	43.6	0.58	0.67
			90	87	46.3	0.59	0.68
			100	89	48.8	0.59	0.68
● Dk. Brown 803610	48 Dk. Green	● Dk. Blue 833500	-	-	-	-	-
			70	90	46.9	0.56	0.64
			80	92	48.9	0.56	0.64
			90	94	50.5	0.55	0.63
			100	96	53.5	0.56	0.65
● Dk. Brown 803610	53 Dk. Blue	● Dk. Blue 833500	-	-	-	-	-
			70	91	49.8	0.58	0.67
			80	93	52.2	0.58	0.67
			90	95	55.5	0.59	0.68
			100	97	58.5	0.60	0.69

● = Nozzle plug P/N 315300 installed in the front side of the nozzle housing.

* Complies to ASAE standard. All precipitation rates calculated for 360° operation. All triangular rates are equilateral.

G-880 STANDARD NOZZLES

G-880 LOW-ANGLE NOZZLES**

** Low-angle nozzles reduce the radius by 15%.

TTS Means Convenience and Versatility

With TTS Technology, every serviceable component of the rotor can be easily accessed anytime with no servicing mess.

G-800 SERIES

These rotors feature convenient no-dig Total-Top-Serviceability and a powerful, high-torque gear drive.

KEY BENEFITS

- Adjustable model distinguished by a gray collar that comes factory set in a true full-circle configuration
- Exclusive PressurePort™ Nozzle Technology optimizes incoming pressure at each nozzle to increase consistency and maximize distribution uniformity
- High-torque gear drive is the strongest in the industry to mitigate the challenges of debris infiltration
- Proprietary Filter Sentry™ Mechanism cleans the filter with every opening and closing cycle

OPERATING SPECIFICATIONS

- Radius: 49' to 97'
- Flow: 14.2 to 58.5 GPM
- Pressure range: 50 to 100 PSI
- All TTS rotors are pressure rated at 150 PSI
- Nozzle range: 15 to 53
  - 10 standard trajectory (22.5°) nozzles
  - 9 low-angle trajectory (15°) nozzles

OPTIONS

- C – Check-O-Matic Technology checks up to 25' in elevation change and readily converts to normally open hydraulic operation with through-the-top connections
- D – Decoder Valve-in-Head Technology with all "E" specifications below*
- DD – Two-station Decoder Valve-in-Head Technology with all "E" specifications below*
- E – Electric Valve-in-Head Technology with adjustable pressure regulation, on-off-auto selector, 190 mA (350 mA inrush) solenoid with captive plunger and internal downstream bleed

* All DIH rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. See **page 11** for critical recommendations on grounding DIH rotors.

G-884C
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

G-884E
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

G-884 – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Regulation
G-884 = Full-circle (convertible to forward-facing adjustable arc rotor)	**C** = Check-O-Matic Technology* **D** = Decoder Valve-in-Head Technology **DD** = Two-station decoder Valve-in-Head Technology **E** = Electric Valve-in-Head Technology **Converts to N.O. hydraulic Valve-in-Head Technology*	**15 to 53** = Installed G-880 nozzle	**P5** = 50 PSI (nozzles 15 to 18) **P6** = 65 PSI (nozzles 18 to 25) **P8** = 80 PSI (nozzles 25 to 53)

Example:
G-884-E-33-P8 = G-884 full-circle electric Valve-in-Head Technology, installed 33 nozzle, 80 PSI regulation

G-884 NOZZLE PERFORMANCE DATA*

Nozzle Set			Pressure	Radius	Flow	Precip in/hr	
			PSI	ft	GPM	■	▲
● Tan 803611	15 White	● Gray 315317	50	49	14.2	0.57	0.66
			60	51	15.7	0.58	0.67
			65	52	16.4	0.58	0.67
			70	53	17.0	0.58	0.67
			80	55	18.2	0.58	0.67
● Tan 803611	18 Orange	● Gray 315317	50	56	17.2	0.53	0.61
			60	58	18.8	0.54	0.62
			65	59	19.7	0.54	0.63
			70	60	20.0	0.53	0.62
			80	61	21.2	0.55	0.63
● Tan 803611	20 Brown	● Gray 315317	50	57	18.4	0.55	0.63
			60	59	20.3	0.56	0.65
			65	61	21.4	0.55	0.64
			70	63	21.6	0.52	0.60
			80	64	22.7	0.53	0.62
● Tan 803611	23 Green	● Lt. Blue 315311	50	63	21.6	0.52	0.60
			60	65	23.0	0.52	0.61
			65	66	24.0	0.53	0.61
			70	67	24.9	0.53	0.62
			80	68	26.6	0.55	0.64
● Tan 803611	25 Blue	● Lt. Blue 315311	65	71	28.6	0.55	0.63
			70	73	29.7	0.54	0.62
			80	74	31.7	0.56	0.64
			90	75	33.7	0.58	0.67
			100	77	35.8	0.58	0.67
● Tan 803611	33 Gray	● Lt. Blue 315311	65	74	30.9	0.54	0.63
			70	75	32.0	0.55	0.63
			80	77	34.2	0.56	0.64
			90	79	36.2	0.56	0.64
			100	81	38.2	0.56	0.65
● Tan 803611	38 Red	● Lt. Blue 315311	65	77	35.1	0.57	0.66
			70	79	36.6	0.56	0.65
			80	82	38.9	0.56	0.64
			90	84	41.3	0.56	0.65
			100	87	43.6	0.55	0.64
● Tan 803611	43 Dk. Brown	● Blue 315315	-	-	-	-	-
			70	83	41.3	0.58	0.67
			80	85	43.6	0.58	0.67
			90	87	46.3	0.59	0.68
			100	89	48.8	0.59	0.68
● Dk. Brown 803610	48 Dk. Green	● Dk. Blue 833500	-	-	-	-	-
			70	90	46.9	0.56	0.64
			80	92	48.9	0.56	0.64
			90	94	50.5	0.55	0.63
			100	96	53.5	0.56	0.65
● Dk. Brown 803610	53 Dk. Blue	● Dk. Blue 833500	-	-	-	-	-
			70	91	49.8	0.58	0.67
			80	93	52.2	0.58	0.67
			90	95	55.5	0.59	0.68
			100	97	58.5	0.60	0.69

● = Nozzle plug P/N 315300 installed in the front side of the nozzle housing.

* Complies to ASAE standard. All precipitation rates calculated for 360° operation. All triangular rates are equilateral.

G-884 STANDARD NOZZLES

G-884 LOW-ANGLE NOZZLES**

** Low-angle nozzles reduce radius by 15%

G-800 SERIES

These rotors feature convenient no-dig Total-Top-Serviceability and a powerful, high-torque gear drive.

KEY BENEFITS

- Adjustable model distinguished by a gray collar that comes factory set in a part-circle configuration (60° to 360°)
- Exclusive PressurePort™ Nozzle Technology optimizes incoming pressure at each nozzle to increase consistency and maximize distribution uniformity
- High-torque gear drive is the strongest in the industry to mitigate the challenges of debris infiltration
- Proprietary Filter Sentry™ Mechanism cleans the filter with every opening and closing cycle

OPERATING SPECIFICATIONS

- Radius: 37' to 94'
- Flow: 8.9 to 59.6 GPM
- Pressure range: 50 to 100 PSI
- All TTS rotors are pressure rated at 150 PSI
- Nozzle range: 10 to 53
  - 12 standard trajectory (22.5°) nozzles
  - 9 low-angle trajectory (15°) nozzles

OPTIONS

- C – Check-O-Matic Technology checks up to 25' in elevation change and readily converts to normally open hydraulic operation with through-the-top connections
- D – Decoder Valve-in-Head Technology with all “E” specifications below*
- DD – Two-station Decoder Valve-in-Head Technology with all “E” specifications below*
- E – Electric Valve-in-Head Technology with adjustable pressure regulation, on-off-auto selector, 190 mA (350mA inrush) solenoid with captive plunger and internal downstream bleed

* All DIH rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. See **page 11** for critical recommendations on grounding DIH rotors.

G-885C
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

G-885E
Pop-up height: 3¾"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

G-885 – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Regulation
G-885 = Full-/part-circle 60° to 360° arc range	**C** = Check-O-Matic Technology* **D** = Decoder Valve-in-Head Technology **DD** = Two-station decoder Valve-in-Head Technology **E** = Electric Valve-in-Head Technology **Converts to N.O. hydraulic Valve-in-Head Technology*	**10 to 53** = Installed G-885 nozzle	**P5** = 50 PSI (nozzles 10 to 18) **P6** = 65 PSI (nozzles 18 to 25) **P8** = 80 PSI (nozzles 25 to 53)

Example:
G-885-E-33-P8 = G-885 full-/part-circle electric Valve-in-Head Technology, installed 33 nozzle, 80 PSI regulation

G-885 NOZZLE PERFORMANCE DATA*

Nozzle Set			Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
Orange	10	Dk. Green	50	37	8.9	0.63	0.72
			60	39	9.8	0.62	0.72
			65	41	10.2	0.58	0.67
803603		315312	-	-	-	-	-
●	Lt. Green	●	-	-	-	-	-
Orange	13	White	50	47	11.4	0.50	0.57
			60	48	12.3	0.51	0.59
			65	49	12.9	0.52	0.60
803603		315314	-	-	-	-	-
●	Lt. Blue	●	-	-	-	-	-
Orange	15	White	50	52	12.9	0.46	0.53
			60	52	14.5	0.52	0.60
			65	53	14.9	0.51	0.59
803603		315314	70	53	15.5	0.53	0.61
●	White	●	80	54	16.5	0.54	0.63
Orange	18	Lt. Green	50	57	16.6	0.49	0.57
			60	58	17.8	0.51	0.59
			65	59	18.6	0.51	0.59
803603		315313	70	60	19.4	0.52	0.60
●	Orange	●	80	61	20.5	0.53	0.61
Orange	20	Lt. Green	50	59	17.9	0.49	0.57
			60	61	19.5	0.50	0.58
			65	62	19.8	0.50	0.57
803603		315313	70	63	20.6	0.50	0.58
●	Tan	●	80	64	22.1	0.52	0.60
Orange	23	Lt. Green	50	65	20.2	0.46	0.53
			60	66	22.1	0.49	0.56
			65	67	23.9	0.51	0.59
803603		315313	70	67	24.2	0.52	0.60
●	Green	●	80	69	25.9	0.52	0.60
Red	25	Green	65	71	28.3	0.54	0.62
			70	72	29.3	0.54	0.63
			80	73	31.5	0.57	0.66
803602		315310	90	74	33.4	0.59	0.68
●	Blue	●	100	75	35.4	0.61	0.70
Red	33	Green	65	72	30.6	0.57	0.66
			70	73	31.6	0.57	0.66
			80	75	33.9	0.58	0.67
803602		315310	90	77	35.8	0.58	0.67
●	Gray	●	100	79	37.9	0.58	0.67
Red	38	Green	65	76	34.9	0.58	0.67
			70	78	36.2	0.57	0.66
			80	80	39.1	0.59	0.68
803602		315310	90	82	41.2	0.59	0.68
●	Red	●	100	84	43.5	0.59	0.69
Red	43	Green	-	-	-	-	-
			70	81	41.2	0.60	0.70
			80	83	43.5	0.61	0.70
803602		315310	90	86	46.2	0.60	0.69
●	Dk. Brown	●	100	89	48.7	0.59	0.68
Dk. Red	48	Dk. Green	-	-	-	-	-
			70	83	46.3	0.65	0.75
			80	85	48.4	0.64	0.74
803601		315312	90	89	51.7	0.63	0.73
●	Dk. Green	●	100	91	54.5	0.63	0.73
Dk. Red	53	Dk. Green	-	-	-	-	-
			70	87	50.7	0.64	0.74
			80	89	53.1	0.65	0.75
803601		315312	90	92	56.4	0.64	0.74
●	Dk. Blue	●	100	94	59.6	0.65	0.75

● = Nozzle plug P/N 315300 installed in the back side of the nozzle housing.

* Complies to ASAE standard. All precipitation rates calculated for 360° operation. All triangular rates are equilateral.

G-885 STANDARD NOZZLES

G-885 LOW-ANGLE NOZZLES**

** Low-angle nozzles reduce the radius by 15%.

Contour Back-Nozzle Capabilities

Whether you want a little extra green behind your adjustable arc TTS rotors or a more modeled look to your fairway's hard edges, contour back-nozzles are here to make your vision a reality. Choose from four short-range or four mid-range nozzles to suit your needs.

CONTOUR BACK-NOZZLE PERFORMANCE DATA

			65 PSI		80 PSI	
P/N	Color	Profile	Radius	GPM	Radius	GPM
803604	Peach		25	3.4	27	3.9
803603	Orange		28	3.8	29	4.2
803602	Red		31	4.2	33	4.5
803601	Dk. Red		34	4.6	36	4.9
315314	White		37	2.8	38	2.9
315313	Lt. Green		42	4.3	44	4.7
315310	Green		46	5.2	48	5.7
315312	Dk. Green		49	7.9	51	8.8

GT-885/G-885 CONTOUR BACK-NOZZLES

QuickSet-360 with Ratcheting Riser

Setting up your adjustable arc TTS rotor is fast and simple. The integrated ratcheting mechanism allows a simple twist of the riser to align the right-side reversing point. These rotors are also easily convertible to a true non-reversing full-circle with our exclusive QuickSet-360 feature.

G-800 SERIES

These rotors feature convenient no-dig Total-Top-Serviceability and a shorter-radius, lower-flow internals.

KEY BENEFITS

- Adjustable, shorter-radius model (50° to 360°)
- Proprietary Filter Sentry™ Mechanism cleans the filter with every opening and closing cycle

OPERATING SPECIFICATIONS

- Radius: 18' to 50'
- Flow: 1.9 to 12.8 GPM
- Pressure range: 40 to 65 PSI
- All TTS rotors are pressure rated at 150 PSI
- Nozzle range: 2 to 12

OPTIONS

- C – Check-O-Matic Technology checks up to 25' in elevation change and readily converts to normally open hydraulic operation with through-the-top connections
- D – Decoder Valve-in-Head Technology with all "E" specifications below*
- DD – Two-station Decoder Valve-in-Head Technology with all "E" specifications below*
- E – Electric Valve-in-Head Technology with adjustable pressure regulation, on-off-auto selector, 190 mA (350 mA inrush) solenoid with captive plunger and internal downstream bleed

* All DIH rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. See **page 11** for critical recommendations on grounding DIH rotors.

G-835C
Pop-up height: 3"
Overall height: 11¾"
Flange diameter: 7¾"
Female inlet: 1½" Acme

G-835E
Pop-up height: 3"
Overall height: 11¾"
Flange diameter: 7¼"
Female inlet: 1½" Acme

G-835 – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Regulation
G-835 = Full-/part-circle, 50° to 360°	**C** = Check-O-Matic Technology * **D** = Decoder Valve-in-Head Technology **E** = Electric Valve-in-Head Technology **Converts to N.O. hydraulic Valve-in-Head Technology*	**6** = Installed G-835 nozzle (includes 8-nozzle rack)	**P5** = 50 PSI (nozzles 2 to 12) **P6** = 65 PSI (nozzles 10 to 12)

Example:
G-835E-6-P6= G-835 full-/part-circle electric Valve-in-Head Technology, installed 6 nozzle, 50 PSI regulation

G-835 NOZZLE PERFORMANCE DATA*

Nozzle	Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
2 Yellow	40	18	1.9	0.56	0.65
	50	20	2.1	0.51	0.58
	60	22	2.4	0.48	0.55
	65	23	2.6	0.47	0.55
3 Yellow	40	23	3.0	0.55	0.63
	50	25	3.2	0.49	0.57
	60	27	3.5	0.46	0.53
	65	28	3.6	0.44	0.51
4 Yellow	40	25	3.9	0.60	0.69
	50	28	4.1	0.50	0.58
	60	30	4.4	0.47	0.54
	65	31	4.6	0.46	0.53
5 Yellow	40	29	4.7	0.54	0.62
	50	32	5.0	0.47	0.54
	60	33	5.3	0.47	0.54
	65	35	5.4	0.42	0.49
6 Yellow	40	32	6.0	0.56	0.65
	50	35	6.3	0.50	0.57
	60	37	6.6	0.46	0.54
	65	39	6.8	0.43	0.50
8 Yellow	40	36	7.8	0.58	0.67
	50	39	8.0	0.51	0.58
	60	42	8.3	0.45	0.52
	65	43	8.5	0.44	0.51
10 Yellow	40	39	9.7	0.61	0.71
	50	43	10.1	0.53	0.61
	60	45	10.3	0.49	0.57
	65	47	10.5	0.46	0.53
12 Yellow	40	44	12.0	0.60	0.69
	50	47	12.2	0.53	0.61
	60	48	12.5	0.52	0.60
	65	50	12.8	0.49	0.57

* Complies to ASAE standard. All precipitation rates calculated for 360˚ operation. All triangular rates are equilateral.

G-835 NOZZLES

QuickSet-360

With Hunter's QuickCheck Arc Mechanism and patented QuickSet-360 non-reversing full-circle feature in a variable arc rotor, adjustments are fast, easy, and more flexible than ever before. Now available on all TTS-800 Series, G-800 Series, and B Series adjustable arc rotors.

B SERIES

These highly efficient block rotors have a powerful gear drive backed by the reliability synonymous with the Hunter name.

KEY BENEFITS

- Dedicated, true full-circle model distinguished by a black collar
- Exclusive PressurePort™ Nozzle Technology optimizes incoming pressure at each nozzle to increase consistency and maximize distribution uniformity
- High-torque gear drive is the strongest in the industry to mitigate the challenges of debris infiltration

OPERATING SPECIFICATIONS

- G-80-B
  - Radius: 49' to 97'
  - Flow: 14.2 to 58.5 GPM
  - Pressure range: 65 to 100 PSI
- All B Series Rotors are pressure rated at 150 PSI
- Check height up to 7' in elevation change
- Nozzle range: 15 to 53
  - 10 standard trajectory (22.5°) nozzles
  - 9 low-angle trajectory (15°) nozzles

G-80-B
Pop-up height: 3"
Overall height: 9⅝"
Flange diameter: 5⅜"
Female inlet: 1¼" Acme

G-80-B – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Options*
G-80 = Full-circle	**B** = Block rotor with check valve	**15 to 53** = Installed G-80 nozzle* **SSU = 18, 25, or 48*	**S** = SSU* **Standard stocking unit*

Example:
G-80-B-25-S = G-80 full-circle block rotor, installed 25 nozzle, standard stocking unit model

G-80-B NOZZLE PERFORMANCE DATA*

Nozzle Set			Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
● Tan 803611	15 White	● Gray 315317	50	49	14.2	0.57	0.66
			60	51	15.7	0.58	0.67
			65	52	16.4	0.58	0.67
			70	53	17.0	0.58	0.67
			80	55	18.2	0.58	0.67
● Tan 803611	18 Orange	● Gray 315317	50	56	17.2	0.53	0.61
			60	58	18.8	0.54	0.62
			65	59	19.7	0.54	0.63
			70	60	20.0	0.53	0.62
			80	61	21.2	0.55	0.63
● Tan 803611	20 Brown	● Gray 315317	50	57	18.4	0.55	0.63
			60	59	20.3	0.56	0.65
			65	61	21.4	0.55	0.64
			70	63	21.6	0.52	0.60
			80	64	22.7	0.53	0.62
● Tan 803611	23 Green	● Lt. Blue 315311	50	63	21.6	0.52	0.60
			60	65	23.0	0.52	0.61
			65	66	24.0	0.53	0.61
			70	67	24.9	0.53	0.62
			80	68	26.6	0.55	0.64
● Tan 803611	25 Blue	● Lt. Blue 315311	65	71	28.6	0.55	0.63
			70	73	29.7	0.54	0.62
			80	74	31.7	0.56	0.64
			90	75	33.7	0.58	0.67
			100	77	35.8	0.58	0.67
● Tan 803611	33 Gray	● Lt. Blue 315311	65	74	30.9	0.54	0.63
			70	75	32.0	0.55	0.63
			80	77	34.2	0.56	0.64
			90	79	36.2	0.56	0.64
			100	81	38.2	0.56	0.65
● Tan 803611	38 Red	● Lt. Blue 315311	65	77	35.1	0.57	0.66
			70	79	36.6	0.56	0.65
			80	82	38.9	0.56	0.64
			90	84	41.3	0.56	0.65
			100	87	43.6	0.55	0.64
● Tan 803611	43 Dk. Brown	● Blue 315315	-	-	-	-	-
			70	83	41.3	0.58	0.67
			80	85	43.6	0.58	0.67
			90	87	46.3	0.59	0.68
			100	89	48.8	0.59	0.68
● Dk. Brown 803610	48 Dk. Green	● Dk. Blue 833500	-	-	-	-	-
			70	90	46.9	0.56	0.64
			80	92	48.9	0.56	0.64
			90	94	50.5	0.55	0.63
			100	96	53.5	0.56	0.65
● Dk. Brown 803610	53 Dk. Blue	● Dk. Blue 833500	-	-	-	-	-
			70	91	49.8	0.58	0.67
			80	93	52.2	0.58	0.67
			90	95	55.5	0.59	0.68
			100	97	58.5	0.60	0.69

● = Nozzle plug P/N 315300 installed in the front side of the nozzle housing.

G-80-B NOZZLES

LOW-ANGLE NOZZLES**

** Low-angle nozzles reduce the radius by 15%.

B SERIES

These highly efficient block rotors have a powerful gear drive backed by the reliability synonymous with the Hunter name.

KEY BENEFITS

- G-84-B
  - Adjustable model distinguished by a gray collar that comes factory set in a true full-circle configuration
  - Exclusive PressurePort™ Nozzle Technology optimizes incoming pressure at each nozzle to increase consistency and maximize distribution uniformity
  - High-torque gear drive is the strongest in the industry to mitigate the challenges of debris infiltration
- G-85-B
  - Adjustable model distinguished by a gray collar that comes factory set in a part-circle configuration (60° to 360°)
  - Exclusive PressurePort™ Nozzle Technology optimizes incoming pressure at each nozzle to increase consistency and maximize distribution uniformity
  - High-torque gear drive is the strongest in the industry to mitigate the challenges of debris infiltration

OPERATING SPECIFICATIONS

- G-84-B
  - Radius: 49' to 97'
  - Flow: 14.2 to 58.5 GPM
  - Pressure range: 65 to 100 PSI
  - Check height up to 7' in elevation change
  - Nozzle range: 15 to 53
    - 10 standard trajectory (22.5°) nozzles
    - 9 low-angle trajectory (15°) nozzles
- G-85-B
  - Radius: 37' to 94'
  - Flow: 8.9 to 59.6 GPM
  - Pressure range: 50 to 100 PSI
  - Check height up to 7' in elevation change
  - Nozzle range: 10 to 53
    - 12 standard trajectory (22.5°) nozzles
    - 9 low-angle trajectory (15°) nozzles
- All B Series Golf Rotors are pressure-rated at 10 bar; 1,000 kPa

G-84-B
Pop-up height: 3"
Overall height: 9⅝"
Flange diameter: 5⅜"
Female inlet: 1¼" Acme

G-85-B
Pop-up height: 3"
Overall height: 9⅝"
Flange diameter: 5⅜"
Female inlet: 1¼" Acme

G-84-B & G-85-B – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Options*
G-84 = Full-circle	**B** = Block rotor with check valve	**15 to 53** = Installed G-84 nozzle* **SSU = 18, 25, or 48*	**S** = SSU* **Standard stocking unit*
G-85 = Full-/part-circle, 60° to 360°	**B** = Block rotor with check valve	**10 to 53** = Installed G-85 nozzle** ***SSU = 18, 25, or 48*	**S** = SSU* **Standard stocking unit*

Example:
G-85-B-25-S = G-85 part-circle block rotor, installed 25 nozzle, standard stocking unit model

G-84-B NOZZLE PERFORMANCE DATA*

Nozzle Set			Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
● Tan 803611	15 White	● Gray 315317	50	49	14.2	0.57	0.66
			60	51	15.7	0.58	0.67
			65	52	16.4	0.58	0.67
			70	53	17.0	0.58	0.67
			80	55	18.2	0.58	0.67
● Tan 803611	18 Orange	● Gray 315317	50	56	17.2	0.53	0.61
			60	58	18.8	0.54	0.62
			65	59	19.7	0.54	0.63
			70	60	20.0	0.53	0.62
			80	61	21.2	0.55	0.63
● Tan 803611	20 Brown	● Gray 315317	50	57	18.4	0.55	0.63
			60	59	20.3	0.56	0.65
			65	61	21.4	0.55	0.64
			70	63	21.6	0.52	0.60
			80	64	22.7	0.53	0.62
● Tan 803611	23 Green	● Lt. Blue 315311	50	63	21.6	0.52	0.60
			60	65	23.0	0.52	0.61
			65	66	24.0	0.53	0.61
			70	67	24.9	0.53	0.62
			80	68	26.6	0.55	0.64
● Tan 803611	25 Blue	● Lt. Blue 315311	65	71	28.6	0.55	0.63
			70	73	29.7	0.54	0.62
			80	74	31.7	0.56	0.64
			90	75	33.7	0.58	0.67
			100	77	35.8	0.58	0.67
● Tan 803611	33 Gray	● Lt. Blue 315311	65	74	30.9	0.54	0.63
			70	75	32.0	0.55	0.63
			80	77	34.2	0.56	0.64
			90	79	36.2	0.56	0.64
			100	81	38.2	0.56	0.65
● Tan 803611	38 Red	● Lt. Blue 315311	65	77	35.1	0.57	0.66
			70	79	36.6	0.56	0.65
			80	82	38.9	0.56	0.64
			90	84	41.3	0.56	0.65
			100	87	43.6	0.55	0.64
● Tan 803611	43 Dk. Brown	● Blue 315315	-	-	-	-	-
			70	83	41.3	0.58	0.67
			80	85	43.6	0.58	0.67
			90	87	46.3	0.59	0.68
			100	89	48.8	0.59	0.68
● Dk. Brown 803610	48 Dk. Green	● Dk. Blue 833500	-	-	-	-	-
			70	90	46.9	0.56	0.64
			80	92	48.9	0.56	0.64
			90	94	50.5	0.55	0.63
			100	96	53.5	0.56	0.65
● Dk. Brown 803610	53 Dk. Blue	● Dk. Blue 833500	-	-	-	-	-
			70	91	49.8	0.58	0.67
			80	93	52.2	0.58	0.67
			90	95	55.5	0.59	0.68
			100	97	58.5	0.60	0.69

● = Nozzle plug P/N 315300 installed in the front side of the nozzle housing.

G-84B NOZZLES

G-85B NOZZLES

LOW-ANGLE NOZZLES**

** Low-angle nozzles reduce radius by 15%.

G-85-B NOZZLE PERFORMANCE DATA*

Nozzle Set			Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
Orange 803603	10 Lt. Green	Dk. Green 315312	50	37	8.9	0.63	0.72
			60	39	9.8	0.62	0.72
			65	41	10.2	0.58	0.67
			-	-	-	-	-
●	●	●	-	-	-	-	-
Orange 803603	13 Lt. Blue	White 315314	50	47	11.4	0.50	0.57
			60	48	12.3	0.51	0.59
			65	49	12.9	0.52	0.60
			-	-	-	-	-
●	●	●	-	-	-	-	-
Orange 803603	15 White	White 315314	50	52	12.9	0.46	0.53
			60	52	14.5	0.52	0.60
			65	53	14.9	0.51	0.59
			70	53	15.5	0.53	0.61
			80	54	16.5	0.54	0.63
Orange 803603	18 Orange	Lt. Green 315313	50	57	16.6	0.49	0.57
			60	58	17.8	0.51	0.59
			65	59	18.6	0.51	0.59
			70	60	19.4	0.52	0.60
			80	61	20.5	0.53	0.61
Orange 803603	20 Tan	Lt. Green 315313	50	59	17.9	0.49	0.57
			60	61	19.5	0.50	0.58
			65	62	19.8	0.50	0.57
			70	63	20.6	0.50	0.58
			80	64	22.1	0.52	0.60
Orange 803603	23 Green	Lt. Green 315313	50	65	20.2	0.46	0.53
			60	66	22.1	0.49	0.56
			65	67	23.9	0.51	0.59
			70	67	24.2	0.52	0.60
			80	69	25.9	0.52	0.60
Red 803602	25 Blue	Green 315310	65	71	28.3	0.54	0.62
			70	72	29.3	0.54	0.63
			80	73	31.5	0.57	0.66
			90	74	33.4	0.59	0.68
			100	75	35.4	0.61	0.70
Red 803602	33 Gray	Green 315310	65	72	30.6	0.57	0.66
			70	73	31.6	0.57	0.66
			80	75	33.9	0.58	0.67
			90	77	35.8	0.58	0.67
			100	79	37.9	0.58	0.67
Red 803602	38 Red	Green 315310	65	76	34.9	0.58	0.67
			70	78	36.2	0.57	0.66
			80	80	39.1	0.59	0.68
			90	82	41.2	0.59	0.68
			100	84	43.5	0.59	0.69
Red 803602	43 Dk. Brown	Green 315310	-	-	-	-	-
			70	81	41.2	0.60	0.70
			80	83	43.5	0.61	0.70
			90	86	46.2	0.60	0.69
			100	89	48.7	0.59	0.68
Dk. Red 803601	48 Dk. Green	Dk. Green 315312	-	-	-	-	-
			70	83	46.3	0.65	0.75
			80	85	48.4	0.64	0.74
			90	89	51.7	0.63	0.73
			100	91	54.5	0.63	0.73
Dk. Red 803601	53 Dk. Blue	Dk. Green 315312	-	-	-	-	-
			70	87	50.7	0.64	0.74
			80	89	53.1	0.65	0.75
			90	92	56.4	0.64	0.74
			100	94	59.6	0.65	0.75

● = Nozzle plug P/N 315300 installed in the back side of the nozzle housing.

* Complies to ASAE standard. All precipitation rates calculated for 360° operation. All triangular rates are equilateral.

B SERIES

These cost-effective block rotors have shorter-radius, lower-flow nozzles for use in smaller areas.

KEY BENEFITS

- Adjustable, shorter-radius model (50° to 360°)

OPERATING SPECIFICATIONS

- G-35-B
  - Radius: 18' to 50'
  - Flow: 1.9 to 12.8 GPM
  - Pressure range: 40 to 65 PSI
- All B Series Rotors are pressure rated at 150 PSI
- Check height up to 7' in elevation change
- Nozzle range: 2 to 12

G-35-B
Pop-up height: 3"
Overall height: 9"
Flange diameter: 4¾"
Female inlet: 1¼" Acme

G-35-B – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Valve Options	3 Nozzle	4 Options*
G-35 = Full-/part-circle 50° to 360°	**B** = Block rotor with check valve	**6** = Installed G-35 nozzle* ** Available in SSU model only* *SSU = 6* *(includes nozzle rack)*	**S** = SSU* ** Standard stocking unit*

Example:
G-35-B-6-S = G-35 full-/part-circle block rotor, installed 6 nozzle with nozzle rack, standard stocking unit model

G-35-B NOZZLE PERFORMANCE DATA*

Nozzle	Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
2 Yellow	40	18	1.9	0.56	0.65
	50	20	2.1	0.51	0.58
	60	22	2.4	0.48	0.55
	65	23	2.6	0.47	0.55
3 Yellow	40	23	3.0	0.55	0.63
	50	25	3.2	0.49	0.57
	60	27	3.5	0.46	0.53
	65	28	3.6	0.44	0.51
4 Yellow	40	25	3.9	0.60	0.69
	50	28	4.1	0.50	0.58
	60	30	4.4	0.47	0.54
	65	31	4.6	0.46	0.53
5 Yellow	40	29	4.7	0.54	0.62
	50	32	5.0	0.47	0.54
	60	33	5.3	0.47	0.54
	65	35	5.4	0.42	0.49
6 Yellow	40	32	6.0	0.56	0.65
	50	35	6.3	0.50	0.57
	60	37	6.6	0.46	0.54
	65	39	6.8	0.43	0.50
8 Yellow	40	36	7.8	0.58	0.67
	50	39	8.0	0.51	0.58
	60	42	8.3	0.45	0.52
	65	43	8.5	0.44	0.51
10 Yellow	40	39	9.7	0.61	0.71
	50	43	10.1	0.53	0.61
	60	45	10.3	0.49	0.57
	65	47	10.5	0.46	0.53
12 Yellow	40	44	12.0	0.60	0.69
	50	47	12.2	0.53	0.61
	60	48	12.5	0.52	0.60
	65	50	12.8	0.49	0.57

* Complies to ASAE standard. All precipitation rates calculated for 360˚ operation. All triangular rates are equilateral.

G-35-B NOZZLES

G-35-B ROTOR

G-900 SERIES

These rotors are simple to install and perfect for retrofits. Total-Top-Serviceability makes field maintenance quick and easy.

KEY BENEFITS

- G-990 is a dedicated, true full-circle model
- G-995 is an adjustable part-circle model (40° to 360°)
- Higher-flow, longer-radius rotor designed for single-row systems
- Contour back-nozzle capability for special applications

OPERATING SPECIFICATIONS

- G-990
  - Radius: 89' to 103'
  - Flow: 54.2 to 83.3 GPM
  - Pressure range: 80 to 120 PSI
- G-995
  - Radius: 81' to 97'
  - Flow: 54.9 to 83.8 GPM
  - Pressure range: 80 to 120 PSI
- All TTS rotors are pressure rated at 150 PSI
- Nozzle range: 53 to 73
  - 3 standard trajectory (22.5°) nozzles
  - 3 low-angle trajectory (15°) nozzles

OPTIONS

- C – Check-O-Matic Technology checks up to 25' in elevation change and readily converts to normally open hydraulic operation with through-the-top connections
- D – Decoder Valve-in-Head Technology with all “E” specifications below*
- DD – Two-station Decoder Valve-in-Head Technology with all “E” specifications below*
- E – Electric Valve-in-Head Technology with adjustable pressure regulation, on-off-auto selector, 190 mA (350mA inrush) solenoid with captive plunger and internal downstream bleed

* All DIH rotors include two DBRY-6 Splice Connectors for connection to the two-wire path. See **page 11** for critical recommendations on grounding DIH rotors.

G-990C
Pop-up height: 3"
Overall height: 13¼"
Flange diameter: 7½"
Femal inlet: 1½" Acme

G-995E
Pop-up height: 3"
Overall height: 13¼"
Flange diameter: 7½"
Female inlet: 1½" Acme

G-990 & G-995 – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4 + 5

1 Model	2 Valve Options	3 Nozzle	4 Regulation*	5 Options
G-990 = Full-circle	**C** = Check-O-Matic Technology*	**53 to 73** = Installed G-990 nozzle*	**P8** = 80 PSI (nozzle 53)	**S** = SSU*
	D = Decoder Valve-in-Head Technology		**P1** = 100 PS (nozzles 53 to 73)	
	DD = Two-station decoder Valve-in-Head Technology		**P2** = 120 PSI (nozzle 73)	
	E = Electric Valve-in-Head Technology			
G-995 = Adjustable arc, 40° to 360°	**C** = Check-O-Matic Technology*	**53 to 73** = Installed G-995 nozzle*	**P8** = 80 PSI (nozzle 53)	**S** = SSU*
	D = Decoder Valve-in-Head Technology		**P1** = 100 PSI (nozzles 53 to 73)	
	DD = Two-station decoder Valve-in-Head Technology		**P2** = 120 PSI (nozzle 73)	
	E = Electric Valve-in-Head Technology			
	**Converts to N.O. hydraulic Valve-in-Head Technology*	** SSU = 53*	** SSU = P8/53*	**Standard stocking unit*

Example:
G-990-E-53-P8-S = G-990 full-circle electric Valve-in-Head Technology, installed 53 nozzle, 80 PSI; 5.5 bar; 550 kPa regulation, standard stocking unit model

G-990 NOZZLE PERFORMANCE DATA*

Nozzle	Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
53 ● Dk. Blue	80	89	54.2	0.66	0.76
	90	90	56.7	0.67	0.78
	100	92	59.2	0.67	0.78
	110	93	61.7	0.69	0.79
	120	94	64.2	0.70	0.81
63 ● Black	80	92	63.2	0.72	0.83
	90	94	65.9	0.72	0.83
	100	96	69.4	0.72	0.84
	110	97	72.0	0.74	0.85
	120	98	74.9	0.75	0.87
73 ● Orange	80	96	72.1	0.75	0.87
	90	98	75.0	0.75	0.87
	100	99	77.8	0.76	0.88
	110	102	80.5	0.74	0.86
	120	103	83.3	0.76	0.87

G-995 NOZZLE PERFORMANCE DATA*

Nozzle	Pressure PSI	Radius ft	Flow GPM	Precip in/hr ■	Precip in/hr ▲
53 ● Dk. Blue	80	81	54.9	0.81	0.93
	90	84	57.2	0.78	0.90
	100	86	59.5	0.77	0.89
	110	87	62.1	0.79	0.91
	120	88	64.4	0.80	0.92
63 ● Black	80	86	62.3	0.81	0.94
	90	88	65.5	0.81	0.94
	100	90	69.0	0.82	0.95
	110	91	71.9	0.84	0.97
	120	92	74.7	0.85	0.98
73 ● Orange	80	89	72.7	0.88	1.02
	90	91	75.4	0.88	1.01
	100	93	78.1	0.87	1.00
	110	95	80.9	0.86	1.00
	120	97	83.8	0.86	0.99

* Complies to ASAE standard. All precipitation rates calculated for 360˚ operation. All triangular rates are equilateral.

G-900 NOZZLES

G-900 LOW-ANGLE NOZZLES**

** Low-angle nozzles reduce the radius by 15%.

Contour Back-Nozzle Capabilities

Choose any nozzle from the I-40 nozzle rack or from the short- and mid-range G-900 nozzles.

SWING JOINTS AND ACCESSORIES

HSJ SWING JOINTS
ADVANCED FEATURES

Proven Products, Proven Partners

Over the last four decades, Hunter has become the leading producer of gear-driven rotors, known worldwide for its quality product and excellent customer support. Similarly, LASCO has spent the last 50 years developing a reputation as the industry's leading producer of PVC irrigation fittings and swing joints, providing outstanding customer support in the golf irrigation market. When Hunter sought a partner for its Hunter-branded swing joints, the choice was immediately clear.

We are proud to offer Hunter HSJ Swing Joints by LASCO — a proven team with time-tested solutions for the golf irrigation market. HSJs are available in a multitude of inlet, outlet, size, and length configurations for every course and preference.

Upgrade Your Rotor Warranty

Include Hunter HSJ Swing Joints with your golf rotor order and qualify for a 5-year component exchange warranty. HSJ Swing Joints must be purchased from an authorized Hunter Golf Distributor to qualify.

LASCO is a trademark of LASCO Fittings Inc.

HSJ SWING JOINTS

With swivel ells on both ends, HSJ Swing Joints easily adjust sprinklers to proper height and position in any configuration.

KEY BENEFITS

- Strength, longevity, and contamination resistance
  - Prefabricated PVC design with O-Ring Seals
- Configurations to meet every installation requirement
  - Available in all popular inlet and outlet configurations
  - Choose from 8", 12", or 18" lay arm lengths
  - Single top-out or triple top-out designs

Swing Joints
HSJ-0 = Model ¾"
HSJ-1 = Model 1"
HSJ-2 = Model 1¼"
HSJ-3 = Model 1½"

SWING JOINT – SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4 + 5

1 Model	2 Inlet Type (from pipe fitting)	3 Outlet Type (to sprinkler inlet)	4 Outlet Style	5 Lay Length
HSJ-0 = ¾" commercial swing joint	**3** = Male NPT 	**0** = Male Acme 	**2** = Single top-out 	**8** = 8" lay arm† 
HSJ-1 = 1" heavy-duty swing joint	**4** = Male Acme* 	**2** = Male NPT 	**4** = Triple top-out 	**12** = 12" lay arm 
HSJ-2 = 1¼" heavy-duty swing joint	**7** = Spigot, 4" long* 	**8** = Enlarging to 1½" male Acme* **A** = Enlarging/reducing to 1¼" male Acme**		**18** = 18" lay arm‡ 
HSJ-3 = 1½" heavy-duty swing joint	***M** = Main Acme H-connection*** **P** = Main Acme V-connection***			

Example:
HSJ-3-M-0-2-12 = HSJ 1½" heavy-duty swing joint, 1½" male Acme horizontal connection to mainline tee, 1½" male Acme single top outlet, 12" lay arm length

** Not available in HSJ-0 or HSJ-3. Use "M" inlet for HSJ-3. ** Not available in HSJ-0. *** Connection reduces from 1½" Acme to swing joint size. † HSJ-0 only. ‡ Not available in HSJ-0.*

ACME ADAPTER FITTINGS

Choose Hunter Acme Adapter Fittings for maximum system design flexibility.

1¼" Models

1¼" male Acme x 1" female NPT	P/N 109325SP
1¼" male Acme x 1¼" female NPT	P/N 474800SP
1¼" male Acme x 1½" female NPT	P/N 104153SP

1½" Models

1½" male Acme x 1" female NPT	P/N 475400SP
1½" male Acme x 1¼" female NPT	P/N 475200SP
1½" male Acme x 1½" female NPT	P/N 475000SP

Acme x Acme Models

1½" male Acme x 1" Acme female	P/N 225300SP
1½" male Acme x 1¼" Acme female	P/N 225400SP
1¼" male Acme x 1" Acme female	P/N 225500SP

B2B Tee Assembly

1½" Acme threaded tee and 1½" adapter for connecting two swing joints to a single mainline connection in back-to-back installations around greens.

P/N = HSJ-305-015-3 = NPT inlet
P/N = HSJ-305-015-M = Acme inlet (shown)

Swing Joint Inlet Adapter for HDPE Service Saddle

1½" male Acme x 1½" 10 TPI female butress thread P/N G312015SP

ROTOR ACCESSORIES

Customize golf rotors according to course needs with these useful accessories.

HOSE SWIVEL ADAPTERS

Models

- Hose Swivel Adapter for G-900 Series (fits ¾" and 1" hose) P/N G90HS100
- Hose Swivel Adapter for G-800 Series (fits ¾" and 1" hose) P/N G800HS100

Hose Swivel Adapters

RUBBER COVER KITS

Models

- TTS-800 Series Low-Bounce Rubber Cover Kit P/N 987200SP
- TTS-800 Series Low-Bounce Rubber Cover Kit (Green) P/N 987201SP
- TTS-800 Series No-Bounce Turf Cup Kit P/N 987100SP
- G-990 Series Rubber Cover Kit (date codes 06/11 and prior only) P/N 473800
- G-995 Series Rubber Cover Kit (also G990 date codes 07/11 and after) P/N 473900

Rubber Cover Kit

SPOTSHOT HOSE-END NOZZLES

Adjustable hose-end nozzles are the ideal solution for a variety of spot-watering and wash-down needs.

Models

- ¾" hose thread inlet – P/N 160700SP
- 1" hose thread inlet – P/N 160705SP

Features

- Variable nozzle stream choices:
  - Jet-Stream Nozzle: Tightly focused stream for power washing
  - Soak-Stream Nozzle: Medium stream for dust control areas
  - Fan-Stream Nozzle: Broad light stream for turf hot spots

Operating Specifications

- Flow: 35 GPM at 80 PSI*

** Not recommended for residential use with regulated, low-pressure, or low-flow conditions.*

SpotShot Hose-End Nozzles
¾" P/N 160700SP
1" P/N 160705SP

Jet-Stream Nozzle

Soak-Stream Nozzle

Fan-Stream Nozzle

QUICK COUPLERS

The sturdy red brass and stainless steel construction of Quick Couplers strengthens any project.

KEY BENEFITS

- 100% interchangeable with major brands
- Red brass and stainless steel construction
- Heavy-duty thermoplastic locking and non-locking covers
- Optional winged stabilization and Acme key connection
- Stainless steel lug on 1" and 1¼" keys
- Spring-loaded covers with stainless steel springs for positive closing and protection of valve's sealing components
- Warranty period: 5 years
- See the SnapLok™ Combo Kits on **page 51**

Quick Couplers

QUICK COUPLER, KEY, AND HOSE SWIVEL CHARTS

Model	Inlet Threads	Slots	Body	Color*	Locking	Key	Swivels
HQ-3-RC	¾"	2	1-piece	Yellow	No	HK-33	HS-0
HQ-33-DRC	¾"	2	2-piece	Yellow	No	HK-33	HS-0
HQ-33-DLRC	¾"	2	2-piece	Yellow	Yes	HK-33	HS-0
HQ-44-RC	1" NPT	1	2-piece	Yellow	No	HK-44	HS-1 or HS-2
HQ-44-LRC	1" NPT	1	2-piece	Yellow	Yes	HK-44	HS-1 or HS-2
HQ-44-RC-AW	1" NPT	Acme	2-piece wing**	Yellow	No	HK-44A	HS-1 or HS-2
HQ-44-LRC-AW	1" NPT	Acme	2-piece wing**	Yellow	Yes	HK-44A	HS-1 or HS-2
HQ-5-RC	1" NPT	1	1-piece	Yellow	No	HK-55	HS-1 or HS-2
HQ-5-LRC	1" NPT	1	1-piece	Yellow	Yes	HK-55	HS-1 or HS-2

Notes:
* All locking cover models are available with purple covers for reclaimed water applications.
** Anti-rotation stabilization wings.

HQ-3-RC HQ-5-RC HK-33

HQ-33-DLRC-R HQ-44-LRC HK-44

Non-locking Locking Reclaimed

HQ-44-LRC-AW-R HK-44A

HLK

Reclaimed Water Option

All locking models have an optional purple cover for sites using reclaimed water.

QUICK COUPLER – SPECIFICATION BUILDER: ORDER 1 + 2 + 3

1 Model	2 Cover Options	3 Additional Options
HQ-3 = ¾" inlet, 1-piece body, 2 slots	**RC** = Yellow rubber cover	**(blank)** = No option
HQ-5 = 1" inlet, 1-piece body, 1 slot	**LRC** = Yellow locking rubber cover *(Not available for HQ-3 body)*	**AW** = Acme key with anti-rotation wings *(Only available for HQ-44 body)*
HQ-33-D = ¾" inlet, 2-piece body, 2 slots		**R** = Purple locking cover *(reclaimed water ID; only available for LRC models)*
HQ-44 = 1" inlet, 2-piece body, 1 slot or Acme key socket		

Examples:
HQ-3-RC = HQ-3 valve with rubber cover
HQ-44-LRC = HQ-44 valve with locking rubber cover
HQ-44-LRC-R = HQ-44 valve with locking rubber cover and reclaimed water ID
HQ-44-LRC-AW-R = HQ-44 valve with locking rubber cover, Acme key socket, anti-rotation wings, and reclaimed water ID

KEYS

Model	Compatible Valve	Compatible Swivel
HK-33 = ¾" valve, ¾" key inlet	HQ-3, HQ-33	HS-0
HK-44 = 1" valve, 1" key inlet	HQ-44	HS-1, HS-2
HK-44A = 1" valve, Acme key inlet	HQ-44-AW	HS-1, HS-2
HK-55 = 1" valve, 1¼" key inlet	HQ-5	HS-1, HS-2

HS HOSE SWIVELS

Model	Compatible Key
HS-0 = ¾" inlet, ¾" hose outlet	HK-33
HS-1 = 1" inlet, ¾" hose outlet	HK-44, HK-44A, HK-55
HS-2 = 1" inlet, 1" hose outlet	HK-44, HK-44A, HK-55

HQ PRESSURE LOSS IN PSI

Flow (GPM)	HQ-3	HQ-33	HQ-44	HQ-5
5	0.8	1.0		
10	1.8	2.0		
15	4.1	4.3	2.2	
20	7.2	7.6	4.4	1.0
30			11.5	3.0
40				6.3
50				9.2
60				13.0
70				19.8

HS-0 HS-1 HS-2

SNAPLOK™ COMBO KITS

These kits are designed for applications that demand sturdy installation due to frequent Quick Coupler use.

FEATURES

- Highly effective solution for quick coupler stabilization
- SnapLok design includes:
  - Heavy-duty PVC and brass outlet construction
  - Anti-rotation coupler locking feature
  - Accommodates both rebar and pipe stabilization
- See the HSJ Swing Joints on **page 48**

Quick Coupler with SnapLok
Equipped HSJ-1 Swing Joint

SNAPLOK COMBO KITS

Kit Model	Quick Coupler Model	SnapLok Model
HQ-SL-K-1-B = Locking Lid, BSP x 18" SnapLok	HQ-44-LRC	HSJ-1-6S-212
HQ-SL-K-1-RB = Locking Reclaimed Lid, BSP x 18" SnapLok	HQ-44-LRCR	HSJ-1-6S-212

SnapLok is a trademark of LASCO Fittings Inc.

TOOLS

Arc Adjustment/ Riser Hold-up Tool
P/N 382800SP
G-85-B/G-885

Valve Insertion/ Removal Tool
P/N 604000SP
G-800 Series

Valve Insertion/ Removal Tool
P/N 280500SP
G-900/G-90 Series

Valve and Snap Ring Insertion/Removal Pliers
P/N 475600SP
G-800 Series

Snap Ring Removal Tool
P/N 251000SP
All Golf Models

T-Handle Tool
P/N 319100SP

Hand Pump
P/N 460302SP

Pitot Gauge
P/N 280100SP

Hunter Wrench
P/N 172000SP

Nozzle Removal/ Installation Tool
P/N 803700SP
G-85-B, G-885 Short- and Mid-range Nozzles

Riser Pressure Gauge
P/N 991200SP
G-80 (2019), G-85-B, and G-885 Risers

Golf Rotor Tool Kit
P/N 475700SP

HUNTER SUPPORT NETWORK

Members-Only Access to Exclusive Services and Benefits

Your membership in the Hunter Support Network entitles you to a host of exclusive services and benefits, ranging from troubleshooting and staff training to overnight shipping of replacement equipment. Whatever your needs are, you'll receive our unwavering support to ensure optimal central control system performance and a healthy irrigation system year-round.

Whether you're setting up for an important tournament, starting a renovation, or recovering from storm damage, your membership provides the safety net you need to ensure your turf remains safe and playable. **Become a member today!**

HSN Membership *BENEFITS*

- Unlimited phone support for software and hardware golf course installations provided by your local distributor representative or Hunter Golf Support
- System commissioning from a Hunter Field Service Manager (FSM) or distributor rep for first-year members with new Pilot® Systems
  - On-site training from a Hunter FSM
  - Complete control system diagnostics
  - Computer setup and programming
  - Communications setup and testing
  - Field wiring diagnostics and benchmark report
  - Equipment grounding test
- The first year of HSN membership includes an uninterruptible power supply
- Online Hunter Golf Forum membership
- Pilot Field Interface next-business-day replacement
- Field interface communication module next-business-day replacement
- Replacement Pilot PC eligibility with next-business-day shipping
- Remote assistance/desktop sharing support
- Free Pilot standard software/ firmware updates
- Members-only pricing on premium software upgrades

HUNTER SUPPORT NETWORK

Plan	Description
HSN-PILOT	Hunter Support Network Welcome Kit, one-year membership; includes uninterruptible power supply
HSN-RENEWAL	Hunter Support Network Renewal, one-year membership renewal; available to to active members only

PRODUCTS FOR THE GOLF COURSE AND BEYOND

Everything we do at Hunter Industries is rooted in innovation. From small residential installations to fully automated smart cities, our teams continually develop solutions to help professionals deliver water as efficiently and sustainably as possible.

Whether it's water-saving MP Rotator® Nozzles around a bunker or reliable I-20 Rotors on the surrounds or clubhouse grounds, Hunter's complete offering of commercial products has your course covered.

Automatic Matched Precipitation

MP Rotator Nozzles adjust the flow rate through the nozzle as the radius and arc are changed, resulting in the same matched precipitation rate regardless of the nozzle setting.

Performance You Can Depend On

From residential to commercial applications, high pressure to low pressure, and clean water to dirty water, Hunter valves keep systems running flawlessly day in and day out.

Efficient, Reliable Irrigation

Packed with upgraded features like FloStop® Technology, check valves, and top-performing nozzles, the I-20 Rotor ensures efficient, reliable irrigation in a range of applications.

As we continue to explore new ways to innovate, you can expect us to deliver even more industry-leading products, services, and tools in the future to help your course thrive.

hunterindustries.com

EXPERIENCE ALL
WALKS OF LIGHT

Landscape and Architectural Lighting

FX Luminaire provides industry-leading landscape and architectural lighting solutions with a focus on the advancement of LED technology and digital lighting control with zoning, dimming, and color adjustment capabilities.

Designer and Standard Series Fixtures

FX Luminaire offers a range of classic and contemporary lighting fixtures in all configurations, from up lights and down lights to path lights and specialty lights.

Our fixture classification system is based on material construction, performance, and price. This helps you quickly identify common fixtures and create lighting packages for any project or budget. All FX Luminaire fixtures are made with top-quality materials and backed by the industry's best support team.

Luxor® Controller

With Luxor Technology, you can liven up your clubhouse, course pathways, or property entryways to complement any occasion with 30,000 vibrant color possibilities. Design one-of-a-kind holiday displays, create the perfect ambience for weddings, add company colors for corporate events, or simply adjust hues to match vegetation as the seasons change.

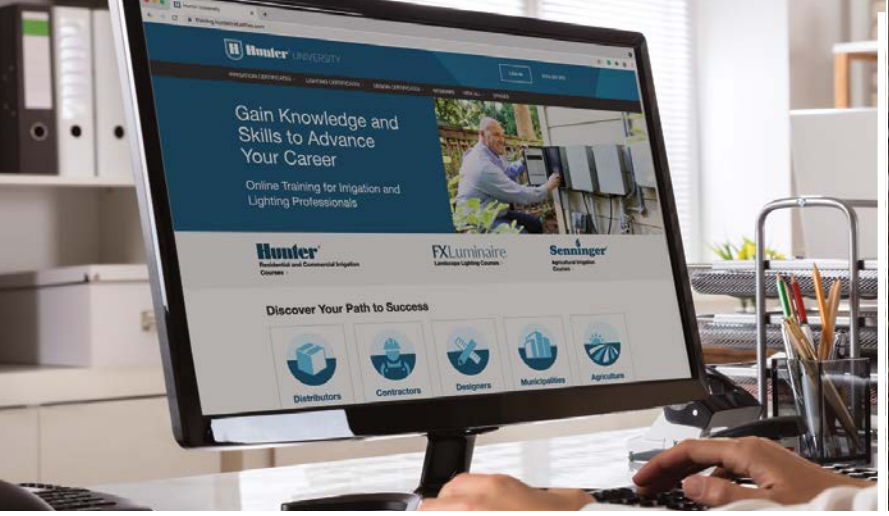
With a Luxor Controller, you can also create up to 250 adjustable lighting groups that can be turned on independently and dimmed from 1–100%.

The Luxor App provides ultimate flexibility and convenience when designing with Luxor Lighting Control Systems. With the app, you can adjust fixture intensities and colors, program up to 40 calendar-based themes, and fine-tune your color palette — from anywhere!

fxl.com

FXLuminaire®

TECHNICAL INFORMATION



HUNTER UNIVERSITY

hunter.info/hunteruniversity

Advance your career with our comprehensive online training programs for golf irrigation professionals. From fundamental product knowledge to advanced control systems to design techniques, there's a golf professional development program waiting for you!
Learn more at **training.hunterindustries.com**.

Find Your Path to Success

1. Access free golf product training online at **training.hunterindustries.com**.
2. Choose the golf programs or courses that best fit your needs.

On-Site Expert Workshops

These interactive, instructor-led courses feature a hands-on approach to learning about irrigation. Classes are held at the Hunter Industries campus in San Marcos, California, and select locations worldwide. To learn more, contact **training@hunterindustries.com**.

Golf Irrigation Training Programs

Learn how to expertly manage your watering needs to ensure a healthy, playable course. Check out the golf-specific training programs below!

Pilot Command Center Software

- Pilot Command Center Introduction
- Pilot Command Center Course Irrigation Profile
- Pilot Command Center Settings
- Pilot Command Center Disable Specific Areas
- Pilot Command Center Adjust Plan for Limited Flow

Pilot Controllers

- PilotFCP Utility Demo
- Pilot Field Controller and Integrated Hub Fundamentals

Maintenance

- Golf Rotor Maintenance
- Golf Controller Maintenance
- Distribution Uniformity Audit

PRECIPITATION RATES

In this section, the "Sprinkler Spacing Method–Any Arc and Any Spacing" equation is used to calculate precipitation rates. The first set of equations with the ■ shows the precipitation rate for the sprinklers when they are laid out in a square pattern. The next set with the ▲ shows the precipitation rate for the sprinklers laid out in an equilateral triangular spacing pattern. This is the "Sprinkler Spacing Method–Equilateral Triangular Spacing" equation.

WHAT IS "PRECIPITATION RATE"?

If someone said they were caught in a rainstorm that dropped one inch of water in an hour, you would have some idea of how "hard" or "heavily" the rain came down. A rainstorm that covers an area with one inch of water in one hour has a "precipitation rate" of one inch per hour (1 in/hr or 25 mm/hr). Similarly, the precipitation rate is the "speed" at which a sprinkler or an irrigation system applies water.

MATCHED PRECIPITATION RATES

A zone or system in which all the heads have similar precipitation rates is said to have "matched precipitation rates." Systems that have matched precipitation rates reduce wet and dry spots and minimize run times, which reduces water consumption and lowers costs. Knowing that sprinkler spacing, flow rates, and arcs of coverage affect precipitation rates, a general guideline is: as the spray arc doubles, so should the flow.

90° Arc = 1 GPM
(0.23 m^3/hr; 3.8 l/min)

180° Arc = 2 GPM
(0.45 m^3/hr; 7.6 l/min)

360° Arc = 4 GPM
(0.91 m^3/hr; 15.1 l/min)

The flow rate of half-circle heads must be two times the flow rate of the quarter-circle heads, and the full-circle heads must have two times the flow rate of the half-circle heads. In the illustration, the same amount of water is applied to each quarter circle area and precipitation is therefore matched.

CALCULATING PRECIPITATION RATES

Depending upon the construction of the irrigation system, the precipitation rate may be calculated by either a Sprinkler Spacing or a Total Area method.

Sprinkler Spacing Method (■)
The precipitation rate should be calculated for each individual zone. If all sprinkler heads on the zone have the same spacing, flow rate, and arc of coverage, use one of the following formulas:

Any Arc and Any Spacing (■):

$$\text{P.R. (in/hr)} = \frac{\text{Flow Rate (GPM) for any Arc} \times 34{,}650}{\text{Degrees of Arc} \times \text{Head Spacing (ft)} \times \text{Row Spacing (ft)}}$$

$$\text{P.R. (mm/hr)} = \frac{\text{Flow Rate } (m^3/hr) \text{ for any Arc} \times 360{,}000}{\text{Degrees of Arc} \times \text{Head Spacing (m)} \times \text{Row Spacing (m)}}$$

$$\text{P.R. (mm/hr)} = \frac{\text{Flow Rate (l/min) for any Arc} \times 21{,}600}{\text{Degrees of Arc} \times \text{Head Spacing (m)} \times \text{Row Spacing (m)}}$$

Sprinkler Spacing Method (▲)
The precipitation rate should be calculated for each individual zone. If all sprinkler heads on the zone have the same spacing, flow rate, and arc of coverage, use one of the following formulas:

Equilateral Triangular Spacing (▲):

$$\text{P.R. (in/hr)} = \frac{\text{Flow Rate (GPM) for any Arc} \times 34{,}650}{\text{Degrees of Arc} \times (\text{Head Spacing})^2 \times 0.866}$$

$$\text{P.R. (mm/hr)} = \frac{\text{Flow Rate } (m^3/hr) \text{ for any Arc} \times 360{,}000}{\text{Degrees of Arc} \times (\text{Head Spacing})^2 \times 0.866}$$

$$\text{P.R. (mm/hr)} = \frac{\text{Flow Rate (l/min) for any Arc} \times 21{,}600}{\text{Degrees of Arc} \times (\text{Head Spacing})^2 \times 0.866}$$

Total Area Method
The precipitation rate for a "system" is the average precipitation rate of all sprinklers in an area, regardless of the spacing, flow rate, or arc for each head. The Total Area Method calculates all the flows of all of the heads in any given area.

$$\text{P.R. (in/hr)} = \frac{\text{Flow (GPM)} \times 96.25}{\text{Total Area (ft)}}$$

$$\text{P.R. (mm/hr)} = \frac{\text{Flow } (m^3/hr) \times 1{,}000}{\text{Total Area } (m^2)}$$

$$\text{P.R. (mm/hr)} = \frac{\text{Flow (l/min)} \times 60}{\text{Total Area } (m^2)}$$

CONVERSION FACTORS

CONVERSION FACTORS			
To Convert	**From**	**To**	**Multiply By**
Area	acres	foot^2	43560
	acres	meter^2	4046.8
	meter^2	foot^2	10.764
	foot^2	inch^2	144
	inch^2	centimeter^2	6.452
	hectares	meter^2	10000
	hectares	acres	2.471
Power	kilowatts	horsepower	1.341
Flow	foot^3/minute	meter^3/second	0.0004719
	foot^3/second	meter^3/second	0.02832
	yards^3/minute	meter^3/second	0.01274
	gallon/minute	meter^3/hour	0.22716
	gallon/minute	liter/minute	3.7854
	gallon/minute	liter/second	0.06309
	meter^3/hour	liter/minute	16.645
	meter^3/hour	liter/second	0.2774
	liter/minute	liter/second	60
Length	foot	inch	12
	inch	centimeter	2.54
	foot	meter	0.30481
	kilometer	miles	0.6214
	miles	foot	5280
	miles	meter	1609.34
	millimeter	inch	0.03937
Pressure	PSI	kilopascals	6.89476
	PSI	bar	0.068948
	bar	kilopascals	100
	PSI	feet of head	2.31
Velocity	feet/second	meter/second	0.3048
Volume	feet^3	gallon	7.481
	feet^3	liter	28.32
	meter^3	feet^3	35.31
	meter^3	yard^3	1.3087
	yard^3	feet^3	27
	yard^3	gallon	202
	acres/feet	foot^3	43,560
	gallon	meter^3	0.003785
	gallon	liter	3.785
	imperial gallon	gallon	1.833

SYMBOLS AND CONSTANTS

SYMBOLS AND CONSTANTS			
Symbol	**Description**	**U.S. Units**	**SI Units**
a	Cross-sectional area of pipe flow	inches^2 (in^2)	millimeters^2 (mm^2)
C	Hazen-Williams roughness coefficient	none/unitless	none/unitless
Cu	Christiansen's coefficient of uniformity	percent (%)	percent (%)
d	inside diameter of pipe	inches (in)	millimeters (mm)
Dt	diameter of throw of a sprinkler	feet (ft)	meters (m)
DU	distribution uniformity	percent (%)	percent (%)
ETc	crop evapotranspiration	inches per day (in/day)	millimeters per day (mm/day)
ET0	reference evapotranspiration	inches per day (in/day)	millimeters per day (mm/day)
I	electrical current	amps (A), milliamps (mA)	amps (A), milliamps (mA)
ID	inside diameter of pipe	inches (in)	millimeters (mm)
hf	energy loss due to friction	feet of water (ft)	meters of water (m)
Kc	crop coefficient	percent (%)	percent (%)
ks	constant used to compute sprinkler spacing	none/unitless	none/unitless
L	spacing between lateral lines	feet (ft)	meters (m)
MAD	management allowable depletion	none/unitless	none/unitless
MC	maximum coverage for single-row sprinklers	feet (ft)	meters (m)
OD	outside diameter of pipe	inches (in)	millimeters (mm)
P	pressure of water	pounds per inch^2 (PSI)	kilopascals (kPa), bars (bar)
PR	precipitation rate	inches per day (in/day)	millimeters per day (mm/day)
Po	sprinkler operating pressure	pounds per inch^2 (PSI)	kilopascals (kPa), bars (bar)
Q	flow of water in a pipe	gallons per minute (GPM)	cubic meters per hour(m^3/hr), liters per second (lps)
R	electrical resistance	ohms (Ω)	ohms (Ω)
Rt	radius of throw	feet (ft)	meters (m)
S	sprinkler spacing	feet (ft)	meters (m)
SC	scheduling coefficient	none/unitless	none/unitless
v	average velocity of water in pipe	feet per second (fps)	meters per second (mps)
Vo	electrical voltage	volts (V)	volts (V)

PILOT FIELD CONTROLLER ELECTRICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

Supply Voltage
Auto-sensing frequency (50 or 60 Hz)
120 VAC nominal (100 to 132 VAC)[1]
230 VAC nominal (200 to 260 VAC)[1]
Station output: 24 VAC at 1.0 A

CAPACITIES

Station Capacity
80 stations
Up to 20 stations can run simultaneously[2]

Station Solenoid Load
Up to four 24 VAC Hunter golf solenoids per station output[3]

[1] To prevent damage, all Pilot Field Controllers are shipped with the supply voltage set to 230 VAC.
[2] One 24 VAC Hunter golf solenoid per station.
[3] Multiple solenoids connected to a single station will reduce total simultaneous stations.

PILOT INTEGRATED HUB ELECTRICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

Supply Voltage
Auto-sensing frequency (50 or 60 Hz)
Auto-switching 120/230 VAC nominal (100 to 277 VAC at 50/60 Hz)[1]

CAPACITIES

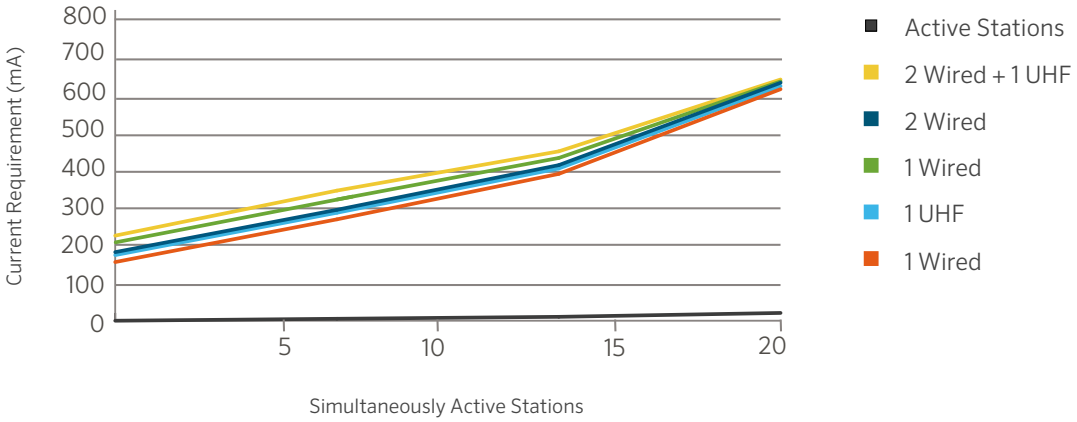
Integrated Two-Way Module Capacity
Up to 999 integrated Pilot® Two-Way Modules per Pilot Integrated Hub
Up to 120 24 VAC Hunter solenoids on at one time[2]

Integrated Two-Way Module Solenoid Load
Up to two 24 VAC Hunter solenoids per integrated Pilot Two-Way Module[3]

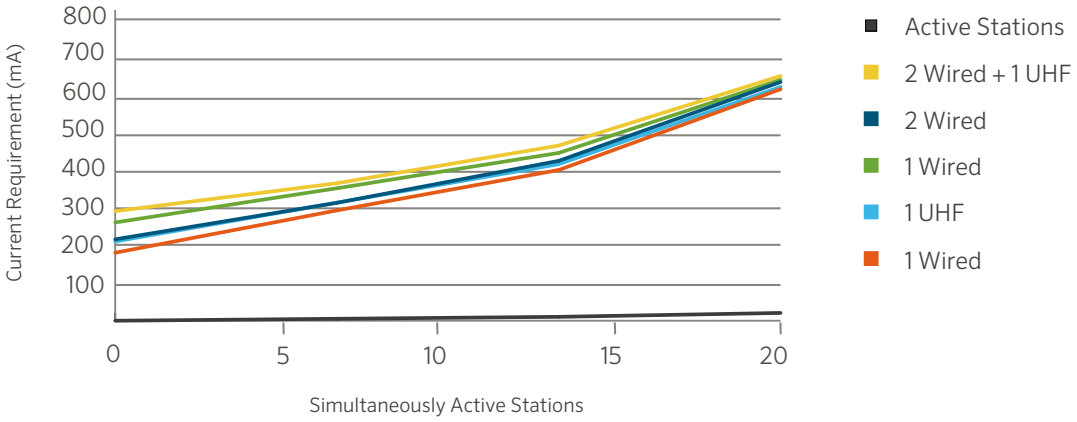
[1] The Pilot Integrated Hub automatically detects supply voltage and frequency.
[2] Depends on configuration. Pilot Integrated Hub will run up to 30 stations simultaneously per output module.
[3] Two solenoids per Pilot Two-Way Module does not reduce the maximum simultaneous station count.

PILOT-FC CURRENT REQUIREMENT CHARTS

PILOT-FC FIELD CONTROLLER CURRENT REQUIREMENTS: 230 VAC/50 Hz Supply Voltage, 10 to 40 Stations, Various Loads and Communication Options

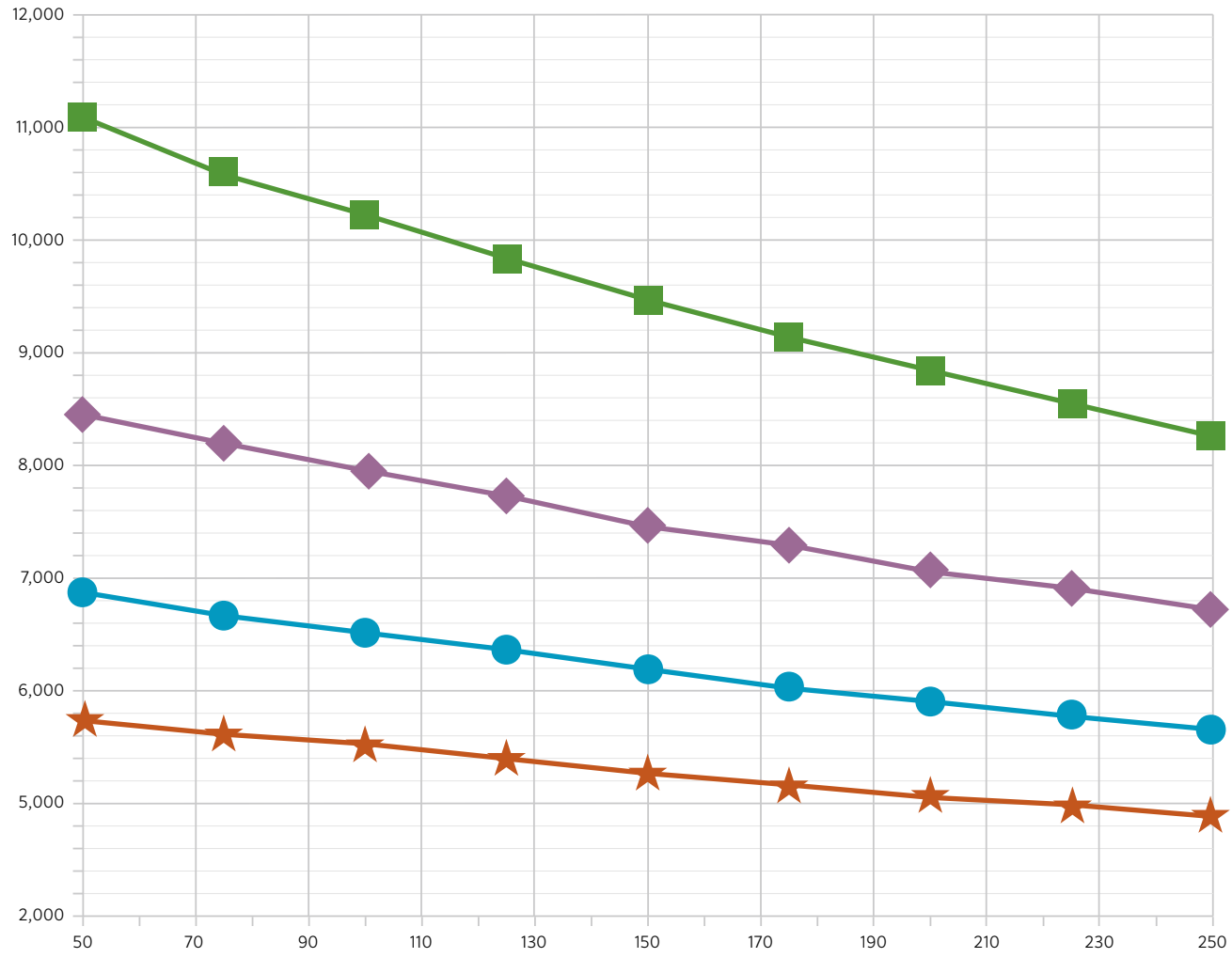


PILOT-FC FIELD CONTROLLER CURRENT REQUIREMENTS: 230 VAC/50 Hz Supply Voltage, 50 to 80 Stations, Various Loads and Communication Options



WIRE USE CHARTS

Active Stations Based on Wire Length and Number of Two-Way Modules Using ID1 (14 AWG) Wire



ACTIVE STATIONS	
■	15
◆	20
●	25
★	30

WIRE SIZING

REQUIRED INFORMATION

1) Actual one-way length of wire between the controllers and the power source or the controllers and valves

2) Allowable voltage loss along the wire circuit

3) Accumulative current flowing through the wire section being sized in amperes

RESISTANCE IS CALCULATED USING THIS FORMULA:

$$R = \frac{1000 \times AVL}{2L \times I}$$

R = Maximum allowable resistance of wire in ohms per 1,000'

AVL = Allowable voltage loss

L = Wire length (one way)

I = Inrush current

AVL for controller power wire sizing is calculated by subtracting the minimum operating voltage required by the controller from the minimum available voltage at the power source.

AVL for valve wire sizing is calculated by subtracting minimum solenoid operating voltage from controller output voltage. This number will vary depending on the manufacturer and in some cases with line pressure.

VALVE WIRE SIZING EXAMPLE

Given: The distance from the controller to the valve is 1,800'. The controller output is 24 VAC. The valve has a minimum operating voltage of 20 VAC and an inrush current of 370 mA (0.37 A).

$$R = \frac{1,000 \times 4}{2\,(1,800) \times 0.37}$$

$$R = \frac{4,000}{1,332}$$

$$R = 3.00 \text{ ohms/1,000 ft}$$

So, wire resistance cannot exceed 3.00 ohms per 1,000'. Now go to Table #1 and select the proper wire size. Since 18 gauge wire has more resistance than 3.00 ohms per 1,000', choose 14 gauge wire.

Table 2 is a quick reference and is set up to provide maximum wire runs given the information at the bottom of the table.

TABLE 1 - RESISTANCE OF COPPER WIRE

Wire Size (AWG)	Resistance at 68° F (ohms per 1,000')
18	6.39
16	4.02
14	2.52
12	1.59
10	1
8	0.63
6	0.4
4	0.25

TABLE 2 - VALVE WIRE SIZING

Ground Wire	Control Wire						
	18	16	14	12	10	8	6
18	850	1040	1210	1350	1460	1540	1590
16	1040	1340	1650	1920	2150	2330	2440
14	1210	1650	2150	2630	3080	3450	3700
12	1350	1920	2630	3390	4170	4880	5400
10	1460	2150	3080	4170	5400	6670	7690
8	1540	2330	3450	4880	6670	8700	10530
6	1590	2440	3700	5400	7690	10530	13330

Notes:

Maximum one-way distance in feet between controller and valve heavy-duty solenoid: 24 VAC, 350 mA inrush current, 190 mA holding current, 60 Hz; 370 mA inrush current, 210 mA holding current, 50 Hz.

Table 2 is for a single active solenoid. With two solenoids operating simultaneously on the same wires, the wire distances should be halved.

ADDITIONAL DATA

STANDARD ANNEALED COPPER AT 68°F

American Wire Gauge	Common Metric Equivalent (mm^2)	Diameter (mils)	Diameter (mm)	Cross-Sectional Area (mm^2)	Resistance (Per mft ohms)	Resistance (per km ohms)
1	50	289.3	7.348	42.4	0.924	0.407
2	35	257.6	6.543	33.6	0.156	0.513
3		229.4	5.827	26.7	0.197	0.647
4	25	204.3	5.189	21.1	0.249	0.815
5		181.9	4.62	16.8	0.313	1.028
6	16	162	4.115	13.3	0.395	1.297
7		144.3	3.665	10.6	0.498	1.634
8	10	128.5	3.264	8.36	0.628	2.061
9		114.4	2.906	6.63	0.793	2.6
10	6	101.9	2.588	5.26	0.999	3.277
11		90.7	2.3	4.17	1.26	4.14
12	4	80.8	2.05	3.31	1.59	5.21
13		72	1.83	2.63	2	6.56
14	2.5	64.1	1.63	1.63	2.52	8.28
15		57.1	1.45	1.65	3.18	10.4
16	1.5	50.8	1.29	1.31	4.02	13.2
17		45.3	1.15	1.04	5.05	16.6
18	0.75	40.3	1.02	0.82	6.39	21
19		35.9	0.912	0.65	8.05	26.4
20	0.5	32	0.813	0.52	10.1	33.2

ESTIMATING PIPE SIZE

Nominal Pipe Size	Approximate String Length in Inches		
	Copper Pipe	Galvanized (Sch. 40 Steel)	PVC Pipe
½"	2"	2⅝"	2⅝"
⅝"	2⅜"		
¾"	2¾"	3⅝"	3⅝"
1"	3½"	4⅛"	4⅛"
1¼"	4⅝"	5⅜"	5⅜"
1½"	5⅛"	6"	6"
2"	6¾"	7⅞"	7⅞"

Notes:
To determine the nominal size of a pipe, wrap a string around the pipe and compare its length to the chart above.

CLIMATE ETP TABLE

Climate*	Inches Daily
Cool Humid	0.10 to 0.15
Cool Dry	0.15 to 0.20
Warm Humid	0.15 to 0.20
Warm Dry	0.20 to 0.25
Hot Humid	0.20 to 0.30
Hot Dry	0.30 to 0.45

Notes:
* Cool = under 70˚F as an average midsummer high
* Warm = between 70˚ and 90˚F as midsummer highs
* Hot = over 90˚F
* Humid = over 50% as average midsummer relative humidity (dry=under 50%)

FRICTION LOSS CHARTS: SCHEDULE 40 PVC

ASTM 1785 C=150 • PSI loss per 100 ft of pipe

Nominal Size	1"		1¼"		1½"		2"		2½"		3"		4"		6"	
Pipe ID	1.029		1.360		1.590		2.047		2.445		3.042		3.998		6.031	
Flow (GPM)	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss
1	0.39	0.04	0.22	0.01	0.16	0.00	0.10	0.00	0.07	0.00	0.04	0.00	0.03	0.00	0.01	0.00
2	0.77	0.13	0.44	0.03	0.32	0.02	0.19	0.00	0.14	0.00	0.09	0.00	0.05	0.00	0.02	0.00
3	1.16	0.28	0.66	0.07	0.48	0.03	0.29	0.01	0.20	0.00	0.13	0.00	0.08	0.00	0.03	0.00
4	1.54	0.48	0.88	0.12	0.65	0.06	0.39	0.02	0.27	0.01	0.18	0.00	0.10	0.00	0.04	0.00
5	1.93	0.73	1.10	0.19	0.81	0.09	0.49	0.03	0.34	0.01	0.22	0.00	0.13	0.00	0.06	0.00
6	2.31	1.02	1.32	0.26	0.97	0.12	0.58	0.04	0.41	0.02	0.26	0.01	0.15	0.00	0.07	0.00
7	2.70	1.36	1.54	0.35	1.13	0.16	0.68	0.05	0.48	0.02	0.31	0.01	0.18	0.00	0.08	0.00
8	3.08	1.74	1.77	0.45	1.29	0.21	0.78	0.06	0.55	0.03	0.35	0.01	0.20	0.00	0.09	0.00
9	3.47	2.17	1.99	0.56	1.45	0.26	0.88	0.08	0.61	0.03	0.40	0.01	0.23	0.00	0.10	0.00
10	3.85	2.63	2.21	0.68	1.61	0.32	0.97	0.09	0.68	0.04	0.44	0.01	0.26	0.00	0.11	0.00
12	4.63	3.69	2.65	0.95	1.94	0.44	1.17	0.13	0.82	0.05	0.53	0.02	0.31	0.01	0.13	0.00
14	5.40	4.91	3.09	1.26	2.26	0.59	1.36	0.17	0.96	0.07	0.62	0.03	0.36	0.01	0.16	0.00
16	6.17	6.29	3.53	1.62	2.58	0.76	1.56	0.22	1.09	0.09	0.71	0.03	0.41	0.01	0.18	0.00
18	6.94	7.82	3.97	2.01	2.91	0.94	1.75	0.28	1.23	0.12	0.79	0.04	0.46	0.01	0.20	0.00
20	7.71	9.51	4.41	2.45	3.23	1.14	1.95	0.33	1.37	0.14	0.88	0.05	0.51	0.01	0.22	0.00
22	8.48	11.35	4.85	2.92	3.55	1.37	2.14	0.40	1.50	0.17	0.97	0.06	0.56	0.02	0.25	0.00
24	9.25	13.33	5.30	3.43	3.87	1.60	2.34	0.47	1.64	0.20	1.06	0.07	0.61	0.02	0.27	0.00
26			5.74	3.98	4.20	1.86	2.53	0.54	1.78	0.23	1.15	0.08	0.66	0.02	0.29	0.00
28			6.18	4.57	4.52	2.13	2.73	0.62	1.91	0.26	1.23	0.09	0.71	0.02	0.31	0.00
30			6.62	5.19	4.84	2.43	2.92	0.71	2.05	0.30	1.32	0.10	0.77	0.03	0.34	0.00
35			7.72	6.90	5.65	3.23	3.41	0.94	2.39	0.40	1.54	0.14	0.89	0.04	0.39	0.00
40			8.83	8.84	6.46	4.13	3.90	1.21	2.73	0.51	1.76	0.18	1.02	0.05	0.45	0.01
45			9.93	10.99	7.26	5.14	4.38	1.50	3.07	0.63	1.98	0.22	1.15	0.06	0.50	0.01
50					8.07	6.25	4.87	1.83	3.41	0.77	2.21	0.27	1.28	0.07	0.56	0.01
55					8.88	7.45	5.36	2.18	3.75	0.92	2.43	0.32	1.40	0.08	0.62	0.01
60					9.69	8.76	5.84	2.56	4.10	1.08	2.65	0.37	1.53	0.10	0.67	0.01
65							6.33	2.97	4.44	1.25	2.87	0.43	1.66	0.11	0.73	0.02
70							6.82	3.41	4.78	1.44	3.09	0.50	1.79	0.13	0.79	0.02
75							7.31	3.87	5.12	1.63	3.31	0.56	1.92	0.15	0.84	0.02
80							7.79	4.36	5.46	1.84	3.53	0.63	2.04	0.17	0.90	0.02
85							8.28	4.88	5.80	2.06	3.75	0.71	2.17	0.19	0.95	0.03
90							8.77	5.43	6.14	2.29	3.97	0.79	2.30	0.21	1.01	0.03
95							9.25	6.00	6.49	2.53	4.19	0.87	2.43	0.23	1.07	0.03
100							9.74	6.60	6.83	2.78	4.41	0.96	2.55	0.25	1.12	0.03
110									7.51	3.32	4.85	1.15	2.81	0.30	1.23	0.04
120									8.19	3.90	5.29	1.35	3.06	0.36	1.35	0.05
130									8.88	4.52	5.73	1.56	3.32	0.41	1.46	0.06
140									9.56	5.18	6.17	1.79	3.57	0.47	1.57	0.06
150											6.62	2.03	3.83	0.54	1.68	0.07
160											7.06	2.29	4.09	0.61	1.80	0.08
170											7.50	2.56	4.34	0.68	1.91	0.09
180											7.94	2.85	4.60	0.75	2.02	0.10
190											8.38	3.15	4.85	0.83	2.13	0.11
200											8.82	3.47	5.11	0.92	2.24	0.12
225											9.92	4.31	5.75	1.14	2.52	0.15
250													6.38	1.39	2.81	0.19
275													7.02	1.65	3.09	0.22
300													7.66	1.94	3.37	0.26
325													8.30	2.25	3.65	0.30
350													8.94	2.58	3.93	0.35
375													9.58	2.94	4.21	0.40
400															4.49	0.45
425															4.77	0.50
450															5.05	0.56
475															5.33	0.62
500															5.61	0.68
525															5.89	0.74
550															6.17	0.81
575															6.45	0.88
600															6.73	0.95
625															7.01	1.02
650															7.29	1.10
675															7.57	1.18
700															7.85	1.26
725															8.14	1.35

FRICTION LOSS CHARTS: CLASS 160 SDR 26 PVC IPS 160 PSI

ANSI/ASAE S376.2 ASTM D2241 C=150 • PSI loss per 100 ft of pipe

Nominal Size	1½"		2"		2½"		3"		4"		6"		8"		10"		12"	
Pipe OD	1.950		2.375		2.875		3.500		4.500		6.625		8.625		10.750		12.750	
Min. Wall	0.073		0.091		0.110		0.135		0.173		0.255		0.332		0.413		0.490	
Pipe ID	1.734		2.173		2.635		3.210		4.134		6.084		7.921		11.710		11.710	
Flow (GPM)	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss
1	0.14	0.00																
2	0.27	0.01	0.17	0.00														
3	0.41	0.02	0.26	0.01														
4	0.54	0.04	0.35	0.01	0.24	0.00												
5	0.68	0.06	0.43	0.02	0.29	0.01												
10	1.36	0.21	0.86	0.07	0.59	0.03	0.40	0.01										
15	2.04	0.44	1.30	0.15	0.88	0.06	0.59	0.02	0.36	0.01								
20	2.71	0.75	1.73	0.25	1.18	0.10	0.79	0.04	0.48	0.01								
25	3.39	1.13	2.16	0.38	1.47	0.15	0.99	0.06	0.60	0.02								
30	4.07	1.59	2.59	0.53	1.76	0.21	1.19	0.08	0.72	0.02								
35	4.75	2.12	3.03	0.71	2.06	0.28	1.39	0.11	0.84	0.03	0.39	0.00	0.23	0.00	0.15	0.00	0.10	0.00
40	5.43	2.71	3.46	0.90	2.35	0.35	1.58	0.14	0.96	0.04	0.44	0.01	0.26	0.00	0.17	0.00	0.12	0.00
45	6.11	3.37	3.89	1.12	2.65	0.44	1.78	0.17	1.07	0.05	0.50	0.01	0.29	0.00	0.19	0.00	0.13	0.00
50	6.79	4.10	4.32	1.37	2.94	0.53	1.98	0.20	1.19	0.06	0.55	0.01	0.33	0.00	0.21	0.00	0.15	0.00
55	7.47	4.89	4.75	1.63	3.23	0.64	2.18	0.24	1.31	0.07	0.61	0.01	0.36	0.00	0.23	0.00	0.16	0.00
60	8.14	5.74	5.19	1.92	3.53	0.75	2.38	0.29	1.43	0.08	0.66	0.01	0.39	0.00	0.25	0.00	0.18	0.00
70	9.50	7.64	6.05	2.55	4.11	1.00	2.77	0.38	1.67	0.11	0.77	0.02	0.46	0.00	0.29	0.00	0.21	0.00
80			6.91	3.26	4.70	1.28	3.17	0.49	1.91	0.14	0.88	0.02	0.52	0.01	0.33	0.00	0.24	0.00
90			7.78	4.06	5.29	1.59	3.56	0.61	2.15	0.18	0.99	0.03	0.59	0.01	0.38	0.00	0.27	0.00
100			8.64	4.93	5.88	1.93	3.96	0.74	2.39	0.22	1.10	0.03	0.65	0.01	0.42	0.00	0.30	0.00
150					8.82	4.09	5.94	1.57	3.58	0.46	1.65	0.07	0.98	0.02	0.63	0.01	0.45	0.00
200							7.92	2.67	4.78	0.78	2.21	0.12	1.30	0.03	0.84	0.01	0.60	0.00
250							9.90	4.03	5.97	1.18	2.76	0.18	1.63	0.05	1.05	0.02	0.74	0.01
300									7.16	1.65	3.31	0.25	1.95	0.07	1.26	0.02	0.89	0.01
350									8.36	2.20	3.86	0.34	2.28	0.09	1.47	0.03	1.04	0.01
400									9.55	2.81	4.41	0.43	2.60	0.12	1.67	0.04	1.19	0.02
450											4.96	0.53	2.93	0.15	1.88	0.05	1.34	0.02
500											5.51	0.65	3.25	0.18	2.09	0.06	1.49	0.03
550											6.06	0.77	3.58	0.21	2.30	0.07	1.64	0.03
600											6.62	0.91	3.90	0.25	2.51	0.09	1.79	0.04
700											7.72	1.21	4.55	0.34	2.93	0.11	2.08	0.05
800											8.82	1.55	5.20	0.43	3.35	0.15	2.38	0.06
900											9.92	1.93	5.85	0.53	3.77	0.18	2.68	0.08
1,000													6.50	0.65	4.19	0.22	2.98	0.10
1,100													7.16	0.77	4.60	0.26	3.27	0.12
1,200													7.81	0.91	5.02	0.31	3.57	0.14
1,300													8.46	1.05	5.44	0.36	3.87	0.16
1,400													9.11	1.21	5.86	0.41	4.17	0.18
1,500													9.76	1.37	6.28	0.47	4.46	0.21
1,600															6.70	0.53	4.76	0.23
1,700															7.12	0.59	5.06	0.26
1,800															7.54	0.66	5.36	0.29
1,900															7.95	0.73	5.66	0.32
2,000															8.37	0.80	5.95	0.35
2,100															8.79	0.88	6.25	0.38
2,200															9.21	0.96	6.55	0.42
2,300															9.63	1.04	6.85	0.45
2,400																	7.14	0.49
2,500																	7.44	0.53
2,600																	7.74	0.57
2,700																	8.04	0.61
2,800																	8.33	0.65
2,900																	8.63	0.70
3,000																	8.93	0.74
3,250																	9.67	0.86

FRICTION LOSS CHARTS: CLASS 200 SDR 21 PVC IPS

ANSI/ASAE S376.2 ASTM D2241 C=150 • PSI loss per 100 ft of pipe

Nominal Size	1½"		2"		2½"		3"		4"		6"		8"		10"		12"	
Pipe OD	1.950		2.375		2.875		3.500		4.500		6.625		8.625		10.750		12.750	
Min. Wall	0.090		0.113		0.137		0.167		0.214		0.316		0.410		0.511		0.606	
Pipe ID	1.700		2.129		2.581		3.146		4.046		5.955		7.755		9.666		11.464	
Flow (GPM)	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss
1	0.14	0.00	0.09	0.00														
2	0.28	0.01	0.18	0.00														
3	0.42	0.02	0.27	0.01														
4	0.56	0.04	0.36	0.01	0.25	0.01												
5	0.71	0.06	0.45	0.02	0.31	0.01												
10	1.41	0.23	0.90	0.08	0.61	0.03	0.41	0.01										
15	2.12	0.49	1.35	0.16	0.92	0.06	0.62	0.02										
20	2.82	0.83	1.80	0.28	1.23	0.11	0.82	0.04	0.50	0.01								
25	3.53	1.25	2.25	0.42	1.53	0.16	1.03	0.06	0.62	0.02								
30	4.24	1.75	2.70	0.59	1.84	0.23	1.24	0.09	0.75	0.03								
35	4.94	2.33	3.15	0.78	2.14	0.31	1.44	0.12	0.87	0.03	0.40	0.01	0.24	0.00	0.15	0.00	0.11	0.00
40	5.65	2.98	3.60	1.00	2.45	0.39	1.65	0.15	1.00	0.04	0.46	0.01	0.27	0.00	0.17	0.00	0.12	0.00
45	6.35	3.71	4.05	1.24	2.76	0.49	1.86	0.19	1.12	0.05	0.52	0.01	0.31	0.00	0.20	0.00	0.14	0.00
50	7.06	4.51	4.50	1.51	3.06	0.59	2.06	0.23	1.25	0.07	0.58	0.01	0.34	0.00	0.22	0.00	0.16	0.00
55	7.77	5.38	4.95	1.80	3.37	0.71	2.27	0.27	1.37	0.08	0.63	0.01	0.37	0.00	0.24	0.00	0.17	0.00
60	8.47	6.32	5.40	2.12	3.68	0.83	2.47	0.32	1.50	0.09	0.69	0.01	0.41	0.00	0.26	0.00	0.19	0.00
70	9.89	8.41	6.30	2.81	4.29	1.10	2.89	0.42	1.75	0.12	0.81	0.02	0.48	0.01	0.31	0.00	0.22	0.00
80			7.20	3.60	4.90	1.41	3.30	0.54	1.99	0.16	0.92	0.02	0.54	0.01	0.35	0.00	0.25	0.00
90			8.10	4.48	5.51	1.76	3.71	0.67	2.24	0.20	1.04	0.03	0.61	0.01	0.39	0.00	0.28	0.00
100			9.00	5.45	6.13	2.14	4.12	0.82	2.49	0.24	1.15	0.04	0.68	0.01	0.44	0.00	0.31	0.00
150					9.19	4.53	6.19	1.73	3.74	0.51	1.73	0.08	1.02	0.02	0.66	0.01	0.47	0.00
200							8.25	2.94	4.99	0.87	2.30	0.13	1.36	0.04	0.87	0.01	0.62	0.01
250									6.23	1.31	2.88	0.20	1.70	0.06	1.09	0.02	0.78	0.01
300									7.48	1.83	3.45	0.28	2.04	0.08	1.31	0.03	0.93	0.01
350									8.73	2.44	4.03	0.37	2.38	0.10	1.53	0.04	1.09	0.02
400									9.97	3.12	4.60	0.48	2.71	0.13	1.75	0.05	1.24	0.02
450											5.18	0.59	3.05	0.16	1.97	0.06	1.40	0.02
500											5.75	0.72	3.39	0.20	2.18	0.07	1.55	0.03
550											6.33	0.86	3.73	0.24	2.40	0.08	1.71	0.04
600											6.91	1.01	4.07	0.28	2.62	0.10	1.86	0.04
700											8.06	1.34	4.75	0.37	3.06	0.13	2.17	0.06
800											9.21	1.72	5.43	0.48	3.49	0.16	2.48	0.07
900													6.11	0.59	3.93	0.20	2.79	0.09
1,000													6.79	0.72	4.37	0.25	3.11	0.11
1,100													7.46	0.86	4.81	0.29	3.42	0.13
1,200													8.14	1.01	5.24	0.35	3.73	0.15
1,300													8.82	1.17	5.68	0.40	4.04	0.17
1,400													9.50	1.34	6.12	0.46	4.35	0.20
1,500															6.55	0.52	4.66	0.23
1,600															6.99	0.59	4.97	0.26
1,700															7.43	0.66	5.28	0.29
1,800															7.86	0.73	5.59	0.32
1,900															8.30	0.81	5.90	0.35
2,000															8.74	0.89	6.21	0.39
2,100															9.17	0.97	6.52	0.42
2,200															9.61	1.06	6.83	0.46
2,300																	7.14	0.50
2,400																	7.45	0.54
2,500																	7.76	0.59
2,600																	8.07	0.63
2,700																	8.38	0.68
2,800																	8.70	0.72
2,900																	9.01	0.77
3,000																	9.32	0.82
3,250																		

FRICTION LOSS CHARTS: HDPE DR 13.5 128 PSI

ANSI/ASAE S376.2 PE3408 ASTM D2239 C=150 • PSI loss per 100 ft of pipe

Nominal Size	3"		4"		6"		8"		10"		12"		14"		16"		18"	
Pipe OD	3.500		4.500		6.625		8.625		10.750		12.750		14.000		16.000		18.000	
Min. Wall	0.275		0.353		0.521		0.678		0.844		1.001		1.099		1.256		1.413	
Pipe ID	2.950		3.794		5.583		7.269		9.062		10.748		11.802		13.488		15.174	
Flow (GPM)	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss
50	2.34	0.31	1.42	0.09	0.65	0.01												
60	2.81	0.43	1.70	0.13	0.79	0.02												
70	3.28	0.58	1.98	0.17	0.92	0.03												
80	3.75	0.74	2.27	0.22	1.05	0.03												
90	4.22	0.92	2.55	0.27	1.18	0.04												
100	4.69	1.11	2.84	0.33	1.31	0.05	0.77	0.01										
120	5.63	1.56	3.40	0.46	1.57	0.07	0.93	0.02										
140	6.57	2.08	3.97	0.61	1.83	0.09	1.08	0.03										
160	7.50	2.66	4.54	0.78	2.09	0.12	1.24	0.03										
180	8.44	3.31	5.10	0.97	2.36	0.15	1.39	0.04										
200	9.38	4.02	5.67	1.18	2.62	0.18	1.54	0.05	0.99	0.02	0.71	0.01						
220			6.24	1.41	2.88	0.22	1.70	0.06	1.09	0.02	0.78	0.01						
240			6.80	1.66	3.14	0.25	1.85	0.07	1.19	0.02	0.85	0.01						
260			7.37	1.92	3.40	0.29	2.01	0.08	1.29	0.03	0.92	0.01						
280			7.94	2.21	3.67	0.34	2.16	0.09	1.39	0.03	0.99	0.01						
300			8.51	2.51	3.93	0.38	2.32	0.11	1.49	0.04	1.06	0.02						
320			9.07	2.82	4.19	0.43	2.47	0.12	1.59	0.04	1.13	0.02	0.94	0.01				
340			9.64	3.16	4.45	0.48	2.63	0.13	1.69	0.05	1.20	0.02	1.00	0.01				
360					4.71	0.54	2.78	0.15	1.79	0.05	1.27	0.02	1.05	0.01				
380					4.98	0.59	2.94	0.16	1.89	0.06	1.34	0.02	1.11	0.02				
400					5.24	0.65	3.09	0.18	1.99	0.06	1.41	0.03	1.17	0.02				
450					5.89	0.81	3.48	0.22	2.24	0.08	1.59	0.03	1.32	0.02	1.01	0.01		
500					6.55	0.99	3.86	0.27	2.48	0.09	1.77	0.04	1.47	0.03	1.12	0.01		
550					7.20	1.18	4.25	0.33	2.73	0.11	1.94	0.05	1.61	0.03	1.23	0.02		
600					7.86	1.38	4.63	0.38	2.98	0.13	2.12	0.06	1.76	0.04	1.35	0.02		
650					8.51	1.60	5.02	0.44	3.23	0.15	2.30	0.07	1.90	0.04	1.46	0.02		
700					9.17	1.84	5.41	0.51	3.48	0.17	2.47	0.08	2.05	0.05	1.57	0.03	1.24	0.01
750					9.82	2.09	5.79	0.58	3.73	0.20	2.65	0.09	2.20	0.05	1.68	0.03	1.33	0.02
800							6.18	0.65	3.98	0.22	2.83	0.10	2.34	0.06	1.79	0.03	1.42	0.02
850							6.57	0.73	4.22	0.25	3.00	0.11	2.49	0.07	1.91	0.04	1.51	0.02
900							6.95	0.81	4.47	0.28	3.18	0.12	2.64	0.08	2.02	0.04	1.60	0.02
950							7.34	0.90	4.72	0.31	3.36	0.13	2.78	0.08	2.13	0.04	1.68	0.02
1,000							7.72	0.99	4.97	0.34	3.53	0.15	2.93	0.09	2.24	0.05	1.77	0.03
1,050							8.11	1.08	5.22	0.37	3.71	0.16	3.08	0.10	2.36	0.05	1.86	0.03
1,100							8.50	1.18	5.47	0.40	3.89	0.18	3.22	0.11	2.47	0.06	1.95	0.03
1,150							8.88	1.28	5.72	0.44	4.06	0.19	3.37	0.12	2.58	0.06	2.04	0.04
1,200							9.27	1.38	5.96	0.47	4.24	0.21	3.52	0.13	2.69	0.07	2.13	0.04
1,250							9.66	1.49	6.21	0.51	4.42	0.22	3.66	0.14	2.80	0.07	2.22	0.04
1,300									6.46	0.55	4.59	0.24	3.81	0.15	2.92	0.08	2.30	0.04
1,350									6.71	0.59	4.77	0.26	3.96	0.16	3.03	0.08	2.39	0.05
1,400									6.96	0.63	4.95	0.27	4.10	0.17	3.14	0.09	2.48	0.05
1,450									7.21	0.67	5.12	0.29	4.25	0.19	3.25	0.10	2.57	0.05
1,500									7.45	0.71	5.30	0.31	4.40	0.20	3.37	0.10	2.66	0.06
1,550									7.70	0.76	5.48	0.33	4.54	0.21	3.48	0.11	2.75	0.06
1,600									7.95	0.80	5.65	0.35	4.69	0.22	3.59	0.12	2.84	0.07
1,650									8.20	0.85	5.83	0.37	4.83	0.24	3.70	0.12	2.92	0.07
1,700									8.45	0.90	6.01	0.39	4.98	0.25	3.81	0.13	3.01	0.07
1,750									8.70	0.95	6.18	0.41	5.13	0.26	3.93	0.14	3.10	0.08
1,800									8.95	1.00	6.36	0.44	5.27	0.28	4.04	0.14	3.19	0.08
1,850									9.19	1.05	6.54	0.46	5.42	0.29	4.15	0.15	3.28	0.09
1,900									9.44	1.11	6.71	0.48	5.57	0.31	4.26	0.16	3.37	0.09
1,950									9.69	1.16	6.89	0.51	5.71	0.32	4.37	0.17	3.46	0.09
2,000									9.94	1.22	7.07	0.53	5.86	0.34	4.49	0.18	3.55	0.10
2,100											7.42	0.58	6.15	0.37	4.71	0.19	3.72	0.11
2,200											7.77	0.63	6.45	0.40	4.94	0.21	3.90	0.12
2,300											8.13	0.69	6.74	0.44	5.16	0.23	4.08	0.13
2,400											8.48	0.74	7.03	0.47	5.38	0.25	4.25	0.14
2,500											8.83	0.80	7.33	0.51	5.61	0.27	4.43	0.15
2,600											9.19	0.86	7.62	0.55	5.83	0.29	4.61	0.16
2,700											9.54	0.92	7.91	0.59	6.06	0.31	4.79	0.17
2,800											9.89	0.99	8.20	0.63	6.28	0.33	4.96	0.18
2,900													8.50	0.67	6.51	0.35	5.14	0.20
3,000													8.79	0.71	6.73	0.37	5.32	0.21
3,500															7.85	0.50	6.20	0.28
4,000															8.97	0.63	7.09	0.36
4,500																	7.98	0.44
5,000																	8.86	0.54

FRICTION LOSS CHARTS: HDPE DR 11 160 PSI

ANSI/ASAE S376.2 PE3408 ASTM D2239 C=150 • PSI loss per 100 ft of pipe

Nominal Size	3"		4"		6"		8"		10"		12"		14"		16"		18"	
Pipe OD	3.500		4.500		6.625		8.625		10.750		12.750		14.000		16.000		18.000	
Min. Wall	0.318		0.409		0.602		0.784		0.977		1.159		1.273		1.455		1.636	
Pipe ID	2.826		3.632		5.349		6.963		8.678		10.292		11.300		12.914		14.532	
Flow (GPM)	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss
50	2.56	0.38	1.55	0.11	0.71	0.02												
60	3.07	0.53	1.86	0.16	0.86	0.02												
70	3.58	0.71	2.17	0.21	1.00	0.03												
80	4.09	0.91	2.48	0.27	1.14	0.04												
90	4.60	1.13	2.78	0.33	1.28	0.05												
100	5.11	1.37	3.09	0.41	1.43	0.06	0.84	0.02										
120	6.13	1.93	3.71	0.57	1.71	0.09	1.01	0.02										
140	7.16	2.56	4.33	0.76	2.00	0.11	1.18	0.03										
160	8.18	3.28	4.95	0.97	2.28	0.15	1.35	0.04										
180	9.20	4.08	5.57	1.20	2.57	0.18	1.52	0.05										
200			6.19	1.46	2.85	0.22	1.68	0.06	1.08	0.02	0.77	0.01						
220			6.81	1.75	3.14	0.27	1.85	0.07	1.19	0.03	0.85	0.01						
240			7.43	2.05	3.42	0.31	2.02	0.09	1.30	0.03	0.92	0.01						
260			8.04	2.38	3.71	0.36	2.19	0.10	1.41	0.03	1.00	0.01						
280			8.66	2.73	3.99	0.41	2.36	0.11	1.52	0.04	1.08	0.02						
300			9.28	3.10	4.28	0.47	2.53	0.13	1.63	0.04	1.16	0.02						
320			9.90	3.49	4.56	0.53	2.69	0.15	1.73	0.05	1.23	0.02	1.02	0.01				
340					4.85	0.59	2.86	0.16	1.84	0.06	1.31	0.02	1.09	0.02				
360					5.14	0.66	3.03	0.18	1.95	0.06	1.39	0.03	1.15	0.02				
380					5.42	0.73	3.20	0.20	2.06	0.07	1.46	0.03	1.21	0.02				
400					5.71	0.80	3.37	0.22	2.17	0.08	1.54	0.03	1.28	0.02				
450					6.42	1.00	3.79	0.28	2.44	0.09	1.73	0.04	1.44	0.03				
500					7.13	1.21	4.21	0.34	2.71	0.12	1.93	0.05	1.60	0.03	1.22	0.02		
550					7.85	1.45	4.63	0.40	2.98	0.14	2.12	0.06	1.76	0.04	1.35	0.02		
600					8.56	1.70	5.05	0.47	3.25	0.16	2.31	0.07	1.92	0.04	1.47	0.02		
650					9.27	1.97	5.47	0.55	3.52	0.19	2.50	0.08	2.08	0.05	1.59	0.03		
700					9.99	2.26	5.89	0.63	3.79	0.21	2.70	0.09	2.24	0.06	1.71	0.03	1.35	0.02
750							6.31	0.71	4.06	0.24	2.89	0.11	2.40	0.07	1.84	0.04	1.45	0.02
800							6.73	0.80	4.34	0.28	3.08	0.12	2.56	0.08	1.96	0.04	1.55	0.02
850							7.16	0.90	4.61	0.31	3.28	0.13	2.72	0.09	2.08	0.04	1.64	0.03
900							7.58	1.00	4.88	0.34	3.47	0.15	2.88	0.09	2.20	0.05	1.74	0.03
950							8.00	1.10	5.15	0.38	3.66	0.16	3.04	0.10	2.32	0.05	1.84	0.03
1,000							8.42	1.21	5.42	0.42	3.85	0.18	3.20	0.12	2.45	0.06	1.93	0.03
1,050							8.84	1.33	5.69	0.46	4.05	0.20	3.36	0.13	2.57	0.07	2.03	0.04
1,100							9.26	1.45	5.96	0.50	4.24	0.22	3.52	0.14	2.69	0.07	2.13	0.04
1,150							9.68	1.57	6.23	0.54	4.43	0.24	3.68	0.15	2.81	0.08	2.22	0.04
1,200									6.50	0.58	4.62	0.25	3.84	0.16	2.94	0.08	2.32	0.05
1,250									6.77	0.63	4.82	0.27	4.00	0.17	3.06	0.09	2.42	0.05
1,300									7.05	0.68	5.01	0.29	4.16	0.19	3.18	0.10	2.51	0.06
1,350									7.32	0.73	5.20	0.32	4.31	0.20	3.30	0.10	2.61	0.06
1,400									7.59	0.78	5.39	0.34	4.47	0.21	3.43	0.11	2.71	0.06
1,450									7.86	0.83	5.59	0.36	4.63	0.23	3.55	0.12	2.80	0.07
1,500									8.13	0.88	5.78	0.38	4.79	0.24	3.67	0.13	2.90	0.07
1,550									8.40	0.94	5.97	0.41	4.95	0.26	3.79	0.14	3.00	0.08
1,600									8.67	0.99	6.16	0.43	5.11	0.28	3.92	0.14	3.09	0.08
1,650									8.94	1.05	6.36	0.46	5.27	0.29	4.04	0.15	3.19	0.09
1,700									9.21	1.11	6.55	0.48	5.43	0.31	4.16	0.16	3.29	0.09
1,750									9.48	1.17	6.74	0.51	5.59	0.32	4.28	0.17	3.38	0.10
1,800									9.76	1.24	6.94	0.54	5.75	0.34	4.41	0.18	3.48	0.10
1,850											7.13	0.57	5.91	0.36	4.53	0.19	3.58	0.11
1,900											7.32	0.60	6.07	0.38	4.65	0.20	3.67	0.11
1,950											7.51	0.63	6.23	0.40	4.77	0.21	3.77	0.12
2,000											7.71	0.66	6.39	0.42	4.89	0.22	3.87	0.12
2,100											8.09	0.72	6.71	0.46	5.14	0.24	4.06	0.13
2,200											8.48	0.78	7.03	0.50	5.38	0.26	4.25	0.15
2,300											8.86	0.85	7.35	0.54	5.63	0.28	4.45	0.16
2,400											9.25	0.92	7.67	0.58	5.87	0.30	4.64	0.17
2,500											9.63	0.99	7.99	0.63	6.12	0.33	4.83	0.18
2,600													8.31	0.68	6.36	0.35	5.02	0.20
2,700													8.63	0.72	6.61	0.38	5.22	0.21
2,800													8.95	0.78	6.85	0.40	5.41	0.23
2,900													9.27	0.83	7.10	0.43	5.60	0.24
3,000													9.59	0.88	7.34	0.46	5.80	0.26
3,500															8.57	0.61	6.76	0.34
4,000															9.79	0.78	7.73	0.44
4,500																	8.70	0.55
5,000																	9.66	0.67

FRICTION LOSS CHARTS: HDPE DR 9 200 PSI

ANSI/ASAE S376.2 PE3408 ASTM D2239 C=150 • PSI loss per 100 ft of pipe

Nominal Size	3"		4"		6"		8"		10"		12"		14"		16"		18"	
Pipe OD	3.500		4.500		6.625		8.625		10.750		12.750		14.000		16.000		18.000	
Min. Wall	0.389		0.500		0.736		0.958		1.194		1.417		1.556		1.778		2.000	
Pipe ID	2.674		3.440		5.065		6.593		8.218		9.746		10.700		12.230		13.760	
Flow (GPM)	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss	Velocity FPS	PSI Loss
50	2.85	0.50	1.72	0.15	0.80	0.02												
60	3.42	0.70	2.07	0.20	0.95	0.03												
70	4.00	0.93	2.41	0.27	1.11	0.04												
80	4.57	1.19	2.76	0.35	1.27	0.05												
90	5.14	1.48	3.10	0.43	1.43	0.07												
100	5.71	1.80	3.45	0.53	1.59	0.08	0.94	0.02										
120	6.85	2.52	4.14	0.74	1.91	0.11	1.13	0.03										
140	7.99	3.35	4.83	0.98	2.23	0.15	1.31	0.04										
160	9.13	4.29	5.52	1.26	2.55	0.19	1.50	0.05	0.97	0.02								
180			6.21	1.57	2.86	0.24	1.69	0.07	1.09	0.02								
200			6.90	1.91	3.18	0.29	1.88	0.08	1.21	0.03								
220			7.59	2.27	3.50	0.35	2.07	0.10	1.33	0.03								
240			8.28	2.67	3.82	0.41	2.25	0.11	1.45	0.04	1.03	0.02						
260			8.97	3.10	4.14	0.47	2.44	0.13	1.57	0.04	1.12	0.02						
280			9.66	3.55	4.45	0.54	2.63	0.15	1.69	0.05	1.20	0.02						
300					4.77	0.61	2.82	0.17	1.81	0.06	1.29	0.03	1.07	0.02				
320					5.09	0.69	3.00	0.19	1.93	0.07	1.37	0.03	1.14	0.02				
340					5.41	0.77	3.19	0.21	2.05	0.07	1.46	0.03	1.21	0.02				
360					5.73	0.86	3.38	0.24	2.18	0.08	1.55	0.04	1.28	0.02				
380					6.05	0.95	3.57	0.26	2.30	0.09	1.63	0.04	1.35	0.03				
400					6.36	1.05	3.76	0.29	2.42	0.10	1.72	0.04	1.43	0.03				
450					7.16	1.30	4.23	0.36	2.72	0.12	1.93	0.05	1.60	0.03	1.23	0.02		
500					7.95	1.58	4.69	0.44	3.02	0.15	2.15	0.07	1.78	0.04	1.36	0.02		
550					8.75	1.89	5.16	0.52	3.32	0.18	2.36	0.08	1.96	0.05	1.50	0.03		
600					9.55	2.22	5.63	0.62	3.63	0.21	2.58	0.09	2.14	0.06	1.64	0.03	1.29	0.02
650							6.10	0.71	3.93	0.24	2.79	0.11	2.32	0.07	1.77	0.04	1.40	0.02
700							6.57	0.82	4.23	0.28	3.01	0.12	2.50	0.08	1.91	0.04	1.51	0.02
750							7.04	0.93	4.53	0.32	3.22	0.14	2.67	0.09	2.05	0.05	1.62	0.03
800							7.51	1.05	4.83	0.36	3.44	0.16	2.85	0.10	2.18	0.05	1.72	0.03
850							7.98	1.17	5.14	0.40	3.65	0.18	3.03	0.11	2.32	0.06	1.83	0.03
900							8.45	1.30	5.44	0.45	3.87	0.19	3.21	0.12	2.46	0.06	1.94	0.04
950							8.92	1.44	5.74	0.49	4.08	0.22	3.39	0.14	2.59	0.07	2.05	0.04
1,000							9.39	1.58	6.04	0.54	4.30	0.24	3.56	0.15	2.73	0.08	2.16	0.04
1,050							9.86	1.73	6.35	0.59	4.51	0.26	3.74	0.16	2.87	0.09	2.26	0.05
1,100									6.65	0.65	4.73	0.28	3.92	0.18	3.00	0.09	2.37	0.05
1,150									6.95	0.70	4.94	0.31	4.10	0.19	3.14	0.10	2.48	0.06
1,200									7.25	0.76	5.16	0.33	4.28	0.21	3.27	0.11	2.59	0.06
1,250									7.55	0.82	5.37	0.36	4.46	0.23	3.41	0.12	2.69	0.07
1,300									7.86	0.88	5.59	0.38	4.63	0.24	3.55	0.13	2.80	0.07
1,350									8.16	0.95	5.80	0.41	4.81	0.26	3.68	0.14	2.91	0.08
1,400									8.46	1.01	6.02	0.44	4.99	0.28	3.82	0.15	3.02	0.08
1,450									8.76	1.08	6.23	0.47	5.17	0.30	3.96	0.16	3.13	0.09
1,500									9.06	1.15	6.45	0.50	5.35	0.32	4.09	0.17	3.23	0.09
1,550									9.37	1.22	6.66	0.53	5.53	0.34	4.23	0.18	3.34	0.10
1,600									9.67	1.30	6.87	0.56	5.70	0.36	4.37	0.19	3.45	0.11
1,650									9.97	1.37	7.09	0.60	5.88	0.38	4.50	0.20	3.56	0.11
1,700											7.30	0.63	6.06	0.40	4.64	0.21	3.66	0.12
1,750											7.52	0.67	6.24	0.42	4.78	0.22	3.77	0.12
1,800											7.73	0.70	6.42	0.45	4.91	0.23	3.88	0.13
1,850											7.95	0.74	6.59	0.47	5.05	0.24	3.99	0.14
1,900											8.16	0.78	6.77	0.49	5.18	0.26	4.10	0.14
1,950											8.38	0.81	6.95	0.52	5.32	0.27	4.20	0.15
2,000											8.59	0.85	7.13	0.54	5.46	0.28	4.31	0.16
2,100											9.02	0.93	7.49	0.59	5.73	0.31	4.53	0.17
2,200											9.45	1.02	7.84	0.65	6.00	0.34	4.74	0.19
2,300											9.88	1.11	8.20	0.70	6.28	0.37	4.96	0.21
2,400													8.56	0.76	6.55	0.40	5.17	0.22
2,500													8.91	0.82	6.82	0.43	5.39	0.24
2,600													9.27	0.88	7.09	0.46	5.60	0.26
2,700													9.62	0.95	7.37	0.49	5.82	0.28
2,800													9.98	1.01	7.64	0.53	6.04	0.30
2,900															7.91	0.56	6.25	0.32
3,000															8.19	0.60	6.47	0.34
3,500															9.55	0.80	7.54	0.45
4,000																	8.62	0.58
4,500																	9.70	0.72
5,000																	10.78	0.87

STATEMENT OF WARRANTY

Hunter Residential and Commercial Irrigation Products

Hunter Industries Incorporated ("Hunter") warrants the following products to be free of defects in materials or workmanship under normal use in landscape irrigation applications for the specified period of time outlined below from the original date of manufacture:

ONE YEAR	**ROTORS**	SRM	**MICRO**	Micro Sprays, PLD Fittings, Rigid Risers, Air Relief Valves, RZB
TWO YEARS	**ROTORS**	PGP-ADJ, PGJ, HCV	**CONTROLLERS**	ACC (Legacy), BTT, Eco-Logic, HC, HCC, HPC, I-Core/DUAL (Legacy), NODE, NODE-BT, Pro-C, Pro-HC, PSR, ROAM, X2, X-Core, XC Hybrid, WAND
	SPRAYS	PS Ultra, SJ, FlexSG, HSBE	**SENSORS**	HC Flow Meter (wired and wireless)
	NOZZLES	Spray Nozzles, PCN, PCB, AFB, MSBN	**MICRO**	ACZ, PCZ, RZWS, Point Source Emitters, Tubing, Multi-Port Emitters, IH Risers, MLD, Eco-Indicator, Multi-Purpose Box, Senninger Regulators, PLD-LOC Fittings
	VALVES	PGV	**TOOLS**	SpotShot
	CENTRAL	A2CWIFI, A2CLAN, A2CCELLE, WIFIKIT, LANKIT, CELLKIT		
THREE YEARS	**CONTROLLERS**	ROAM XL, EZ Decoder System, EZ-DT	**MP ROTATOR**	All
FIVE YEARS	**ROTORS**	PGP Ultra, I-20, I-25, I-40, I-50, I-80, and I-90	**CONTROLLERS**	ACC2, ICC2, ICD Decoders, ICD-HP
	SPRAYS	Pro-Spray, Pro-Spray PRS30, and Pro-Spray PRS40	**SENSORS**	Clik Sensors, Flow-Sync, MWS, Solar Sync, Wireless Flow Sensor
	VALVES	HQ, ICV, IBV	**MICRO**	ICZ, PLD, HDL, HDL-COP**, Eco-Mat, Eco-Wrap

Hunter Golf and ST System Irrigation Products*

Hunter will unconditionally repair, replace, or repurchase, at its sole discretion, any defective component* assemblies contained within the Golf and ST products listed below by category, returned freight prepaid, from the date of manufacture within a period of:

ONE YEAR	**GOLF CONTROLLERS**	Pilot Command Center Software, Pilot-FC, Pilot-FI, Pilot Hub
THREE YEARS	**GOLF ROTORS**	TTS-800 Series, G-800 Series, G-900 Series, B Series
	GOLF TWO-WAY MODULES	Pilot 100, Pilot 200, Pilot 400, Pilot 600
FIVE YEARS	**GOLF ROTORS**	The golf rotor component warranty is extended to 5 years with a one-for-one purchase of an HSJ Swing Joint from an authorized Hunter Golf distributor.
	SWING JOINTS	HSJ-0, HSJ-1, HSJ-2, HSJ-3
	ST ROTORS	ST-90, STG-900, ST-1200, ST-1600, ST-1700
	ST ACCESSORIES	All models starting with "ST"
	COMPUTER, PRINTERS & ACCESSORIES, MAINTENANCE RADIO & BATTERY	Equipment manufacturer's warranty (no Hunter warranty)

* Warranty covers repair, replacement, or repurchase of individual defective component assemblies contained within the product. Returns of complete finished goods are not allowed under warranty without prior approval from the Hunter Product Manager.

If used for agricultural applications, Hunter limits the warranty for valves, sprays, MP Rotator Nozzles, and rotor products to a period of one (1) year from the original date of manufacture. This agriculture limitation supersedes all other warranties expressed or implied.

** Plus 2 additional years for environmental stress cracking. No warranty against root intrusion on HDL-COP. While the use of copper does not completely remove the chance of root intrusion, it has been shown to assist in its prevention when coupled with proper irrigation scheduling.

*** Eco-Indicator – 6" ECO-ID: 2-year warranty; 12" ECO-ID-12: 5-year warranty

**** Hunter's cellular module warranty does not apply to the availability or compatibility of cellular data service, in any particular area. Availability of compatible data services should be determined prior to installation.

Statement of Warranty, Continued

If a defect in a Hunter product is discovered during the applicable warranty period, Hunter will repair or replace, at its option, the product or the defective part. This warranty does not extend to repairs, adjustments, or replacement of a Hunter product or part that results from misuse, negligence, alteration, modification, tampering, or improper installation and/or maintenance of the product. This warranty extends only to the original installer of the Hunter product. If a defect arises in a Hunter product during the warranty period, contact your local Hunter Authorized Distributor.

Hunter's warranty applies only to products installed as specified and used as intended for irrigation purposes. Hunter's warranty shall be limited to defects in materials and workmanship during the warranty period, and shall not extend to situations in which the product was subjected to improper design, installation, operation, maintenance, application, abuse, improper electrical current, grounding, service other than by Hunter authorized agents, operating conditions other than that for which it was designed, or in systems using water containing corrosive chemicals, electrolytes, sand, dirt, silt, rust, or agents that otherwise attack and degrade plastics. Hunter's warranty does not cover component failures caused by lightning strikes, electrical power surges, or unconditioned power supplies. If products are repurchased, the price to Distributor for such products in effect at the time of return will apply.

Hunter's obligation to repair, replace, or repurchase its products or product components as set forth above is the sole and exclusive warranty extended by Hunter. There are no other warranties, expressed or implied, including warranties of merchantability and warranties of fitness for a particular purpose. Hunter will not be liable to a distributor or to any other party in strict liability, tort, contract, or any other manner for any damages caused or claimed to be caused as a result of any design of or defect in Hunter's products, or for any special, incidental, or consequential damages of any nature.

Where applicable, Hunter's statement of warranty complies with local directives.

If you have any questions concerning the warranty or its application, please email support@hunterindustries.com.

ASAE CERTIFICATION STATEMENT

Hunter Industries Incorporated certifies that pressure, flow rate, and radius data for these products were determined and listed in accordance with ASAE Standard S398.1, Procedure for Sprinkler Testing and Performance Reporting, and are representative of performance of production sprinklers at the time of publication. Actual product performance may differ from the published specifications due to normal manufacturing variations and sample selection. All other specifications are solely the recommendation of Hunter Industries Incorporated.

Helping our customers succeed is what drives us. While our passion for innovation and engineering is built into everything we do, it is our commitment to exceptional support that we hope will keep you in the Hunter family of customers for years to come.

Gregory R. Hunter, CEO of Hunter Industries

Denise Mullikin, President, Landscape Irrigation and Outdoor Lighting

Website hunterindustries.com | **Customer Support** +1-800-383-4747 | **Technical Service** +1-800-733-2823

USA HEADQUARTERS
1940 Diamond Street
San Marcos, CA 92078 USA
TEL: +1-760-744-5240

MEXICO
ISO 9001:2015 Certified
Calle Nordika #8615
Colonia la Joya
Parque Industrial Nordika
Tijuana, B.C., Mexico CP 22640
TEL: +011-52-664-903-1382

EUROPE
Avenida Diagonal 523, 5o-2a
Edificio Atalaya
08029 Barcelona, Spain
TEL: +34-9-34-94-88-81

AUSTRALIA
Suite 7, 202 Ferntree Gully Road
Notting Hill, VIC 3168, Australia
TEL: +61-3-9562-9918

MIDDLE EAST
P.O. Box 2370
Amman, 11941, Jordan
TEL: +962-6-5152882
FAX: +962-6-5152992

CHINA
B1618, Huibin Plaza
No. 8, Beichen Dong Street
Beijing 100101, China
TEL/FAX: +86-10-84975146

GI-001 US 12/23