

IRRIGATION

2023

PRODUCT CATALOG



turf products

SINCE 1970



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TORO INFINITY® SERIES GOLF ROTORS



Engineered for Today's Challenges. Designed for Tomorrow's Technologies.
The INFINITY improves course quality with less workload and most important, it keeps golfers playing. Calculate the money you'll save by cutting sprinkler maintenance from hours to minutes.

Industry's Largest Nozzle Selection

Nozzles from 25' to 100' radius plus the ability to add back nozzles on PC models lets you put the precise amount of water where you need it. All color coded nozzles thread in without requiring any disassembly.

20,000 Volt Lightning Rating

The Spike-Guard™ solenoid virtually eliminates the need for replacements in high lightning areas. It draws half the amperage of traditional solenoids so you can run twice as many sprinklers simultaneously or increase the distance from controller to sprinkler.

Stainless Steel Valve Seat

Eliminates body damage from rocks and debris. The in-destructible stainless steel seat is molded to the body and eliminates body replacements due to seat damage.

Hot Spot Watering

On part circle models - the nozzle base can be turned in either direction and held to put down as much water as needed, precisely where you want it.

Adjustment With No Disassembly

A Toro original, simply pull up the riser and ratchet it to the precise position you want to water.

True Part and Full-Circle in One

The PC sprinklers can be full circle today and part circle tomorrow allowing you to simply adjust the area of coverage to match your seasonal needs or meet water rationing mandates.

Smart Access®

Provides top accessibility to all critical components

- ✓ No digging or unsightly turf repair scars
- ✓ No buried wire splices or ground faults
- ✓ Pilot valve removable with water "ON"
- ✓ Increased labor efficiency
- ✓ Ready for whatever the future holds!



SPECIFICATIONS

- Inlet:
 - INF34/35: 1" ACME
 - INF54/55: 1½" ACME
- Pilot Valve:
 - Selectable at 50, 65, 80 and 100 psi
- Operating Pressure:
 - Maximum: 150 psi
 - Minimum: 40 psi
- Activation Types:
 - Standard Solenoid:
 - 24 VAC, 50/60 Hz
 - Inrush: 0.30 A
 - Holding: 0.20 A
 - Spike Guard Solenoid
 - 24 VAC, 50/60 Hz
 - Inrush: 0.12 A
 - Holding: 0.10 A

- DC Latching Solenoid

- Momentary Low Voltage Pulse

- Integrated LSM

- Momentary Low Voltage Pulse

Dimensions

- Compartment:
 - INF34/35: 7⅝" Dia.
 - INF54/55: 7⅞" Dia.
- Body Height:
 - INF34/35: 10"
 - INF54/55: 11⅜"
- Pop-up Height:
 - 3¼" to nozzle

Warranty

- Three years
- Five years with Toro Swing Joint

TORO INFINITY® SERIES COMPARISONS



MODEL:	INF35-6 / INF55-6	INF35 / INF55	INF34 / INF54
Radius:	42' - 100'	43' - 92'	52' - 99'
Short Radius (Mainless Nozzle):	25' - 51'	25' - 50'	
Radius Reduction Screw:		X	X
Back Nozzle Capable:	1-Position	2-Positions	
Inlet Size:	1" & 1½" ACME	1" & 1½" ACME	1" & 1½" ACME
Below Grade Capable:	STEALTH-T	STEALTH-D	STEALTH-D
Grade Height Adjustable:	RAZOR	RAZOR	RAZOR
LSM 2-Wire System Capable:	X	X	X
Spike Guard™ Solenoid Option:	X	X	X
Full Circle:	X	X	X
Part-circle Adjustable:	X	X	
Part/Full Circle In One:	40° - 330° & 360°	40° - 330° & 360°	
Ratcheting Riser	X	X	
Effluent Water Option:	X	X	X
Trajectory Adjustment:	7° - 30°	25° & 15°	25° & 15°
Nozzle Base Clutching:	X	X	
SMART ACCESS® Compartment:	X	X	X
Removable Marker:	X	X	X
Pilot Valve Serviceable Under Pressure:	X	X	X
Warranty:	3 Years / 5 Years*	3 Years / 5 Years*	3 Years / 5 Years*

* When purchased and installed with Toro Swing Joints



INFINITY® SERIES DISTANCE MARKERS

Set your course apart with Toro's unique, customizable distance markers

- White (#118-6234) and Yellow (#118-6235) provide excellent visibility
- Customizable with any graphic image (Ex: Club logo)
- Multiple number & orientation options
- Any font style
- Easy snap-in installation into any INFINITY and won't rotate position when sprinkler operates

TORO INFINITY® 35-6/55-6 SERIES GOLF ROTORS

TORO

With Trujectory™ adjustment the INFINITY 35-6/55-6 Series with SMART ACCESS® allows you to put water precisely where you want for maximum distribution uniformity. And the part/full circle drive and ratcheting riser allows you to simply and economically adjust the area of coverage to match your seasonal watering needs or meet water rationing mandates in seconds with no disassembly or additional parts required.

Trujectory™ Main Nozzle Adjustment



From 7° to 30° in 1° increments put water where you want it. Adjust from the top of the sprinkler in seconds - wet or dry. This flexibility lets you tackle every obstacle on the course; wind, trees, bunkers, mounds and more.



Ordering Information - INFINITY 35-6 & INFINITY 55-6

INF X 5-XXX-X6-X						
Body Inlet	Arc	Nozzle	Pressure Regulation *	Activation Type	Trajectory	Optional
INF X	5	XX	X	X	6	X
INF3 - 1" INF5 - 1½"	5 - Part Circle and Full Circle in One	INF35 - 30, 31, 32, 33, 34, 35, 36, 37 INF55 - 51, 52, 53, 54, 55, 56, 57, 58, 59	6 - 65 psi 8 - 80 psi 1 - 100 psi	1 - Standard Solenoid 2 - Spike Guard Solenoid 4 - DC Latching Solenoid 6 - Integrated Lynx Smart Module (2-wire)	6 - 24-pos. Trujectory	7 - Effluent Purple Cap
Examples: INFINITY 1" PC/FC Sprinkler with #32 Nozzle at 80 psi and Spike Guard Solenoid = INF35-328-26 INFINITY 1½" PC/FC Sprinkler with #52 at 65 psi and Integrated LSM 2-wire Module = INF55-526-66						

* All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.



INF35-6 CONVERSION UPGRADES

DESCRIPTION	PART NO.
INF35-6 w/31-34 Nozzles	INF35-6-3134
INF35-6 w/35-37 Nozzles	INF35-6-3537



INF55-6 CONVERSION UPGRADES









































DESCRIPTION	PART NO.
INF55-6 w/51-54 Nozzles	INF55-6-5154
INF55-6 w/55-58 Nozzles	INF55-6-5558
INF55-6 w/59 Nozzle	INF55-6-59

NOTE: All new sprinklers have ACME thread inlets. If installing on standard MPT swing joints - use ACME adapter:












































1½" Bodies = PART NO. SF0A39-015
1" Bodies = PART NO. SF0A39-010

TORO INFINITY® 35-6/55-6 SERIES PERFORMANCE

INFINITY 35-6 SERIES PERFORMANCE CHART

Base Pressure	Nozzle Set 30		Nozzle Set 31		Nozzle Set 32		Nozzle Set 33		Nozzle Set 34		Nozzle Set 35		Nozzle Set 36		Nozzle Set 37	
																
	(White)	(Yellow)	(Blue)	(Brown)	(Orange)	(Green)	(Gray)	(Black)								
	102-2208	102-4587	102-4588	102-4589	102-0728	102-0729	102-0730	102-4261								
																
102-2925	102-2910	102-2925	102-2910	102-2928	102-2910	102-2926	102-2910	102-2926	102-2910	102-2925	102-2910	102-2925	102-2910	102-2926	102-2910	
Back Nozzle Positions																
	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335
	psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius
50	42	7.1	52	13.7	61	17.1	64	20.2	69	27.4	—	—	—	—	—	—
65	45	8.7	54	15.5	63	20.5	66	22.9	74	30.0	76	32.4	—	—	—	—
80	46	9.6	57	17.0	67	22.6	70	25.3	77	33.2	79	35.8	84	37.5	86	40.8
100	48	11.2	59	18.9	72	25.2	74	28.2	80	37.0	84	39.9	88	42.5	92	45.3
Stator	102-6929 Blue		102-1939 Yellow								102-1940 White					
Conversions			INF35-6-3134								INF35-6-3537					

INFINITY 55-6 SERIES PERFORMANCE CHART

Base Pressure	Nozzle Set 51		Nozzle Set 52		Nozzle Set 53		Nozzle Set 54		Nozzle Set 55		Nozzle Set 56		Nozzle Set 57		Nozzle Set 58		Nozzle Set 59	
																		
	(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)		(Red)		(Beige)	
	102-4587		102-4588		102-4589		102-0728		102-0729		102-0730		102-4261		102-4260		102-4259	
																		
Back Nozzle Positions	102-2925	102-2910	102-2923	102-2910	102-2926	102-2910	102-2926	102-2910	102-2925	102-2910	102-2925	102-2910	102-2926	102-2910	102-2925	102-2910	102-2925	102-2910
																		
	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335	Red Plug 102-4335
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	52	13.9	62	17.4	66	20.7	69	28.6	—	—	—	—	—	—	—	—	—	—
65	54	15.7	64	20.8	68	23.4	74	31.2	76	33.8	—	—	—	—	—	—	—	—
80	57	17.2	68	22.9	72	25.8	77	34.4	79	37.2	85	39.4	89	43.6	92	47.5	96	57.0
100	59	19.1	73	25.5	76	28.7	80	38.2	84	41.3	89	43.7	94	48.5	95	51.1	100	61.1
Stator	102-1939 Yellow								102-1940 White								102-1941	
Conver.	INF55-6-5154								INF55-6-5558								INF55-6-59	

Not recommended at these pressures. Radius shown in feet.
Toro recommends the use of a 1 1/4" swing joint at flows over 25-gpm (95-LPM). Sprinkler radius data collected in Toro's zero wind test facility per ASAE standard S399.1.
Actual site conditions must be considered when selecting the appropriate nozzle.
All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.



Main Nozzle Adapter
A wide assortment of intermediate and inner nozzles for use in the main nozzle adapter and back nozzle position provide unmatched nozzle flexibility.

TORO INFINITY® 35/55 SERIES GOLF ROTORS



The INFINITY 35/55 Series features a dual trajectory main nozzle that provides exceptional nozzle performance at the 25° standard angle position and great performance in windy applications at the 15° low angle position. And the part/full circle drive and ratcheting riser allows you to adjust the area of coverage to match your seasonal watering needs.

Dual Trajectory Main Nozzle Adjustment



The 25° setting provides maximum distance of throw and the 15° setting provides improved wind performance, radius reduction and obstacle avoidance.



Ordering Information - INFINITY 35 & INFINITY 55

INF5-XXX-XX					
Body Inlet	Arc	Nozzle	Pressure Regulation *	Activation Type	Optional
INF3	5	XX	X	X	X
INF3 - 1"	5 - Part	INF35 - 30, 31, 32, 33, 34, 35, 36, 37	6 - 65 psi	1 - Standard Solenoid	7 - Effluent
INF5 - 1½"	Circle and Full Circle in One	INF55 - 51, 52, 53, 54, 55, 56, 57, 58, 59	8 - 80 psi 1 - 100 psi	2 - Spike Guard Solenoid 4 - DC Latching Solenoid 6 - Integrated Lynx Smart Module (2-wire)	Purple Cap
Examples: INFINITY 1" PC/FC Sprinkler with #32 Nozzle at 80 psi and Spike Guard Solenoid = INF35-328-2 INFINITY 1½" PC/FC Sprinkler with #52 at 65 psi and Integrated LSM 2-wire Module = INF55-526-6					

* All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.



INF35 CONVERSION UPGRADES

DESCRIPTION	PART NO.
INF35 w/31-34 Nozzles	INF35-3134
INF35 w/35-37 Nozzles	INF35-3537



INF55 CONVERSION UPGRADES

DESCRIPTION	PART NO.
INF55 w/51-54 Nozzles	INF55-5154
INF55 w/55-58 Nozzles	INF55-5558
INF55 w/59 Nozzle	INF55-59









































NOTE: All new sprinklers have ACME thread inlets. If installing on standard MPT swing joints - use ACME adapter:

1½" Bodies = PART NO. SF0A39-015










1" Bodies = PART NO. SF0A39-010

TORO INFINITY® 35/55 SERIES PERFORMANCE

INFINITY 35 SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 30		Nozzle Set 31		Nozzle Set 32		Nozzle Set 33		Nozzle Set 34		Nozzle Set 35		Nozzle Set 36		Nozzle Set 37	
																
	(White Plug)		(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)	
	102-2208		102-6906		102-0726		102-6907		102-0728		102-6955		102-6935		102-6936	
																
	Yellow	Beige	Yellow	Brown	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green
	102-5670	102-6942	102-5670	102-5671	102-5670	102-6884	102-5670	102-6884	102-5670	102-6884	102-5670	102-6885	102-6531	102-6885	102-6531	102-6885
Back Nozzle Positions																
	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	43	8.2	53	13.8	56	18.3	61	21.7	65	25.3	—	—	—	—	—	—
65	45	10.0	53	15.5	59	20.5	64	24.4	68	28.2	72	34.1	—	—	—	—
80	46	11.5	57	17.3	62	22.7	67	27.1	71	31.1	75	37.8	78	40.3	80	44.0
100	47	13.4	59	19.1	65	24.9	70	29.8	74	34.1	79	40.9	81	43.8	83	47.3

INFINITY 55 SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 51		Nozzle Set 52		Nozzle Set 53		Nozzle Set 54		Nozzle Set 55		Nozzle Set 56		Nozzle Set 57		Nozzle Set 58		Nozzle Set 59	
																		
	(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)		(Red)		(Beige)	
	102-6906		102-0726		102-6907		102-0728		102-6955		102-6935		102-6936		102-6909		102-4259	
																		
	Yellow	Brown	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green
	102-5670	102-5671	102-5670	102-6884	102-5670	102-6884	102-5670	102-6884	102-5670	102-6885	102-6531	102-6885	102-6531	102-6885	102-6531	102-6885	102-6531	102-6885
Back Nozzle Positions																		
	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	55	14.1	57	18.5	62	22.3	66	25.8	—	—	—	—	—	—	—	—	—	—
65	57	15.8	60	20.9	65	25.1	69	28.7	73	35.9	—	—	—	—	—	—	—	—
80	59	17.5	61	23.1	68	27.8	72	31.7	76	39.7	80	43.1	83	48.2	85	50.0	89	57.5
100	61	19.3	63	25.3	71	30.3	75	34.5	80	43.5	83	49.0	88	51.5	90	53.9	92	61.3

Not recommended at these pressures. Radius shown in feet.
Toro recommends the use of a 1 1/4" swing joint at flows over 25-gpm (95-LPM). Sprinkler radius data collected in Toro's zero wind test facility per ASAE standard S298.1.
Actual site conditions must be considered when selecting the appropriate nozzle.
All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.

INFINITY 35 NOZZLE APEX

Pressure	Nozzle	Apex at 15'	Apex at 25°
65 psi	31	6' @ 51'	13' @ 54'
	32	6' @ 51'	11' @ 64'
	33	7' @ 59'	13' @ 68'
	34	8' @ 63'	15' @ 74'
	35	9' @ 66'	15' @ 76'
80 psi	36	8' @ 75'	18' @ 83'
	37	9' @ 74'	19' @ 82'

INFINITY 55 NOZZLE APEX

Pressure	Nozzle	Apex at 15'	Apex at 25°
65 psi	51	6' @ 51'	13' @ 54'
	52	6' @ 51'	11' @ 64'
	53	7' @ 59'	13' @ 68'
	54	8' @ 63'	15' @ 74'
	55	9' @ 66'	15' @ 76'
80 psi	56	8' @ 75'	18' @ 83'
	57	9' @ 74'	19' @ 82'
	58	10' @ 82'	18' @ 87'
	59	11' @ 81'	21' @ 91'

TORO INFINITY® 34/54 SERIES GOLF ROTORS

TORO

The INFINITY 34/54 with the dual trajectory main nozzle provides exceptional nozzle performance at the 25° standard angle position and great performance in windy applications at the 15° low angle position. And the consistency of the constant velocity full circle drive ensures even water application across the coverage area every time you water.

Dual Trajectory Main Nozzle Adjustment



The 25° setting provides maximum distance of throw and the 15° setting provides improved wind performance, radius reduction and obstacle avoidance.



INF4-XXX-XX					
Body Inlet	Arc	Nozzle	Pressure Regulation *	Activation Type	Optional
INF3 - 1" INF5 - 1½"	4 - Full Circle	INF34 - 30, 31, 32, 33, 34, 35, 36, 37 INF54 - 51, 52, 53, 54, 55, 56, 57, 58, 59	6 - 65 psi 8 - 80 psi 1 - 100 psi	1 - Standard Solenoid 2 - Spike Guard Solenoid 4 - DC Latching Solenoid 6 - Integrated Lynx Smart Module (2-wire)	7 - Effluent Purple Cap
Examples: INFINITY 1" Full Circle Sprinkler with #33 Nozzle at 80 psi and Standard Solenoid = INF34-338-1 INFINITY 1½" Full Circle Sprinkler with #52 at 65 psi and Integrated LSM 2-wire Module = INF54-526-6					

* All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.

INF34 CONVERSION UPGRADES



DESCRIPTION	PART NO.
INF34 w/31-34 Nozzles	INF34-3134
INF34 w/35-37 Nozzles	INF34-3537

INF54 CONVERSION UPGRADES



DESCRIPTION	PART NO.
INF54 w/51-54 Nozzles	INF54-5154
INF54 w/55-58 Nozzles	INF54-5558
INF54 w/59 Nozzle	INF54-59

























CONVERSION UPGRADE ADAPTER




































- #102-5011 - Toro 690 Adapter allows you to upgrade any 690 with a newer conversion assembly.
- #102-0950 - Adapter required to upgrade older 1½" Toro sprinklers including 650, 670, 680, 750 and 780 series.

TORO INFINITY® 34/54 SERIES PERFORMANCE

INFINITY 34 SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 31  (Yellow)		Nozzle Set 32  (Blue)		Nozzle Set 33  (Brown)		Nozzle Set 34  (Orange)		Nozzle Set 35  (Green)		Nozzle Set 36  (Gray)		Nozzle Set 37  (Black)		
	102-0725		102-7001		102-0727		102-7002		102-6908		102-0730		102-4261		
															
	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Brown
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-6893
Back Nozzle Positions															
	Yellow	Blue	Yellow	Orange	Yellow	Red	Yellow	Beige	Yellow	Beige	Yellow	Red	Yellow	Gray	
	102-6937	102-2925	102-6937	102-2926	102-6937	102-2928	102-6937	102-2929	102-6937	102-2929	102-6937	102-6944	102-6937	102-6945	
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	
50	57	13.0	58	15.5	64	21.9	68	24.4	—	—	—	—	—	—	
65	58	14.6	60	18.0	68	24.4	72	28.1	76	32.2	—	—	—	—	
80	60	16.2	63	20.5	72	26.9	76	31.1	80	35.6	83	38.2	85	41.5	
100	62	17.9	66	23.4	75	29.8	79	34.9	84	49.3	98	43.4	91	46.9	

INFINITY 54 SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 51		Nozzle Set 52		Nozzle Set 53		Nozzle Set 54		Nozzle Set 55		Nozzle Set 56		Nozzle Set 57		Nozzle Set 58		Nozzle Set 59	
																		
	(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)		(Red)		(Beige)	
	102-0725		102-7001		102-0727		102-7002		102-6908		102-0730		102-4261		102-4260		102-4259	
																		
	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Brown	Red Plug	Brown	Red Plug	Red Plug	
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-6883	102-4335	102-6883	102-4335	102-4335
Back Nozzle Positions																		
	Yellow		Blue		Yellow		Orange		Yellow		Red		Yellow		Beige		Yellow	
	102-6937		102-2925		102-6937		102-2926		102-6937		102-2928		102-6937		102-2929		102-6937	
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	58	13.2	59	15.7	64	22.0	70	26.2	—	—	—	—	—	—	—	—	—	—
65	60	14.8	61	17.5	68	24.8	74	29.3	79	34.2	—	—	—	—	—	—	—	—
80	61	16.4	64	20.0	72	27.6	78	32.6	83	38.0	85	40.7	87	44.9	91	50.2	96	55.6
100	63	18.1	67	23.6	75	30.4	81	36.7	87	42.5	90	45.8	93	50.2	95	55.4	99	61.8

Not recommended at these pressures. Radius shown in feet
 Toro recommends the use of a 1 1/4" swing joint at flows over 25-gpm (95-LPM). Sprinkler radius data collected in Toro's zero wind test facility per ASAE standard 5399.1
 Actual site conditions must be considered when selecting the appropriate nozzle
 All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 ps

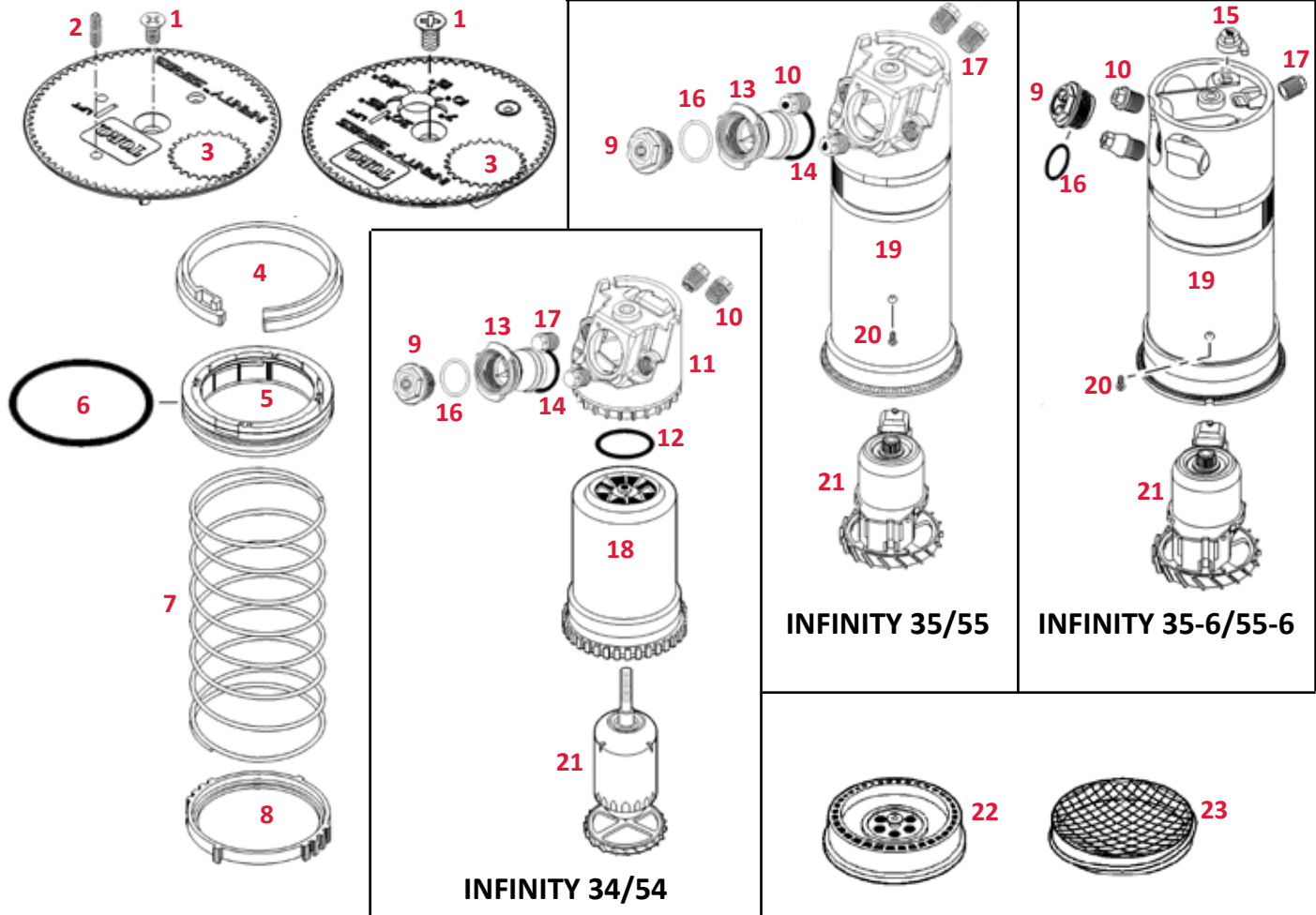
INFINITY 34 NOZZLE APEX

Pressure	Nozzle	Apex at 15°	Apex at 25°
65 psi	31	6' @ 51'	13' @ 54'
	32	6' @ 51'	11' @ 64'
	33	7' @ 59'	13' @ 68'
	34	8' @ 63'	15' @ 74'
	35	9' @ 66'	15' @ 76'
80 psi	36	8' @ 75'	18' @ 83'
	37	9' @ 74'	19' @ 82'

INFINITY 54 NOZZLE APEX

Pressure	Nozzle	Apex at 15°	Apex at 25°
65 psi	51	6' @ 51'	13' @ 54'
	52	6' @ 51'	11' @ 64'
	53	7' @ 59'	13' @ 68'
	54	8' @ 63'	15' @ 74'
	55	9' @ 66'	15' @ 76'
80 psi	56	8' @ 75'	18' @ 83'
	57	9' @ 74'	19' @ 82'
	58	10' @ 82'	18' @ 87'
	59	11' @ 81'	21' @ 91'

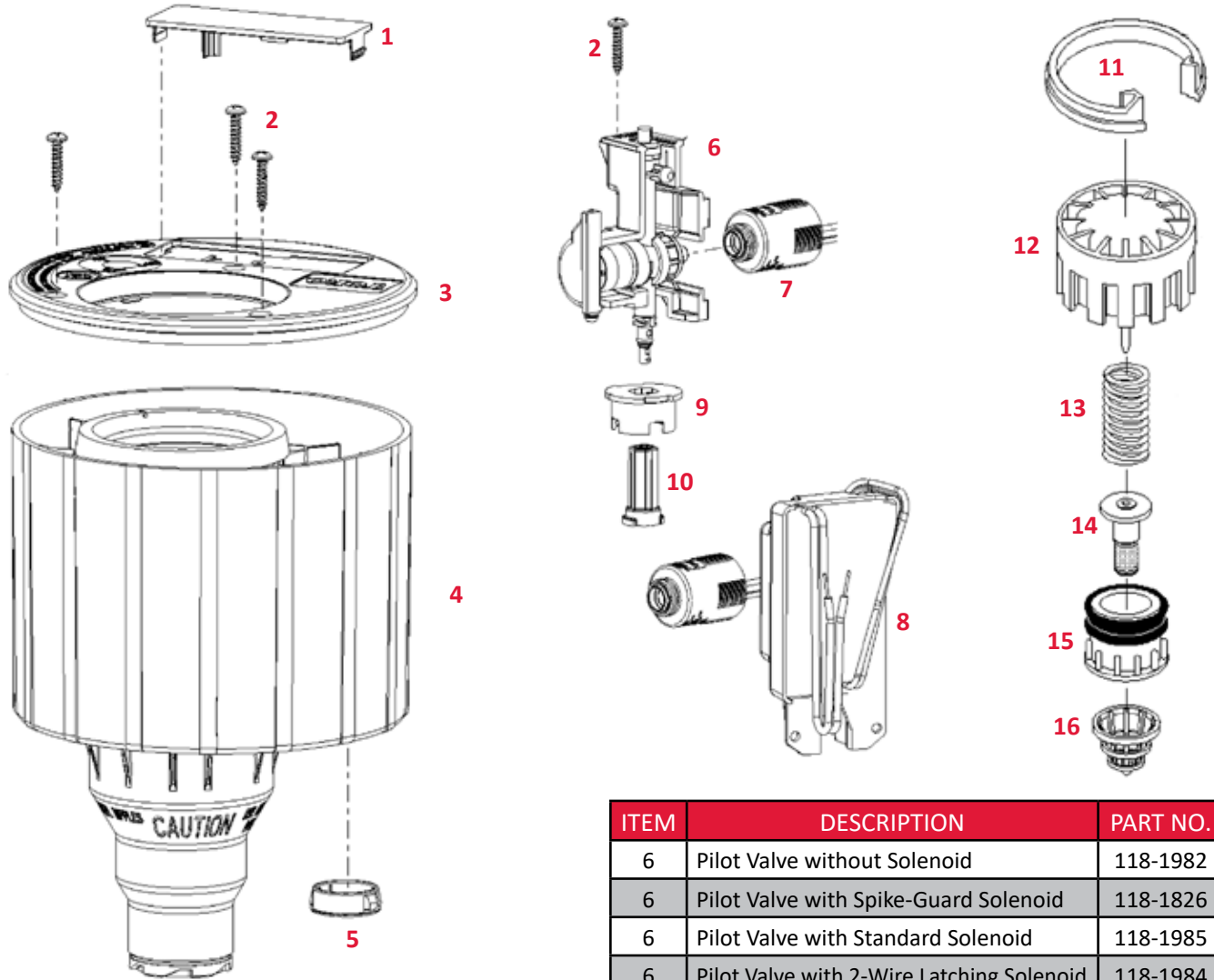
TORO INFINITY® SERIES REPLACEMENT PARTS



ITEM	DESCRIPTION	PART NO.
1	Cap Screw - INF34/54	102-0362
1	Cap Screw (Black) - INF35/55, INF35-6/55-6	102-6138
2	Radius Reduction Screw - INF34/54, INF35/55	363-4839
3	Cap - INF34, INF35	118-3089
3	Cap - INF54, INF55	118-3091
3	Cap - INF35-6	118-3090
3	Cap - INF55-6	118-3092
4	Snap Ring - INF34, INF35, INF35-6	89-1385
4	Snap Ring - INF54, INF55, INF55-6	35-6119
5	Seal Retainer - INF34, INF35, INF35-6	102-0134
5	Seal Retainer - INF54, INF55, INF55-6	102-0136
6	O-Ring - INF34, INF35, INF35-6	363-4102
6	O-Ring - INF54, INF55, INF55-6	363-4103
7	Return Spring - ALL INFINITY	102-0151
8	Ratcheting Ring - INF35, INF35-6	102-2619
8	Ratcheting Ring - INF55, INF55-6	102-4967

ITEM	DESCRIPTION	PART NO.
9	Main Nozzle - SEE NOZZLE CHARTS	
10	Inner & Rear Nozzles - SEE NOZZLE CHARTS	
11	Nozzle Base - INF34/54	102-5837
12	Nozzle Base O-Ring - INF34/54	363-4167
13	Nozzle Housing - INF34/54, INF35/55	102-5597
14	Nozzle Housing O-Ring - INF34/54, INF35/55	102-5978
15	Trajectory Adjuster - INF35-6/55-6	102-5971
16	Main Nozzle O-Ring - ALL INFINITY	363-4978
17	Nozzle Plug - ALL INFINITY	102-4335
18	Riser - INF34/54	102-0202
19	Riser Assy & Nozzle Base - INF35/55	118-1079
19	Riser Assy & Nozzle Base - INF35-6/INF55-6	102-2892
20	Drive Set Screw - INF35/55, INF35-6/55-6	363-4236
21	Drive Assembly - INF34/54	102-4503
21	Drive Assembly - INF35/55, 35-6/55-6	102-4504
22	Stator Assembly - SEE NOZZLE CHARTS	
23	Screen - ALL INFINITY	102-1715

TORO INFINITY® SERIES REPLACEMENT PARTS



ITEM	DESCRIPTION	PART NO.
1	Marker, Blank - ALL INFINITY	118-1840
2	Cover & Pilot Valve Screw - ALL INFINITY	4102001
3	Cover - ALL INFINITY	118-1813
4	Body, 1" - INF34, INF35, INF35-6	118-3031
4	Body, 1½" - INF54, INF55, INF55-6	118-3030
5	Wire Access Plug - ALL INFINITY	364-1164
1" Body Assy w/Standard Solenoid & Valve		INF30-1
1" Body Assy w/Spike-Guard Solenoid & Valve		INF30-2
1" Body Assy w/2-Wire Module, Solenoid & Valve		INF30-6
1½" Body Assy w/Standard Solenoid & Valve		INF50-1
1½" Body Assy w/Spike-Guard Solenoid & Valve		INF50-2
1½" Body Assy w/2-Wire Module, Solenoid & Valve		INF50-6
INFINITY Body Assemblies have ACME inlet. Add "-06" to part number to order with NPT inlet. Ex: 1½" with SG solenoid = INF50-06-2		

ITEM	DESCRIPTION	PART NO.
6	Pilot Valve without Solenoid	118-1982
6	Pilot Valve with Spike-Guard Solenoid	118-1826
6	Pilot Valve with Standard Solenoid	118-1985
6	Pilot Valve with 2-Wire Latching Solenoid	118-1984
7	Solenoid, Standard	118-0248
7	Solenoid, Spike-Guard	102-3443
7	Solenoid, 2-Wire Latching	102-2709
8	2-Wire Module without Solenoid	LSM-1
9	Check Valve Retainer	118-1815
10	Check Flow Assembly	118-1827
11	Snap Ring, Bottom Valve - 1" Body	89-4702
11	Snap Ring, Bottom Valve - 1½" Body	3-3304
12	Valve Cylinder - 1" Body	102-0623
12	Valve Cylinder - 1½" Body	102-0626
13	Valve Spring - ALL INFINITY	102-6411
14	Valve Filter Assembly - ALL INFINITY	35-9646
15	Valve Piston - 1" Body	89-1054
15	Valve Piston - 1½" Body	102-5101
16	Body Rock Screen - 1" Body	102-0784
16	Body Rock Screen - 1½" Body	102-6065

TORO INFINITY® RAZOR™ KITS



Extend the frequency of digging up and leveling sprinklers with the Toro INFINITY Razor kits. Over time the application of topdressing can result in the sprinkler being in a depression below grade level. This can interfere in the natural roll of the ball, create trip hazards and take away from the natural beauty of the course. The Razor kits are designed to raise the top of the sprinkler in ½" increments up to 1½" without digging!!



FEATURES & BENEFITS

- ✓ Eliminates sprinkler interference
- ✓ Eliminates trip hazards
- ✓ Enhances course appearance
- ✓ Huge labor savings - no digging required!
- ✓ Retention features - hardware never gets lost

INFINITY RAZOR KITS

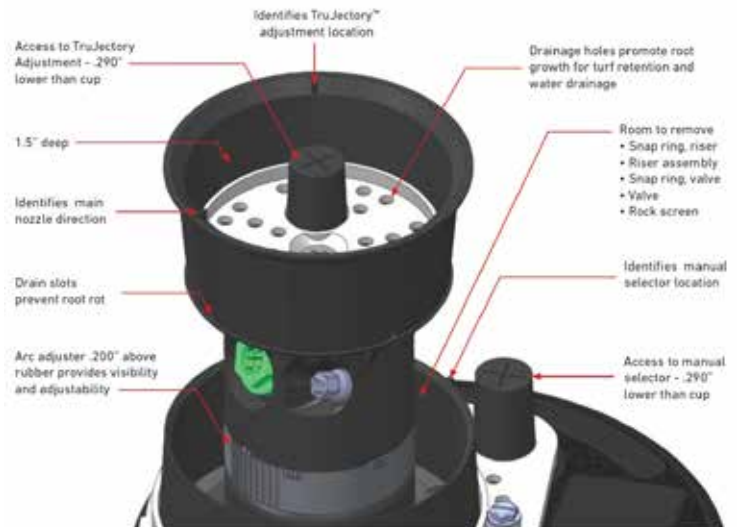
DESCRIPTION	PART NO.
Razor Kit for 1" INFINITY 34/35, Stage 1 with 1½" screws and pilot valve stacker	RAZOR-10-1
Razor Kit for 1" INFINITY 34/35, Stage 2 with 2" screws and pilot valve stacker	RAZOR-10-2
Razor Kit for 1" INFINITY 34/35, Stage 3 with 2½" screws and pilot valve stacker	RAZOR-10-3
Razor Kit for 1½" INFINITY 54/55, Stage 1 with 1½" screws and pilot valve stacker	RAZOR-15-1
Razor Kit for 1½" INFINITY 54/55, Stage 2 with 2" screws and pilot valve stacker	RAZOR-15-2
Razor Kit for 1½" INFINITY 54/55, Stage 3 with 2½" screws and pilot valve stacker	RAZOR-15-3



Eliminate sprinkler interference with the outcome of the game forever! Toro's INFINITY Stealth Kits can be installed onto any INFINITY sprinkler allowing turf growth directly atop the sprinkler to eliminate the hard surface bounce should a golf ball hit it. The seamless turf appearance adds to the beauty of the course and improves labor efficiency by minimizing trimming efforts around the sprinklers.

FEATURES & BENEFITS

- ✓ Eliminates sprinkler interference
- ✓ Enhances course appearance
- ✓ Natural turf atop sprinkler
- ✓ Kits fit existing INFINITY sprinklers
- ✓ Easy access to arc adjustment, snap rings, riser removal assembly, valve and rock screen
- ✓ SMART ACCESS compartment enables access to pilot valve, Lynx Smart Module, wire splices & more
- ✓ Access to manual selector and TruJectory™ adjuster with minimal turf/soil displacement
- ✓ Turf cup grass can be grown in a nursery prior to being installed onto the sprinkler



STEALTH KIT MODELS

- **STEALTH-T** - Kit for INFINITY Sprinklers with TruJectory 24-position main nozzle adjustment (INF35-6/INF55-6)
- **STEALTH-D** - Kit for INFINITY Sprinklers with dual trajectory main nozzle adjustment (INF35/INF34/INF55/INF54)



TORO FLEX800™ SERIES GOLF ROTORS



Golf sprinklers with all the efficiency and proven performance features and benefits of the original Toro 800S and DT Series.

Industry's Largest Nozzle Selection

Nozzles from 25' to 100' radius plus the ability to add back nozzles on PC models lets you put the precise amount of water where you need it. All color coded nozzles thread in without requiring any disassembly.

20,000 Volt Lightning Rating

The Spike-Guard™ solenoid virtually eliminates the need for replacements in high lightning areas. It draws half the amperage of traditional solenoids so you can run twice as many sprinklers simultaneously or increase the distance from controller to sprinkler.

Stainless Steel Valve Seat

Eliminates body damage from rocks and debris. The in-destructible stainless steel seat is molded to the body and eliminates body replacements due to seat damage.

Hot Spot Watering

On part circle models - the nozzle base can be turned in either direction and held to put down as much water as needed, precisely where you want it.

Adjustment With No Disassembly

A Toro original, simply pull up the riser and ratchet it to the precise position you want to water.

True Part and Full-Circle in One

The PC sprinklers can be full circle today and part circle tomorrow allowing you to simply adjust the area of coverage to match your seasonal needs or meet water rationing mandates.



FLEX800
with LSM



FLX35-6

FLX54

FLX35B

SPECIFICATIONS

- Inlet:
 - FLX34/35: 1" ACME
 - FLX54/55: 1½" ACME
- Pilot Valve:
 - Selectable at 50, 65, 80 and 100 psi
- Operating Pressure:
 - Maximum: 150 psi
 - Minimum: 40 psi
- Activation Types:
 - Standard Solenoid:
 - 24 VAC, 50/60 Hz
 - Inrush: 0.30 A
 - Holding: 0.20 A
 - Spike Guard Solenoid
 - 24 VAC, 50/60 Hz
 - Inrush: 0.12 A
 - Holding: 0.10 A

- DC Latching Solenoid

- Momentary Low Voltage Pulse

- Integrated LSM

- Momentary Low Voltage Pulse

Dimensions

- Body Flange:
 - FLX34/35: 6½" Dia.
 - FLX54/55: 7½" Dia.
- Body Height:
 - FLX34/35: 10"
 - FLX54/55: 11¾"
- Pop-up Height:
 - 3¼" to nozzle

Warranty

- Three years
- Five years with Toro Swing Joint

TORO FLEX800™ SERIES COMPARISONS



MODEL:	FLX35-6/FLX55-6	FLX35 / FLX55	FLX34 / FLX54	FLEX B SERIES
Radius:	42' - 100'	43' - 92'	52' - 99'	25' - 95'
Short Radius (Mainless Nozzle):	25' - 51'	25' - 50'		X
Radius Reduction Screw:		Optional	Optional	Optional
Back Nozzle Capable:	1-Position	2-Positions		
Inlet Size:	1" & 1½" ACME	1" & 1½" ACME	1" & 1½" ACME	1" NPT or ACME
LSM 2-Wire System Capable:	X	X	X	
Spike Guard™ Solenoid Option:	X	X	X	
Full Circle:	X	X	X	X
Part-circle Adjustable:	X	X		X
Part/Full Circle In One:	40° - 330° & 360°	40° - 330° & 360°		40° - 330° & 360°
Ratcheting Riser	X	X		FLX35-6B/FLX35B
Effluent Water Option:	X	X	X	X
Trajectory Adjustment:	7° - 30°	25° & 15°	25° & 15°	7°-30° / 25° & 15°
Nozzle Base Clutching:	X	X		X
Check Valve:	X	X	X	X
Warranty:	3 Years / 5 Years*	3 Years / 5 Years*	3 Years / 5 Years*	3 Years / 5 Years*
* When purchased and installed with Toro Swing Joints				



MAIN NOZZLE ADAPTER #118-1521

A wide assortment of intermediate and inner nozzles for use in the main nozzle adapter and back nozzle position provide unmatched nozzle flexibility.

TORO FLEX800™ 35-6/55-6 SERIES GOLF ROTORS

TORO

With TruJectory™ adjustment the FLEX800 35-6/55-6 Series allows you to put water precisely where you want it for maximum distribution uniformity. And the part/full circle drive allows you to simply and economically adjust the area of coverage to match your seasonal watering needs in seconds with no disassembly or additional parts required.

TruJectory™ Main Nozzle Adjustment



From 7° to 30° in 1° increments put water where you want it. Adjust from the top of the sprinkler in seconds - wet or dry. This flexibility lets you tackle every obstacle on the course; wind, trees, bunkers, mounds and more.



Ordering Information - FLEX 35-6 & FLEX 55-6

FLX 5 - XXX -X6-X						
Body Inlet	Arc	Nozzle	Pressure Regulation *	Activation Type	Trajectory	Optional
FLX X	5	XX	X	X	6	X
FLX3 - 1" FLX5 - 1½"	5 - Part Circle and Full Circle in One	FLX35 - 30, 31, 32, 33, 34, 35, 36, 37 FLX55 - 51, 52, 53, 54, 55, 56, 57, 58, 59	6 - 65 psi 8 - 80 psi 1 - 100 psi	1 - Standard Solenoid 2 - Spike Guard Solenoid 4 - DC Latching Solenoid 6 - Integrated Lynx Smart Module (2-wire)	6 - 24-pos. TruJectory	7 - Effluent Purple Cap
Examples: FLEX 1" PC/FC Sprinkler with #32 Nozzle at 80 psi and Spike Guard Solenoid = FLX35-328-26 FLEX 1½" PC/FC Sprinkler with #52 at 65 psi and Integrated LSM 2-wire Module = FLX55-526-66						

* All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.

FLX35-6 CONVERSION UPGRADES



DESCRIPTION	PART NO.
FLX35-6 w/31-34 Nozzles	FLX35-6-3134
FLX35-6 w/35-37 Nozzles	FLX35-6-3537

FLX55-6 CONVERSION UPGRADES



DESCRIPTION	PART NO.
FLX55-6 w/51-54 Nozzles	FLX55-6-5154
FLX55-6 w/55-58 Nozzles	FLX55-6-5558
FLX55-6 w/59 Nozzle	FLX55-6-59

FLX55-6 CONVERSION UPGRADES RIBLESS BODY*

















DESCRIPTION	PART NO.
FLX55-6 w/51-54 Nozzles	FLX55-6-5154R
FLX55-6 w/55-58 Nozzles	FLX55-6-5558R
FLX55-6 w/59 Nozzle	FLX55-6-59R










































* Designed for use in older Toro sprinklers without alignment ribs built-in to the body cavity.

TORO FLEX800™ 35-6/55-6 SERIES PERFORMANCE

FLEX800 35-6 SERIES PERFORMANCE CHART

Base Pressure	Nozzle Set 30		Nozzle Set 31		Nozzle Set 32		Nozzle Set 33		Nozzle Set 34		Nozzle Set 35		Nozzle Set 36		Nozzle Set 37		
																	
	(White)		(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)		
	102-2208		102-4587		102-4588		102-4589		102-0728		102-0729		102-0730		102-4261		
																	
Blue	Gray	Blue	Gray	Red	Gray	Orange	Gray	Orange	Gray	Blue	Gray	Blue	Gray	Orange	Gray		
102-2925	102-2910	102-2925	102-2910	102-2928	102-2910	102-2926	102-2910	102-2926	102-2910	102-2925	102-2910	102-2925	102-2910	102-2926	102-2910		
Back Nozzle Positions																	
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	
	psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	42	7.1	52	13.7	61	17.1	64	20.2	69	27.4	—	—	—	—	—	—	
65	45	8.7	54	15.5	63	20.5	66	22.9	74	30.0	76	32.4	—	—	—	—	
80	46	9.6	57	17.0	67	22.6	70	25.3	77	33.2	79	35.8	84	37.5	86	40.8	
100	48	11.2	59	18.9	72	25.2	74	28.2	80	37.0	84	39.9	88	42.5	92	45.3	
Stator	102-6929 Blue		102-1939 Yellow								102-1940 White						

FLEX800 55-6 SERIES PERFORMANCE CHART

Base Pressure	Nozzle Set 51		Nozzle Set 52		Nozzle Set 53		Nozzle Set 54		Nozzle Set 55		Nozzle Set 56		Nozzle Set 57		Nozzle Set 58		Nozzle Set 59	
																		
	(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)		(Red)		(Beige)	
	102-4587		102-4588		102-4589		102-0728		102-0729		102-0730		102-4261		102-4260		102-4259	
																		
Blue	Gray	Red	Gray	Orange	Gray	Orange	Gray	Blue	Gray	Blue	Gray	Orange	Gray	Blue	Gray	Blue	Gray	
102-2925	102-2910	102-2923	102-2910	102-2926	102-2910	102-2926	102-2910	102-2925	102-2910	102-2925	102-2910	102-2926	102-2910	102-2925	102-2910	102-2925	102-2910	
Back Nozzle Positions																		
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	52	13.9	62	17.4	66	20.7	69	28.6	—	—	—	—	—	—	—	—	—	—
65	54	15.7	64	20.8	68	23.4	74	31.2	76	33.8	—	—	—	—	—	—	—	—
80	57	17.2	68	22.9	72	25.8	77	34.4	79	37.2	85	39.4	89	43.6	92	47.5	96	57.0
100	59	19.1	73	25.5	76	28.7	80	38.2	84	41.3	89	43.7	94	48.5	95	51.1	100	61.1
Stator	102-1939 Yellow								102-1940 White								102-1941	

Toro recommends the use of a 1½" swing joint at flows over 25-gpm (95-LPM). Sprinkler radius data collected in Toro's zero wind test facility per ASAE standard S398.1. Actual site conditions must be considered when selecting the appropriate nozzle. All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.



Main Nozzle Adapter
A wide assortment of intermediate and inner nozzles for use in the main nozzle adapter and back nozzle position provide unmatched nozzle flexibility.

NOTE: All new sprinklers have ACME thread inlets.
If installing on standard MPT swing joints - use ACME adapter:
1½" Bodies = PART NO. SF0A39-015
1" Bodies = PART NO. SF0A39-010

TORO FLEX800™ 35/55 SERIES GOLF ROTORS



The FLEX800 35/55 Series features a dual trajectory main nozzle that provides exceptional nozzle performance at the 25° standard angle position and great performance in windy applications at the 15° low angle position. And the part/full circle drive allows you to adjust the area of coverage to match your seasonal watering needs in seconds.

Dual Trajectory Main Nozzle Adjustment



The 25° setting provides maximum distance of throw and the 15° setting provides improved wind performance, radius reduction and obstacle avoidance.



Ordering Information - FLEX 35 & FLEX 55

FLX XX 5-XXX-XX					
Body Inlet	Arc	Nozzle	Pressure Regulation *	Activation Type	Optional
FLX XX	5	XX	X	X	X
FLX3 - 1"	5 - Part	FLX35 - 30, 31, 32, 33, 34, 35, 36, 37	6 - 65 psi	1 - Standard Solenoid	7 - Effluent
FLX5 - 1½"	Circle and Full Circle in One	FLX55 - 51, 52, 53, 54, 55, 56, 57, 58, 59	8 - 80 psi 1 - 100 psi	2 - Spike Guard Solenoid 4 - DC Latching Solenoid 6 - Integrated Lynx Smart Module (2-wire)	Purple Cap
Examples: FLEX 1" PC/FC Sprinkler with #32 Nozzle at 80 psi and Spike Guard Solenoid = FLX35-328-2 FLEX 1½" PC/FC Sprinkler with #52 at 65 psi and Integrated LSM 2-wire Module = FLX55-526-6					

* All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.

FLX35 CONVERSION UPGRADES



DESCRIPTION	PART NO.
FLX35 w/31-34 Nozzles	FLX35-3134
FLX35 w/35-37 Nozzles	FLX35-3537

FLX55 CONVERSION UPGRADES



DESCRIPTION	PART NO.
FLX55 w/51-54 Nozzles	FLX55-5154
FLX55 w/55-58 Nozzles	FLX55-5558
FLX55 w/59 Nozzle	FLX55-59











































FLX55 CONVERSION UPGRADES RIBLESS BODY*

DESCRIPTION	PART NO.
FLX55 w/51-54 Nozzles	FLX55-5154R
FLX55 w/55-58 Nozzles	FLX55-5558R
FLX55 w/59 Nozzle	FLX55-59R







* Designed for use in older Toro sprinklers without alignment ribs built-in to the body cavity.

TORO FLEX800™ 35/55 SERIES PERFORMANCE

FLEX800 35 SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 30		Nozzle Set 31		Nozzle Set 32		Nozzle Set 33		Nozzle Set 34		Nozzle Set 35		Nozzle Set 36		Nozzle Set 37	
																
	(White Plug)		(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)	
	102-2208		102-6906		102-0726		102-6907		102-0728		102-6955		102-6935		102-6936	
																
	102-5670	102-6942	102-5670	102-5671	102-5670	102-6884	102-5670	102-6884	102-5670	102-6884	102-5670	102-6885	102-6531	102-6885	102-6531	102-6885
Back Nozzle Positions																
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	43	8.2	53	13.8	56	18.3	61	21.7	65	25.3	—	—	—	—	—	—
65	45	10.0	53	15.5	59	20.5	64	24.4	68	28.2	72	34.1	—	—	—	—
80	46	11.5	57	17.3	62	22.7	67	27.1	71	31.1	75	37.8	78	40.3	80	44.0
100	47	13.4	59	19.1	65	24.9	70	29.8	74	34.1	79	40.9	81	43.8	83	47.3

FLEX800 55 SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 51		Nozzle Set 52		Nozzle Set 53		Nozzle Set 54		Nozzle Set 55		Nozzle Set 56		Nozzle Set 57		Nozzle Set 58		Nozzle Set 59	
																		
	(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)		(Red)		(Beige)	
	102-6906		102-0726		102-6907		102-0728		102-6955		102-6935		102-6936		102-6909		102-4259	
																		
	Yellow		Brown		Yellow		Yellow		Yellow		Yellow		Green		Green		Green	
Back Nozzle Positions	102-5670	102-5671	102-5670	102-6884	102-5670	102-6884	102-5670	102-6884	102-5670	102-6885	102-6531	102-6885	102-6531	102-6885	102-6531	102-6885	102-6531	102-6885
																		
	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	55	14.1	57	18.5	62	22.3	66	25.8	—	—	—	—	—	—	—	—	—	—
65	57	15.8	60	20.9	65	25.1	69	28.7	73	35.9	—	—	—	—	—	—	—	—
80	59	17.5	61	23.1	68	27.8	72	31.7	76	39.7	80	43.1	83	48.2	85	50.0	89	57.5
100	61	19.3	63	25.3	71	30.3	75	34.5	80	43.5	83	49.0	88	51.5	90	53.9	92	61.3

Not recommended at these pressures. Radius shown in feet.
Toro recommends the use of a 1 1/4" swing joint at flows over 25-gpm (95-LPM). Sprinkler radius data collected in Toro's zero wind test facility per ASAE standard S298.1.
Actual site conditions must be considered when selecting the appropriate nozzle.
All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.

FLEX800 55 NOZZLE APEX

Pressure	Nozzle	Apex at 15°	Apex at 25°
65 psi	51	6' @ 51'	13' @ 54'
	52	6' @ 51'	11' @ 64'
	53	7' @ 59'	13' @ 68'
	54	8' @ 63'	15' @ 74'
	55	9' @ 66'	15' @ 76'
80 psi	56	8' @ 75'	18' @ 83'
	57	9' @ 74'	19' @ 82'
	58	10' @ 82'	18' @ 87'
	59	11' @ 81'	21' @ 91'

FLEX800 35 NOZZLE APEX

Pressure	Nozzle	Apex at 15°	Apex at 25°
65 psi	31	6' @ 51'	13' @ 54'
	32	6' @ 51'	11' @ 64'
	33	7' @ 59'	13' @ 68'
	34	8' @ 63'	15' @ 74'
	35	9' @ 66'	15' @ 76'
80 psi	36	8' @ 75'	18' @ 83'
	37	9' @ 74'	19' @ 82'

NOTE: All new sprinklers have ACME thread inlets.
If installing on standard MPT swing joints -
use ACME adapter:

1 1/2" Bodies = PART NO. SF0A39-015

1" Bodies = PART NO. SF0A39-010

TORO FLEX800™ 34/54 SERIES GOLF ROTORS

TORO

The FLEX800 34/54 Series with dual trajectory main nozzle provides exceptional nozzle performance at the 25° standard angle position and great performance in windy applications at the 15° low angle position. And the consistency of the constant velocity full circle drive ensures even water application across the coverage area every time you water.

Dual Trajectory Main Nozzle Adjustment



The 25° setting provides maximum distance of throw and the 15° setting provides improved wind performance, radius reduction and obstacle avoidance.



Ordering Information - FLEX 34 & FLEX 54

FLX4-XXX-XX					
Body Inlet	Arc	Nozzle	Pressure Regulation *	Activation Type	Optional
FLXX	4	XX	X	X	X
FLX3 - 1" FLX5 - 1½"	4 - Full Circle	FLX34 - 30, 31, 32, 33, 34, 35, 36, 37 FLX54 - 51, 52, 53, 54, 55, 56, 57, 58, 59	6 - 65 psi 8 - 80 psi 1 - 100 psi	1 - Standard Solenoid 2 - Spike Guard Solenoid 4 - DC Latching Solenoid 6 - Integrated Lynx Smart Module (2-wire)	7 - Effluent Purple Cap
Examples: FLEX 1" Full Circle Sprinkler with #33 Nozzle at 65 psi and Spike Guard Solenoid = FLX34-336-2 FLEX 1½" Full Circle Sprinkler with #57 at 80 psi and Integrated LSM 2-wire Module = FLX54-578-6					

* All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.

FLX34 CONVERSION UPGRADES



DESCRIPTION	PART NO.
FLX34 w/31-34 Nozzles	FLX34-3134
FLX34 w/35-37 Nozzles	FLX34-3537

FLX54 CONVERSION UPGRADES



DESCRIPTION	PART NO.
FLX54 w/51-54 Nozzles	FLX54-5154
FLX54 w/55-58 Nozzles	FLX54-5558
FLX54 w/59 Nozzle	FLX54-59

































CONVERSION UPGRADE ADAPTER
















































- **#102-5011** - Toro 690 Adapter allows you to upgrade any 690 with a newer conversion assembly.
- **#102-0950** - Adapter required to upgrade older 1½" Toro sprinklers including 650, 670, 680, 750 and 780 series.

TORO FLEX800™ 34/54 SERIES PERFORMANCE

FLEX800 34 SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 31  (Yellow)		Nozzle Set 32  (Blue)		Nozzle Set 33  (Brown)		Nozzle Set 34  (Orange)		Nozzle Set 35  (Green)		Nozzle Set 36  (Gray)		Nozzle Set 37  (Black)	
	102-0725		102-7001		102-0727		102-7002		102-6908		102-0730		102-4261	
														
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-6883
Back Nozzle Positions														
	102-6937	102-2925	102-6937	102-2926	102-6937	102-2928	102-6937	102-2929	102-6937	102-2929	102-6937	102-6944	102-6937	102-6945
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	57	13.0	58	15.5	64	21.9	68	24.4	—	—	—	—	—	—
65	58	14.6	60	18.0	68	24.4	72	28.1	76	32.2	—	—	—	—
80	60	16.2	63	20.5	72	26.9	76	31.1	80	35.6	83	38.2	85	41.5
100	62	17.9	66	23.4	75	29.8	79	34.9	84	49.3	88	43.4	91	46.9

FLEX800 54 SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 51  (Yellow)		Nozzle Set 52  (Blue)		Nozzle Set 53  (Brown)		Nozzle Set 54  (Orange)		Nozzle Set 55  (Green)		Nozzle Set 56  (Gray)		Nozzle Set 57  (Black)		Nozzle Set 58  (Red)		Nozzle Set 59  (Beige)	
	102-0725		102-7001		102-0727		102-7002		102-6908		102-0730		102-4261		102-4260		102-4259	
																		
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-6883	102-4335	102-6883	102-4335	102-4335
Back Nozzle Positions																		
	102-6937	102-2926	102-6937	102-2926	102-6937	102-2928	102-6937	102-2929	102-6937	102-2929	102-6937	102-6944	102-6937	102-6945	102-6937	102-6945	102-6937	102-6945
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	58	13.2	59	15.7	64	22.0	70	26.2	—	—	—	—	—	—	—	—	—	—
65	60	14.8	61	17.5	68	24.8	74	29.3	79	34.2	—	—	—	—	—	—	—	—
80	61	16.4	64	20.0	72	27.6	78	32.6	83	38.0	85	40.7	87	44.9	91	50.2	96	55.6
100	63	18.1	67	23.6	75	30.4	81	36.7	87	42.5	90	45.8	93	50.2	95	55.4	99	61.8

Not recommended at these pressures. Radius shown in feet.
 Toro recommends the use of a 1 1/4" swing joint at flows over 25-gpm (95-LPM). Sprinkler radius data collected in Toro's zero wind test facility per ASAE standard S398.1.
 Actual site conditions must be considered when selecting the appropriate nozzle.
 All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.

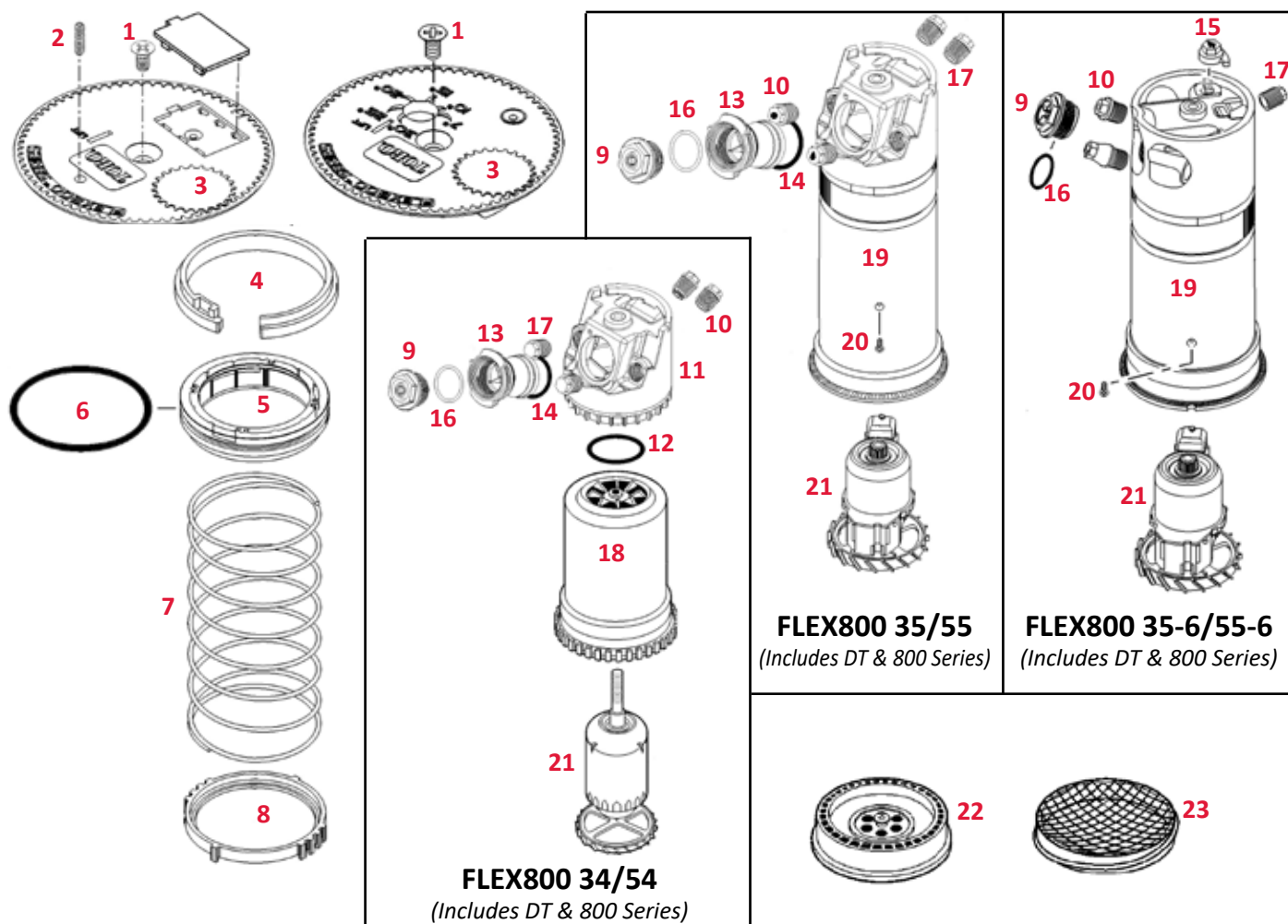
FLEX800 34 NOZZLE APEX

Pressure	Nozzle	Apex at 15'	Apex at 25'
65 psi	31	6' @ 51'	13' @ 54'
	32	6' @ 51'	11' @ 64'
	33	7' @ 59'	13' @ 68'
	34	8' @ 63'	15' @ 74'
	35	9' @ 66'	15' @ 76'
80 psi	36	8' @ 75'	18' @ 83'
	37	9' @ 74'	19' @ 82'

FLEX800 54 NOZZLE APEX

Pressure	Nozzle	Apex at 15'	Apex at 25'
65 psi	51	6' @ 51'	13' @ 54'
	52	6' @ 51'	11' @ 64'
	53	7' @ 59'	13' @ 68'
	54	8' @ 63'	15' @ 74'
	55	9' @ 66'	15' @ 76'
80 psi	56	8' @ 75'	18' @ 83'
	57	9' @ 74'	19' @ 82'
	58	10' @ 82'	18' @ 87'
	59	11' @ 81'	21' @ 91'

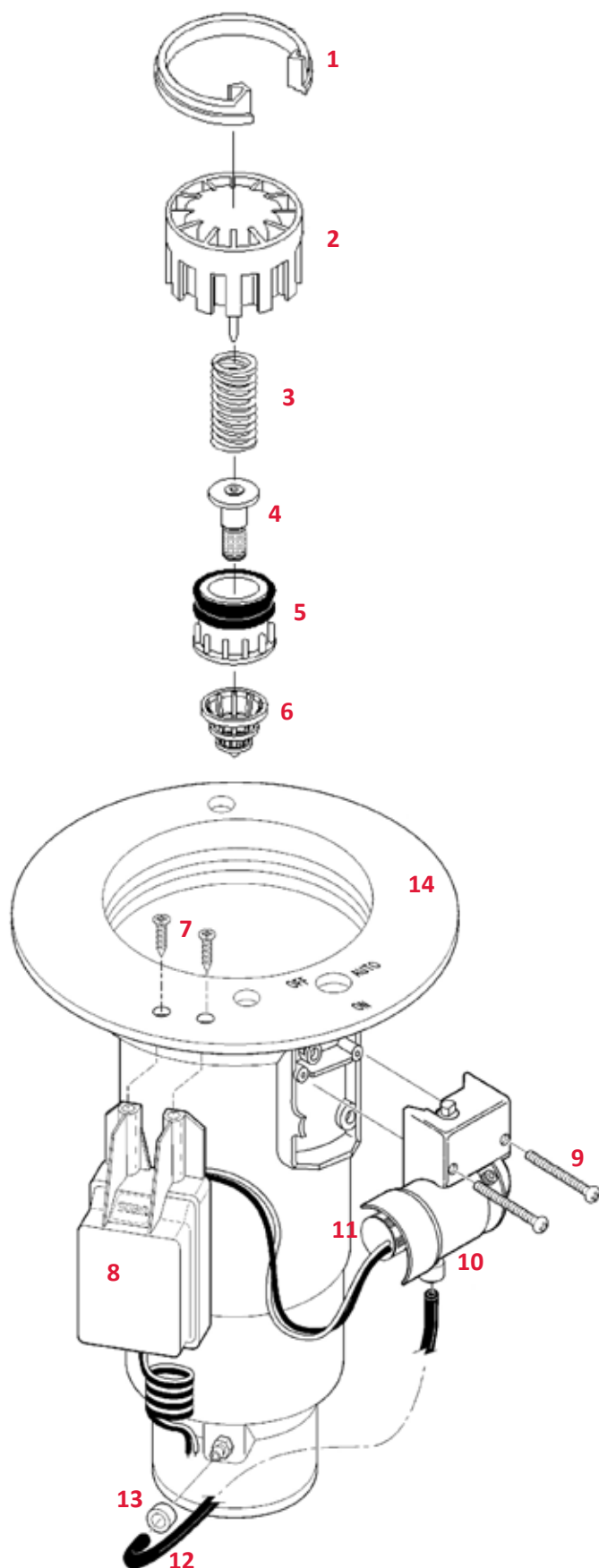
TORO FLEX800™ SERIES REPLACEMENT PARTS



ITEM	DESCRIPTION	PART NO.
1	Cap Screw - FLX34/54	102-0362
1	Cap Screw (Black) - FLX35/55, FLX35-6/55-6	102-6138
2	Radius Reduction Screw - FLX34/54, FLX35/55	363-4839
3	Cap - FLX34, FLX35	118-6918
3	Cap - FLX54, FLX55	118-6922
3	Cap - FLX35-6	118-6920
3	Cap - FLX55-6	118-6138
4	Snap Ring - FLX34, FLX35, FLX35-6	89-1385
4	Snap Ring - FLX54, FLX55, FLX55-6	35-6119
5	Seal Retainer - FLX34, FLX35, FLX35-6	102-0134
5	Seal Retainer - FLX54, FLX55, FLX55-6	102-0136
6	O-Ring - FLX34, FLX35, FLX35-6	363-4102
6	O-Ring - FLX54, FLX55, FLX55-6	363-4103
7	Return Spring - ALL FLEX	102-0151
8	Ratcheting Ring - FLX35, FLX35-6	102-2619
8	Ratcheting Ring - FLX55, FLX55-6	102-4967

ITEM	DESCRIPTION	PART NO.
9	Main Nozzle - SEE NOZZLE CHARTS	
10	Inner & Rear Nozzles - SEE NOZZLE CHARTS	
11	Nozzle Base - FLX34/54	102-5837
12	Nozzle Base O-Ring - FLX34/54	363-4167
13	Nozzle Housing - FLX34/54, FLX35/55	102-5597
14	Nozzle Housing O-Ring - FLX34/54, FLX35/55	102-5978
15	Trajectory Adjuster - FLX35-6/55-6	102-5971
16	Main Nozzle O-Ring - ALL FLEX	363-4978
17	Nozzle Plug - ALL FLEX	102-4335
18	Riser - FLX34/54	102-0202
19	Riser Assy & Nozzle Base - FLX35/55	118-1079
19	Riser Assy & Nozzle Base - FLX35-6/FLX55-6	102-2892
20	Drive Set Screw - FLX35/55, FLX35-6/55-6	363-4236
21	Drive Assembly - FLX34/54	102-4503
21	Drive Assembly - FLX35/55, FLX35-6/55-6	102-4504
22	Stator Assembly - SEE NOZZLE CHARTS	
23	Screen - ALL FLEX	102-1715

TORO FLEX800™ SERIES REPLACEMENT PARTS



ITEM	DESCRIPTION	PART NO.
1	Snap Ring, Bottom Valve - 1" Bodies	89-4702
1	Snap Ring, Bottom Valve - 1½" Bodies	3-3304
2	Valve Cylinder - 1" Bodies	102-0623
2	Valve Cylinder - 1½" Bodies	102-0626
3	Valve Spring - 1" Bodies	3-2633
3	Valve Spring - 1½" Bodies	102-6411
4	Valve Filter - 1" Bodies	35-9646
4	Valve Filter - 1½" Bodies	35-9645
5	Valve Piston - 1" Bodies	89-1054
5	Valve Piston - 1½" Bodies	102-6311
Bottom Valve Assy (Incl. 1-6) - 1" V-I-H Bodies		102-0624
Bottom Valve Assy (Incl. 1-6) - 1½" V-I-H Bodies		102-4003
6	Body Rock Screen - 1" Bodies	102-0784
6	Body Rock Screen - 1½" Bodies	102-6065
7	Screw for 2-Wire Module	363-6396
8	LSM 2-Wire Module w/o Solenoid	LSM-1GB
9	Screw for Pilot Valve	3-2696
10	Pilot Valve Assembly without Solenoid	102-5975
Pilot Valve Assy with Standard Solenoid		102-5178
Pilot Valve Assembly with Spike-Guard Solenoid		102-5974
Pilot Valve Assy with 2-Wire Latching Solenoid		102-6533
11	Solenoid, Standard (Red & Black Wires)	118-0248
11	Solenoid, Spike-Guard (Black Wires)	102-3443
11	Solenoid, 2-Wire Latching (Yellow Wires)	102-4979
12	¼" Tubing, 12" Long	9-1876
13	Tubing Retainer	900-40
14	Body, 1" ACME - FLX34, FLX35, FLX35-6	102-1094
14	Body, 1" NPT - FLX34, FLX35, FLX35-6	102-1090
14	Body, 1½" ACME - FLX54, FLX55, FLX55-6	102-1153
14	Body, 1½" NPT - FLX54, FLX55, FLX55-6	102-1149
1" Body Assy w/Stand. Solenoid & Valve - ACME		FLX30-46-1
1" Body Assy w/Stand. Solenoid & Valve - NPT		FLX30-06-1
1" Body Assy w/Spike-Guard Sol. & Valve - ACME		FLX30-46-2
1" Body Assy w/Spike-Guard Sol. & Valve - NPT		FLX30-06-2
1" Body Assy w/2-Wire Module, Sol. & Valve - ACME		FLX30-46-6
1½" Body Assy w/Stand. Solenoid & Valve - ACME		FLX50-46-1
1½" Body Assy w/Stand. Solenoid & Valve - NPT		FLX50-06-1
1½" Body Assy w/Spike-Guard Sol. & Valve - ACME		FLX50-46-2
1½" Body Assy w/Spike-Guard Sol. & Valve - NPT		FLX50-06-2
1½" Body Assy w/2-Wire Module, Sol. & Valve - ACME		FLX50-46-6

TORO FLEX800™ 35-6B/34B/35B SERIES GOLF ROTORS



The FLEX800™ B Series golf sprinkler family brings you all the great features and performance of the FLEX800 35-6, 34 and 35 Series sprinklers in a more economical body package specifically designed for block systems. With its rugged golf body design, small exposed surface diameter, flanged body for stability and check valve these sprinklers are perfect for every golf application.































Nozzle Trajectory Provides Unmatched Performance
 FLX35-6B with TruJectory™ adjustment from 7°-30° in 1° increments and FLX35/FLX34 models with dual trajectory settings of 25° or 15° provide improved wind performance, obstacle avoidance and radius adjustment.

Ordering Information - FLEX B SERIES



























FLX3XB-X2-XXXXX						
Body Inlet	Arc	System	Thread Type	Valve Type	Nozzle	Optional
FLX3	X	B	X	2	XXXX	X
FLX3 - 1"	4 - Full Circle 5 - PC/FC 5-6 - PC/FC w/TruJectory	B - Block	0 - NPT 4 - ACME	Check-O-Matic	3134 - Includes #31, 32, 33 & 34 3538 - Includes #35, 36, 37 & 38	7 - Effluent Purple Cap
Examples: FLEX B Series PC/FC Sprinkler, 1" NPT Inlet with Short to Mid Range Nozzle and Dual Trajectory = FLX35B-02-3134 FLEX B Series PC/FC Sprinkler, 1" ACME Inlet with Longer Range Nozzle and TruJectory = FLX35-6B-42-3538						

TORO FLEX800™ 35-6B/34B/35B PERFORMANCE






























FLEX800 35-6B SERIES PERFORMANCE CHART

Base Pressure	Nozzle Set 30		Nozzle Set 31		Nozzle Set 32		Nozzle Set 33		Nozzle Set 34		Nozzle Set 35		Nozzle Set 36		Nozzle Set 37		Nozzle Set 38	
	 (White) 102-2208		 (Yellow) 102-4587		 (Blue) 102-4588		 (Brown) 102-4589		 (Orange) 102-0728		 (Green) 102-0729		 (Gray) 102-0730		 (Black) 102-4261		 (Red) 102-6909	
																		
	102-2925	102-2910	102-2925	102-2910	102-2928	102-2910	102-2926	102-2910	102-2926	102-2910	102-2925	102-2910	102-2925	102-2910	102-2926	102-2910	102-2925	102-2910
Back Nozzle 102-4335  Red Plug																		
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	42	7.1	52	14.0	58	18.0	—	—	—	—	—	—	—	—	—	—	—	—
60	43	7.9	54	15.2	60	19.5	66	21.9	—	—	—	—	—	—	—	—	—	—
70	45	8.8	55	16.4	63	21.0	68	23.6	74	32.7	77	35.2	—	—	—	—	—	—
80	46	9.6	57	17.4	65	22.6	70	25.3	77	35.1	79	37.7	84	39.6	86	43.4	90	47.5
90	47	10.4	58	18.5	68	23.9	72	26.8	79	37.0	82	9.9	86	41.9	88	45.9	93	50.0
100	48	11.2	59	19.4	70	25.2	74	28.2	80	38.9	84	41.8	88	44.1	90	48.4	95	52.5
Stator	102-6929 Blue		102-1939 Yellow								102-1940 White							

FLEX800 35B SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 30		Nozzle Set 31		Nozzle Set 32		Nozzle Set 33		Nozzle Set 34		Nozzle Set 35		Nozzle Set 36		Nozzle Set 37		Nozzle Set 38	
	 (White Plug) 102-2208		 (Yellow) 102-6906		 (Blue) 102-0726		 (Brown) 102-6907		 (Orange) 102-0728		 (Green) 102-6955		 (Gray) 102-6935		 (Black) 102-6936		 (Red) 102-6909	
																		
	102-5670	102-6942	102-5670	102-5671	102-5670	102-6884	102-5670	102-6884	102-5670	102-6884	102-5670	102-6885	102-6531	102-6885	102-6531	102-6885	102-6531	102-6885
Back Nozzles 102-4335  Red Plug																		
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm
50	43	8.2	55	13.6	56	18.3	—	—	—	—	—	—	—	—	—	—	—	—
60	44	9.3	56	15.0	58	20.1	63	24.2	—	—	—	—	—	—	—	—	—	—
70	45	10.4	58	16.2	60	21.8	65	26.3	69	30.0	73	37.0	—	—	—	—	—	—
80	46	11.5	59	17.3	62	23.3	67	28.0	71	32.1	75	39.6	78	42.9	80	48.6	85	50.6
90	47	12.5	60	18.4	64	24.7	69	29.8	73	34.2	77	42.0	80	45.4	82	51.5	88	53.6
100	47	13.4	61	19.3	65	26.0	70	31.4	74	35.9	79	44.2	81	48.8	83	54.2	90	56.3
Stator	102-6929 Blue		102-1939 Yellow								102-1940 White							

FLEX800 34B SERIES PERFORMANCE CHART

Front Nozzle Positions	Nozzle Set 31  (Yellow) 102-0725		Nozzle Set 32  (Blue) 102-7001		Nozzle Set 33  (Brown) 102-0727		Nozzle Set 34  (Orange) 102-7002		Nozzle Set 35  (Green) 102-6908		Nozzle Set 36  (Gray) 102-0730		Nozzle Set 37  (Black) 102-4261		Nozzle Set 38  (Red) 102-4260		
	Front Nozzles 102-4335   Red Plug												 Red Plug 102-4335	 Brown 102-6883	 Red Plug 102-4335	 Brown 102-6883	
	Back Nozzle Positions																
		Yellow 102-6937	Blue 102-2925	Yellow 102-6937	Orange 102-2926	Yellow 102-6937	Red 102-2928	Yellow 102-6937	Beige 102-2929	Yellow 102-6937	Beige 102-2929	Yellow 102-6937	Red 102-6944	Yellow 102-6937	Gray 102-6945	Yellow 102-6937	Gray 102-6945
psi	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	Radius	gpm	
50	57	13.0	58	15.5	—	—	—	—	—	—	—	—	—	—	—	—	
60	58	14.1	60	17.2	67	23.6	—	—	—	—	—	—	—	—	—	—	
70	59	15.5	61	18.2	69	26.2	73	30.0	78	35.7	—	—	—	—	—	—	
80	60	16.2	63	20.5	72	27.9	76	32.1	80	38.2	83	40.9	85	42.1	91	50.2	
90	61	17.5	65	22.0	74	29.7	78	34.1	82	40.5	86	43.4	88	44.5	93	52.8	
100	62	18.8	66	23.4	75	31.4	79	36.0	84	42.7	88	45.8	91	46.9	95	55.4	
Stator	102-6929 Blue								102-1940 White								

Not recommended at these pressures. Radius shown in feet.
Toro recommends the use of a 1 1/4" swing joint at flows over 25-gpm (95-LPM). Sprinkler radius data collected in Toro's zero wind test facility per ASAE standard S398.1.

TORO NOZZLE PERFORMANCE CHARTS

INTERMEDIATE NOZZLE PERFORMANCE

	Trajectory					
102-2929 Beige	30°	25°	20°	15°	10°	7°
psi / gpm	Radius	Radius	Radius	Radius	Radius	Radius
50 / 8.1	53	52	50	48	45	42
60 / 8.9	57	56	53	51	47	45
65 / 9.3	58	56	54	51	49	46
70 / 9.6	59	57	56	53	50	48
80 / 10.3	61	60	58	56	53	50
90 / 10.9	63	61	59	57	54	51
100 / 11.5	65	63	60	58	55	51

	Trajectory					
102-2928 Red	30°	25°	20°	15°	10°	7°
psi / gpm	Radius	Radius	Radius	Radius	Radius	Radius
50 / 6.3	53	51	48	46	43	40
60 / 4.1	55	53	50	48	45	42
65 / 4.5	56	54	52	49	47	44
70 / 4.8	57	55	53	51	49	46
80 / 5.5	59	58	56	54	52	49
90 / 6.2	60	58	57	55	53	50
100 / 6.9	61	59	57	55	53	50

	Trajectory					
102-2927 Gray	30°	25°	20°	15°	10°	7°
psi / gpm	Radius	Radius	Radius	Radius	Radius	Radius
50 / 5.0	50	48	46	44	41	38
60 / 5.5	52	50	48	46	43	40
65 / 5.7	53	51	49	46	44	41
70 / 5.9	53	51	49	47	45	42
80 / 6.3	54	52	50	48	46	43
90 / 6.7	55	53	52	50	48	45
100 / 7.1	55	54	53	52	50	46

	Trajectory					
102-2926 Orange	30°	25°	20°	15°	10°	7°
psi / gpm	Radius	Radius	Radius	Radius	Radius	Radius
50 / 4.3	48	46	44	42	39	35
60 / 4.7	50	48	46	44	41	38
65 / 4.9	51	49	47	45	42	39
70 / 5.1	51	50	48	46	43	40
80 / 5.4	52	51	50	48	45	42
90 / 5.8	53	52	51	49	47	44
100 / 6.1	54	53	52	50	48	45

	Trajectory					
102-2925 Blue	30°	25°	20°	15°	10°	7°
psi / gpm	Radius	Radius	Radius	Radius	Radius	Radius
50 / 2.7	42	41	39	38	36	34
60 / 3.0	43	42	40	39	37	35
65 / 3.2	43	42	40	39	37	35
70 / 3.3	44	42	41	39	38	36
80 / 3.5	44	43	41	40	38	36
90 / 3.7	45	44	42	41	39	37
100 / 3.9	45	44	43	42	40	38

	Trajectory					
102-6885 Green	30°	25°	20°	15°	10°	7°
psi / gpm	Radius	Radius	Radius	Radius	Radius	Radius
50 / 5.4	51	50	48	45	42	39
60 / 5.9	52	51	49	46	43	41
65 / 6.1	52	51	50	47	44	42
70 / 6.3	53	52	50	47	44	42
80 / 6.7	53	52	51	48	45	43
90 / 7.1	54	53	52	50	47	45
100 / 7.1	55	55	54	52	49	47

TORO NOZZLE PERFORMANCE CHARTS

INTERMEDIATE NOZZLE PERFORMANCE

102-6884 Yellow	Trajectory					
	30°	25°	20°	15°	10°	7°
psi / gpm	Radius	Radius	Radius	Radius	Radius	Radius
50 / 4.1	48	47	45	41	38	35
60 / 4.5	49	48	47	44	41	38
65 / 4.7	50	49	48	45	42	39
70 / 4.8	50	49	48	45	43	40
80 / 5.1	51	50	49	47	44	41
90 / 5.4	53	52	50	48	45	42
100 / 5.8	54	53	51	49	46	43

102-6883 Brown	Trajectory					
	30°	25°	20°	15°	10°	7°
psi / gpm	Radius	Radius	Radius	Radius	Radius	Radius
50 / 2.4	41	40	38	36	33	30
60 / 2.6	43	42	40	38	36	33
65 / 2.7	44	42	41	39	37	34
70 / 2.8	45	43	42	40	38	35
80 / 3.0	46	45	43	41	40	36
90 / 3.2	46	45	44	42	41	37
100 / 3.4	46	46	44	43	41	38

INNER NOZZLE PERFORMANCE

102-6937 Yellow	Trajectory		
	30°	25°	20°
psi / gpm	Radius	Radius	Radius
50 / 3.7	26	24	20
60 / 4.0	28	25	22
65 / 4.2	28	25	22
70 / 4.4	28	26	23
80 / 4.7	28	26	24
90 / 5.0	29	27	25
100 / 5.2	30	29	27

102-6531 Green	Trajectory		
	30°	25°	20°
psi / gpm	Radius	Radius	Radius
50 / 4.0	32	32	26
60 / 4.3	34	34	27
65 / 4.5	34	34	27
70 / 4.7	34	34	28
80 / 5.0	34	34	29
90 / 5.3	34	34	29
100 / 5.6	35	35	30



BACK NOZZLE PERFORMANCE

Nozzles				65 psi		80 psi		Profile
Part #	Description		Color	Radius	gpm	Radius	gpm	
102-6937	Inner Nozzle w/ Yellow Restrictor		Yel/Yel	29	3.7	30	4.1	
102-6531	Inner Nozzle w/ White Restrictor		Grn/Wht	31	4.3	33	4.6	
102-6883	Intermediate Nozzle		Brown	38	2.8	38	2.8	
102-6884	Intermediate Nozzle		Yellow	41	4.1	43	4.5	
102-6885	Intermediate Nozzle		Green	42	5.4	45	6.0	
102-2925	Intermediate Nozzle		Blue	40	2.8	42	3.2	
102-2926	Intermediate Nozzle		Orange	44	4.3	45	4.8	
102-2927	Intermediate Nozzle		Gray	46	5.1	47	5.4	
102-2928	Intermediate Nozzle		Red	48	6.5	50	7.0	
102-2929	Intermediate Nozzle		Beige	51	8.1	53	9.1	

TORO FLEX800™ R SERIES CONVERSION UPGRADES



The Toro FLEX800™ R Series Conversion Upgrades enable customers with existing Rain Bird Eagle™ 900 and 1100* Series sprinklers to upgrade to Toro's industry leading sprinkler technology. The benefits of include the patented TruJectory™ adjustment, full and part circle in the same sprinkler, the ability to ratchet the riser and clutch the nozzle base, and an extra 1½" pop-up height.

* Registered trademark of Rain Bird Corporation.

Industry's Largest Nozzle Selection

Nozzles from 42' to 100' radius plus a wide assortment of back nozzles lets you put the precise amount of water exactly where you need it.

20,000 Volt Lightning Rating

Spike Guard™ solenoid virtually eliminates the need for replacements in high lightning areas. Draws half the amperage of traditional solenoids so you can run twice as many sprinklers simultaneously.

Dual TruJectory

The 25° setting provides maximum distance of throw and the 15° setting provides improved wind performance, radius reduction and obstacle avoidance (FLX54RB and FLX55RB).

True Part and Full-Circle in One

These sprinklers can be full circle today and part circle tomorrow allowing you to simply and economically adjust the area of coverage to match your seasonal needs or meet water rationing mandates (FLX55-6RB and FLX55RB).



































Ordering Information - FLEX800 R Series

































DESCRIPTION	PART NO.
R Series Conversion with FLEX55-6 TruJectory Riser Assembly and Low Flow Nozzle Set #51 - #54	FLX55-6RB-5154
R Series Conversion with FLEX55-6 TruJectory Riser Assembly and High Flow Nozzle Set #55 - #58	FLX55-6RB-5558
R Series Conversion with FLEX55 Dual Trajectory Riser Assembly and Low Flow Nozzle Set #51 - #54	FLX55RB-5154
R Series Conversion with FLEX55 Dual Trajectory Riser Assembly and High Flow Nozzle Set #55 - #58	FLX55RB-5558
R Series Conversion with FLEX54 Full Circle Riser Assembly and Low Flow Nozzle Set #51 - #54	FLX54RB-5154
R Series Conversion with FLEX54 Full Circle Riser Assembly and High Flow Nozzle Set #55 - #58	FLX54RB-5558
Toro Adapter with Spike Guard™ Solenoid for Rain Bird® Eagle 700, 900 or 1100 Series Sprinklers	SPIKEGUARD-RB


























Toro® has designed and manufactured this product to fit within a sprinkler housing made by Rain Bird® Corporation, but Toro's product is not manufactured by or affiliated with Rain Bird®. Rain Bird® is a registered trademark.

TORO FLEX800™ R SERIES CONVERSION PERFORMANCE

FLEX800 R SERIES PERFORMANCE CHARTS

FLX55-6RB-5154 Performance Chart										FLX55-6RB-5558 Performance Chart							
Front Nozzle Positions	Nozzle Set 51		Nozzle Set 52		Nozzle Set 53		Nozzle Set 54		Nozzle Set 55		Nozzle Set 56		Nozzle Set 57		Nozzle Set 58		
																	
	(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)		(Red)		
	102-4587		102-4588		102-4589		102-0728		102-0729		102-0730		102-4261		102-4260		
																	
	102-2925	102-2910	102-2928	102-2910	102-2926	102-2910	102-2926	102-2910	102-2925	102-2910	102-2925	102-2910	102-2926	102-2910	102-2925	102-2910	
Back Nozzle Positions																	
	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	
psi	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	
60	55	16.1	63	20.3	69	23.4	75	31.3	—	—	—	—	—	—	—	—	
70	56	17.4	66	21.8	70	25.3	76	33.8	—	—	—	—	—	—	—	—	
80	57	18.5	68	23.3	72	27.0	77	36.0	80	39.1	85	41.0	88	45.4	92	49.7	
90	58	19.4	70	24.5	75	28.5	79	38.1	83	41.5	87	43.5	91	48.2	94	52.8	
100	59	20.5	72	25.9	76	30.0	80	40.2	86	43.7	90	45.7	94	50.6	96	55.3	
Stator	102-1939 Yellow									102-1940 White							

FLX55RB-5154 Performance Chart										FLX55RB-5558 Performance Chart							
Front Nozzle Positions	Nozzle Set 51		Nozzle Set 52		Nozzle Set 53		Nozzle Set 54		Nozzle Set 55		Nozzle Set 56		Nozzle Set 57		Nozzle Set 58		
																	
	(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)		(Red)		
	102-6906		102-0726		102-6907		102-0728		102-6955		102-6935		102-6936		102-6909		
																	
	102-5670	102-5671	102-5670	102-6884	102-5670	102-6884	102-5670	102-6884	102-5670	102-6885	102-6531	102-6885	102-6531	102-6885	102-6531	102-6885	
Back Nozzle Positions																	
	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	
	psi	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm
	60	56	15.2	57	20.1	66	24.3	68	28.0	—	—	—	—	—	—	—	—
	70	58	16.5	60	21.7	67	26.2	71	30.4	—	—	—	—	—	—	—	—
	80	59	17.5	62	23.1	68	27.8	72	31.7	76	39.7	80	43.1	83	48.2	85	53.0
	90	60	18.4	64	24.5	71	28.8	74	34.5	78	43.1	81	45.1	86	51.2	87	56.0
	100	61	19.3	66	25.3	72	30.3	75	36.5	80	45.5	82	49.0	90	54.5	89	59.0

FLX54RB-5154 Performance Chart										FLX54RB-5558 Performance Chart							
Front Nozzle Positions	Nozzle Set 51		Nozzle Set 52		Nozzle Set 53		Nozzle Set 54		Nozzle Set 55		Nozzle Set 56		Nozzle Set 57		Nozzle Set 58		
																	
	(Yellow)		(Blue)		(Brown)		(Orange)		(Green)		(Gray)		(Black)		(Red)		
	102-0725		102-7001		102-0727		102-7002		102-6908		102-0730		102-4261		102-4260		
																	
Back Nozzle Positions	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Red Plug	Brown	Red Plug	Brown	
	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-4335	102-6883	102-4335	102-6883	
																	
	Yellow		Blue		Yellow		Orange		Yellow		Beige		Yellow		Gray		
	102-6937	102-2925	102-6937	102-2926	102-6937	102-2928	102-6937	102-2929	102-6937	102-2929	102-6937	102-2928	102-6937	102-4965	102-6937	102-4965	
psi	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	Rad/Ft	gpm	
60	59	14.6	62	17.4	68	24.3	71	28.2	—	—	—	—	—	—	—	—	
70	60	15.7	63	18.8	70	26.3	75	30.6	—	—	—	—	—	—	—	—	
80	61	16.4	64	20.0	72	27.6	78	32.6	83	39.5	85	42.7	87	45.9	91	50.2	
90	62	17.8	66	21.3	74	29.9	80	34.7	85	41.6	88	44.9	90	48.5	93	52.8	
100	63	18.1	67	23.6	75	30.4	81	36.7	87	43.7	90	46.8	93	51.2	95	55.4	
Stator	102-6929 Blue									102-1940 White							

Not recommended at these pressures. Radius shown in feet.
Toro recommends the use of a 1 1/8" swing joint at flows over 25-gpm (95-LPM). Sprinkler radius data collected in Toro's zero wind test facility per ASAE standard S398.1.

TORO 690 SERIES GOLF ROTORS



For nearly 50 years the 690 Series has set the standard for durability and reliability in golf applications. Two 2-speed models provide a slower speed in the non-overlap areas and a faster speed in the overlap areas to provide a more balanced precipitation rate than traditional single speed full circle sprinklers in these applications which lowers system costs.

696 2-Speed Models

Used in single row applications these sprinklers operate at a slower speed over the 60 degree non-overlap area and a faster speed over the 120 degree overlapped areas to provide a balanced application rate.

698 2-Speed Models

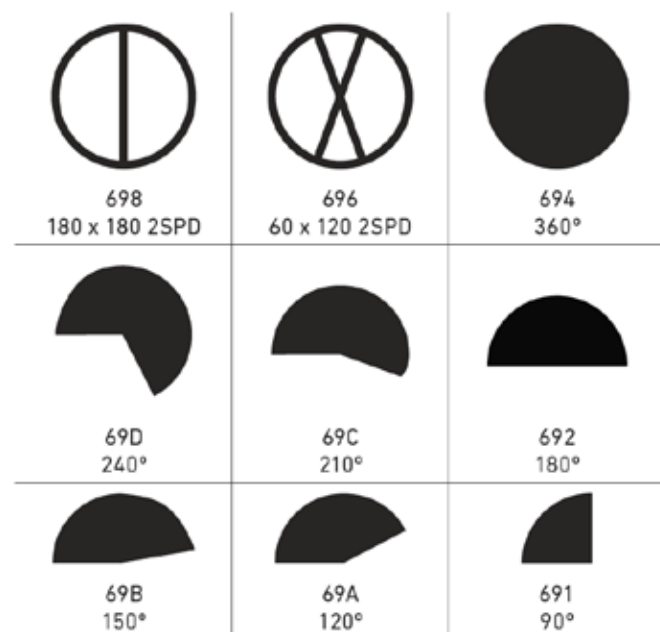
Used in double row applications these sprinklers operate at a slower speed over the 180 degree non-overlap area and a faster speed over the 180 degree overlapped areas to provide a balanced application rate.

Artificial Playing Surfaces

Radius and flow capabilities are perfect for cooling and rinsing artificial playing surfaces.

Electric Valve In Head Models

Electric valve in head models provide individual head control that ensures run times can match differing soil, turf and terrain watering requirements, pressure regulation to ensure all nozzles perform at the same pressure and manual ON-OFF-Auto control at the head.



SPECIFICATIONS

Operational

- Inlet: 1½" NPT
- Pilot Valve:
 - Selectable at 50, 65, 80 and 100 psi
- Operating Pressure:
 - Maximum: 150 psi
 - Minimum: 40 psi
- Activation Types:
 - Standard Solenoid:
 - 24 VAC, 50/60 Hz
 - Inrush: 0.30 A
 - Holding: 0.20 A
 - Check-O-Matic:
 - Maintains 37' elevation

Dimensions

- Body Diameter: 10"
- Body Height: 16"
- Weight: 5.6 lbs.
- Pop-up Height:
 - 3/4" to nozzle

Warranty

- Three years
- Five years when installed with Toro Swing Joint

TORO 690 SERIES GOLF ROTORS

Ordering Information - 690 Series Rotors

69X-0X-XXX			
Arc	Valve-In-Head Type	Nozzle	Pressure Regulation *
69X	0X		X
1 - 90° 2 - 180° 4 - Full Circle 6 - FC, 2-Speed 60° - 120° 8 - FC, 2-Speed 180° - 180°	1 - Normally Open Hydraulic 2 - Check-O-Matic 6 - Electric	90 91 92	8 - 80 psi 1 - 100 psi
Example: 690 Single Speed Full Circle Sprinkler, Electric with #91 Nozzle at 100 psi = 694-06-911			

* All sprinklers are equipped with the selectable pilot valve that allows settings at 50, 65, 80 and 100 psi.

690 SERIES CONVERSIONS AND BODY ASSEMBLIES



DESCRIPTION	PART NO.
690 Conversion Assembly, 150° Arc, #92 Nozzle	69A-92
690 Conversion Assembly, 165° Arc, #92 Nozzle	69B-92
690 Conversion Assembly, 195° Arc, #92 Nozzle	69C-92
690 Conversion Assembly, 210° Arc, #92 Nozzle	69D-92
690 Conversion Assembly, 90° Arc, #91 Nozzle	691-91
690 Conversion Assembly, 90° Arc, #92 Nozzle	691-92
690 Conversion Assembly, 180° Arc, #90 Nozzle	692-90
690 Conversion Assembly, 180° Arc, #91 Nozzle	692-91
690 Conversion Assembly, 180° Arc, #92 Nozzle	692-92
690 Conversion Assembly, 360° Arc, #90 Nozzle	694-90
690 Conversion Assembly, 360° Arc, #91 Nozzle	694-91
690 Conversion Assembly, 360° Arc, #92 Nozzle	694-92
690 Conversion Assembly, 60°X120° 2-Speed, #91 Nozzle	696-91
690 Conversion Assembly, 60°X120° 2-Speed, #92 Nozzle	696-92
690 Conversion Assembly, 180°X180° 2-Speed, #91 Nozzle	698-91
690 Conversion Assembly, 180°X180° 2-Speed, #92 Nozzle	698-92
690 Body Assembly with Adj. PV & Standard Solenoid	690-06-1
690 Body Assembly with Adj. PV & Spike Guard Solenoid	690-06-2
690 Body Assembly with Adj. PV & DC Latching Solenoid	690-06-4

690 SERIES PERFORMANCE CHART

Base Pressure	Nozzle Set 90		Nozzle Set 91		Nozzle Set 92	
	Radius	gpm	Radius	gpm	Radius	gpm
80	87	51.0	96	61.2	100	74.0
100	90	57.1	100	73.5	108	82.2

Radius shown in feet.
Sprinkler radius of throw per ASAE standard S398.1.

TORO 640 SERIES ROTORS

TORO

Considered the most durable, heavy-duty commercial sprinkler available, the Toro 640 Series is the proven veteran for athletic fields, parks, campuses and commercial sites.



Normally Open Valve In Head Models

Allows individual head control - the only commercial grade Toro rotor available with this feature.

Standard Check Valve

Prevents low head drainage and keeps laterals charged with water.

Additional Features

Includes a rubber cover and vandal-resistant cap with a locking set screw. The 640 series designed with a small exposed surface diameter is a gear drive including a basket filter.

SPECIFICATIONS

Operational

- Inlet: 1" NPT
- Nozzle Trajectory: 27°
- Operating Pressure:
 - Maximum: 90 psi
 - Minimum: 40 psi
- Below-grade installation up to ½"
- Check-O-Matic:
 - Maintains 15' elevation

Dimensions

- Body Diameter: 2½"
- Cap Diameter: 3¼"
- Body Height:
 - Check-O-Matic: 9"
 - Valve-In-Head: 10½"
- Exposed surface diameter when buried ½" below grade: 1¾"

Warranty

- Five years

640 SERIES COMPLETE SPRINKLERS







DESCRIPTION	PART NO.
90° Arc with #40 Nozzle	641-02-40
90° Arc with #41 Nozzle	641-02-41
90° Arc with #42 Nozzle	641-02-42
90° Arc with #43 Nozzle	641-02-43
90° Arc with #44 Nozzle	641-02-44
180° Arc with #40 Nozzle	642-02-40
180° Arc with #41 Nozzle	642-02-41
180° Arc with #42 Nozzle	642-02-42
180° Arc with #43 Nozzle	642-02-43
180° Arc with #44 Nozzle	642-02-44
360° Arc with #40 Nozzle	644-02-40
360° Arc with #41 Nozzle	644-02-41
360° Arc with #42 Nozzle	644-02-42
360° Arc with #43 Nozzle	644-02-43
360° Arc with #44 Nozzle	644-02-44



CUSTOM CONFIGURATIONS

- The 640 Series is available in additional fixed arcs including: 45°, 60°, 108°, 127°, 148°, 173°, 192°, 238°, 270°

TORO 640 SERIES PERFORMANCE

640 SERIES PERFORMANCE DATA

Nozzle	psi	gpm	Radius	360° 		270° 		238° 		192° 		180° 		173° 	
				▲	■	▲	■	▲	■	▲	■	▲	■	▲	■
40	40	6.0	47	0.30	0.26	0.40	0.35	0.46	0.39	0.57	0.49	0.60	0.52	0.63	0.54
	50	6.7	50	0.30	0.26	0.40	0.34	0.45	0.39	0.56	0.49	0.60	0.52	0.62	0.54
	60	7.3	52	0.30	0.26	0.40	0.35	0.45	0.39	0.56	0.49	0.60	0.52	0.62	0.54
	70	8.0	53	0.32	0.27	0.42	0.36	0.48	0.41	0.60	0.52	0.63	0.55	0.66	0.57
	80	8.6	54	0.33	0.28	0.44	0.38	0.50	0.43	0.62	0.53	0.66	0.57	0.68	0.59
	90	9.2	55	0.34	0.29	0.45	0.39	0.51	0.44	0.64	0.55	0.68	0.59	0.70	0.61
41	40	9.5	48	0.46	0.40	0.61	0.53	0.69	0.60	0.86	0.75	0.92	0.79	0.95	0.83
	50	10.2	53	0.40	0.35	0.54	0.47	0.61	0.58	0.76	0.60	0.81	0.70	0.84	0.73
	60	11.0	54	0.42	0.36	0.56	0.48	0.63	0.55	0.79	0.68	0.84	0.73	0.87	0.76
	70	11.9	55	0.44	0.38	0.58	0.50	0.66	0.57	0.82	0.71	0.87	0.76	0.91	0.79
	80	12.7	56	0.45	0.39	0.60	0.52	0.68	0.59	0.85	0.73	0.90	0.78	0.94	0.81
	90	13.4	57	0.46	0.40	0.61	0.53	0.69	0.60	0.86	0.74	0.92	0.79	0.95	0.83
42	40	12.0	52	0.49	0.43	0.66	0.57	0.75	0.65	0.93	0.80	0.99	0.85	1.03	0.89
	50	12.9	55	0.47	0.41	0.63	0.55	0.72	0.62	0.89	0.77	0.95	0.82	0.99	0.85
	60	14.0	56	0.50	0.43	0.66	0.57	0.75	0.65	0.93	0.81	0.99	0.86	1.03	0.89
	70	14.7	57	0.50	0.44	0.67	0.58	0.76	0.66	0.95	0.82	1.01	0.87	1.05	0.91
	80	15.8	58	0.52	0.45	0.69	0.60	0.79	0.68	0.98	0.85	1.04	0.90	1.09	0.94
	90	16.8	58	0.56	0.48	0.74	0.64	0.84	0.73	1.04	0.90	1.11	0.96	1.16	1.00
43	40	13.2	56	0.47	0.41	0.62	0.54	0.71	0.61	0.88	0.76	0.94	0.81	0.97	0.84
	50	14.5	59	0.46	0.40	0.62	0.53	0.70	0.61	0.87	0.75	0.93	0.80	0.96	0.83
	60	15.7	59	0.50	0.43	0.67	0.58	0.76	0.66	0.94	0.82	1.00	0.87	1.04	0.83
	70	17.0	61	0.51	0.44	0.68	0.59	0.77	0.67	0.96	0.83	1.02	0.88	1.06	0.92
	80	18.3	63	0.51	0.44	0.68	0.59	0.77	0.67	0.96	0.83	1.03	0.89	1.07	0.92
	90	19.4	64	0.53	0.46	0.70	0.61	0.80	0.69	0.99	0.86	1.05	0.91	1.10	0.95
44	40	16.7	55	0.61	0.53	0.82	0.71	0.93	0.80	1.15	1.00	1.23	1.06	1.28	1.11
	50	18.6	60	0.57	0.50	0.76	0.66	0.87	0.75	1.08	0.94	1.15	1.00	1.20	1.03
	60	19.9	61	0.59	0.52	0.79	0.68	0.90	0.78	1.12	0.97	1.19	1.03	1.24	1.07
	70	21.9	63	0.61	0.53	0.82	0.71	0.93	0.80	1.15	1.00	1.23	1.06	1.28	1.11
	80	23.4	65	0.62	0.53	0.82	0.71	0.93	0.81	1.16	1.00	1.23	1.07	1.28	1.11
	90	25.0	67	0.62	0.54	0.82	0.71	0.94	0.81	1.16	1.01	1.24	1.07	1.29	1.12

Nozzle	psi	gpm	Radius	148° 		127° 		108°		90°		60°		45°	
				▲	■	▲	■	▲	■	▲	■	▲	■	▲	■
40	40	6.0	47	0.73	0.64	0.85	0.74	1.01	0.87	1.21	1.05	1.81	1.57	2.42	2.09
	50	6.7	50	0.72	0.63	0.84	0.73	0.99	0.86	1.19	1.03	1.79	1.55	2.38	2.06
	60	7.3	52	0.73	0.63	0.85	0.74	1.00	0.75	1.20	1.04	1.80	1.56	2.40	2.08
	70	8.0	53	0.77	0.67	0.90	0.78	1.05	0.91	1.27	1.10	1.90	1.65	2.53	2.19
	80	8.6	54	0.80	0.69	0.93	0.80	1.09	0.95	1.31	1.14	1.97	1.70	2.62	2.27
	90	9.2	55	0.82	0.71	0.96	0.83	1.13	0.98	1.35	1.17	2.03	1.76	2.71	2.34
41	40	9.5	48	1.11	0.96	1.30	1.12	1.53	1.32	1.83	1.59	2.75	2.38	3.67	3.18
	50	10.2	53	0.98	0.85	1.14	0.99	1.34	1.16	1.62	1.40	2.42	2.10	3.23	2.80
	60	11.0	54	1.02	0.88	1.19	1.03	1.40	1.21	1.68	1.45	2.52	2.18	3.36	2.91
	70	11.9	55	1.06	0.92	1.24	1.07	1.46	1.26	1.75	1.52	2.62	2.27	3.50	3.03
	80	12.7	56	1.09	0.95	1.27	1.10	1.50	1.30	1.80	1.56	2.70	2.34	3.60	3.12
	90	13.4	57	1.11	0.97	1.30	1.12	1.53	1.32	1.83	1.59	2.75	2.38	3.67	3.18
42	40	12.0	52	1.20	1.04	1.40	1.21	1.64	1.42	1.97	1.71	2.96	2.56	3.95	3.42
	50	12.9	55	1.15	1.00	1.34	1.16	1.58	1.37	1.90	1.64	2.85	2.46	3.79	3.29
	60	14.0	56	1.21	1.05	1.40	1.22	1.65	1.43	1.99	1.72	2.98	2.58	3.97	3.44
	70	14.7	57	1.22	1.06	1.42	1.23	1.68	1.445	2.01	1.74	3.02	2.61	4.03	3.49
	80	15.8	58	1.27	1.10	1.48	1.28	1.74	1.51	2.09	1.81	3.13	2.71	4.18	3.62
	90	16.8	58	1.35	1.17	1.57	1.36	1.85	1.60	2.22	1.92	3.33	2.89	4.44	3.85
43	40	13.2	56	1.14	0.98	1.32	1.15	1.56	1.35	1.87	1.62	2.81	2.43	3.74	3.24
	50	14.5	59	1.13	0.97	1.31	1.14	1.54	1.34	1.85	1.60	2.78	2.41	3.71	3.21
	60	15.7	59	1.22	1.06	1.42	1.23	1.67	1.45	2.01	1.74	3.01	2.61	4.01	3.47
	70	17.0	61	1.23	1.07	1.44	1.25	1.69	1.47	2.03	1.76	3.05	2.64	4.06	3.52
	80	18.3	63	1.25	1.08	1.45	1.25	1.71	1.48	2.05	1.78	3.08	2.66	4.10	3.55
	90	19.4	64	1.28	1.11	1.49	1.29	1.75	1.52	2.11	1.82	3.16	2.74	4.21	3.65
44	40	16.7	55	1.49	1.29	1.74	1.50	2.04	1.77	2.46	2.13	3.68	3.19	4.91	4.25
	50	18.6	60	1.40	1.21	1.63	1.41	1.91	1.66	2.30	1.99	3.45	2.99	4.60	3.98
	60	19.9	61	1.45	1.25	1.68	1.46	1.98	1.71	2.38	2.06	3.57	3.09	4.76	4.12
	70	21.9	63	1.49	1.29	1.74	1.53	2.04	1.84	2.45	2.16	3.68	3.19	4.91	4.25
	80	23.4	65	1.50	1.30	1.74	1.51	2.05	1.78	2.46	2.13	3.70	3.20	4.93	4.27
	90	25.0	67	1.50	1.30	1.75	1.52	2.06	1.79	2.48	2.15	3.72	3.22	4.95	4.29

*▲ Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.

*■ Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.

All performance specifications are based on the stated working pressure available at the base of the sprinkler. Radius shown in feet. Note: For the 640, differing arcs cannot be valved together.

TORO T7 SERIES ROTORS



The T7 Series sprinkler is built rugged to withstand harsh golf course conditions. The low-flow version is perfect for shorter-radius golf course applications like tee boxes, surrounds and perimeters. The T7 has been designed and tested to ensure the high reliability demanded by the market.

Water is Evenly Distributed

High efficiency nozzles with single port design ensure water is evenly distributed across the pattern.

Versatility

Available in standard and low-flow models to meet your application needs.

Vandal and Abuse Resistant

The Smart Arc™ memory safely returns the sprinkler to previously set arc even when turned beyond arc borders.

Clears Tall Grasses

The 5.75 inch pop-up ensures proper spray pattern and nozzle distribution uniformity even in taller grasses.

Additional Features

- ✓ Standard check valve
- ✓ Radius reduction screw - up to 25%
- ✓ Threaded cap-retained riser assembly
- ✓ Variable reversing stator
- ✓ Slip clutch
- ✓ 6 nozzles included with Low-flow models
- ✓ 7 nozzles included with High-flow models



Top Arc Indication
Arc setting indicator on top of the rotor allows for easy wet or dry adjustments. Part or full-circle from 45° to 360°.

SPECIFICATIONS

Operational

- Inlet: 1" NPT or 1" ACME
- Arc Adjustment: - 45° to true 360°
- Operating Pressure: - Maximum: 100 psi - Minimum: 40 psi

Dimensions

- Body Diameter: 2.7"
- Body Height: 8.8"
- Pop-up Height: 5¾"

Warranty

- Five years

T7 SERIES ROTORS

DESCRIPTION	PART NO.
T7, SS Riser, NPT Thread, High Flow	T7PSS-02
T7, SS Riser, NPT Thread, Low Flow	T7PSS-02L
T7, SS Riser, ACME Thread, High Flow	T7PSS-42
T7, SS Riser, ACME Thread, Low Flow	T7PSS-42L
T7, Plastic Riser, NPT Thread, High Flow	T7P-02
T7, Plastic Riser, NPT Thread, Low Flow	T7P-02L
T7, Plastic Riser, ACME Thread, High Flow	T7P-42
T7, Plastic Riser, ACME Thread, Low Flow	T7P-42L

TORO T7 SERIES PERFORMANCE

T7 SERIES PERFORMANCE DATA

HIGH FLOW MODELS

Nozzle	psi	Radius (ft)	gpm	Precip. Rate (in/hr) ▲	Precip. Rate (in/hr) ■
7.0	40	45	6.6	0.72	0.62
	50	47	7.4	0.75	0.65
	60	48	8.1	0.78	0.68
	70	49	8.8	0.82	0.71
	80	51	9.4	0.83	0.72
	90	52	10.3	0.85	0.73
	100	54	10.7	0.83	0.72
	110	55	11.5	0.84	0.73
9.0	40	47	7.4	0.76	0.66
	50	50	8.3	0.73	0.64
	60	51	8.7	0.76	0.66
	70	52	9.4	0.81	0.70
	80	54	9.9	0.80	0.69
	90	55	10.9	0.82	0.71
	100	56	11.5	0.84	0.73
	110	59	12.5	0.89	0.77
12.0*	40	51	11.6	0.90	0.78
	50	53	12.7	0.91	0.79
	60	54	13.8	0.96	0.83
	70	55	14.7	0.99	0.86
	80	56	15.6	1.02	0.88
	90	57	16.5	1.04	0.90
	100	58	17.5	1.06	0.92
	110	60	18.8	1.10	0.95
16.0	40	53	13.0	1.06	0.92
	50	56	15.1	1.06	0.92
	60	58	16.2	1.04	0.90
	70	59	17.5	1.09	0.95
	80	61	18.8	1.10	0.95
	90	62	20.0	1.14	0.98
	100	63	21.1	1.17	1.01
	110	65	22.2	1.19	1.03
20.0	40	53	16.0	1.28	1.10
	50	58	17.5	1.22	1.05
	60	60	19.5	1.21	1.05
	70	61	20.6	1.26	1.09
	80	65	22.2	1.19	1.03
	90	66	23.6	1.23	1.06
	100	67	24.8	1.25	1.09
	110	69	26.5	1.30	1.14
24.0	40	52	15.8	1.27	1.10
	50	60	17.5	1.09	0.95
	60	63	19.3	1.11	0.96
	70	65	20.7	1.14	0.99
	80	67	22.3	1.15	1.00
	90	68	23.8	1.20	1.04
	100	71	25.3	1.16	1.01
	110	73	27.4	1.14	0.99
27.0	40	55	18.7	1.42	1.23
	50	65	23.4	1.16	1.00
	60	71	23.6	1.05	0.91
	70	72	25.8	1.10	0.95
	80	73	27.4	1.14	0.99
	90	74	29.1	1.18	1.02
	100	75	30.6	1.21	1.05
	110	77	32.5	1.25	1.09

LOW FLOW MODELS

Nozzle	psi	Radius (ft)	gpm	Precip. Rate (in/hr) ▲	Precip. Rate (in/hr) ■
2.0	40	39	1.7	0.25	0.22
	50	39	2.0	0.29	0.25
	60	40	2.2	0.30	0.26
	70	40	2.4	0.33	0.28
	80	40	2.6	0.35	0.31
	90	41	2.7	0.36	0.31
	100	41	2.9	0.38	0.33
	110	42	3.0	0.39	0.33
3.0*	40	39	2.4	0.36	0.31
	50	40	2.8	0.39	0.33
	60	41	3.1	0.41	0.36
	70	41	3.4	0.45	0.39
	80	42	3.6	0.46	0.40
	90	42	3.9	0.47	0.41
	100	43	4.1	0.49	0.42
	110	43	4.3	0.51	0.44
4.5	40	38	4.1	0.63	0.54
	50	41	4.7	0.62	0.53
	60	41	5.2	0.68	0.59
	70	42	5.7	0.71	0.62
	80	42	6.1	0.77	0.66
	90	43	6.5	0.78	0.68
	100	43	6.9	0.83	0.72
	110	44	7.4	0.88	0.76
6.0	40	43	5.0	0.59	0.51
	50	46	5.7	0.59	0.51
	60	48	6.3	0.61	0.52
	70	49	7.0	0.65	0.57
	80	49	7.4	0.68	0.59
	90	50	7.9	0.70	0.61
	100	50	8.4	0.74	0.64
	110	51	8.9	0.78	0.67
7.5	40	44	5.8	0.66	0.58
	50	46	6.7	0.70	0.60
	60	48	7.4	0.71	0.62
	70	49	8.0	0.75	0.65
	80	50	8.8	0.78	0.67
	90	50	9.5	0.84	0.73
	100	52	10.0	0.81	0.70
	110	53	10.4	0.83	0.72
9.0	40	45	7.4	0.81	0.70
	50	49	8.5	0.78	0.68
	60	51	9.4	0.80	0.70
	70	53	10.4	0.83	0.72
	80	55	11.3	0.83	0.72
	90	55	12.0	0.89	0.77
	100	56	12.8	0.90	0.78
	110	57	13.6	0.92	0.80

* When the sprinkler is adjusted to 360°, it will be uni-directional in that direction of rotation (clockwise or counterclockwise) at the moment when the sprinkler was changed to 360°
 * Pre-installed nozzle. Data based on 180°.

TORO T5 RAPIDSET® SERIES ROTORS

TORO

The Toro T5 RapidSet rotor can be set in seconds. Engineered to use the slip clutch to adjust the arc, the T5 RapidSet requires NO TOOLS for arc adjustments. Along with a 5 inch pop-up height, the T5 RapidSet rotors feature exclusive Airfoil Technology™ standard and low angle nozzles that deliver class-leading distribution uniformity. Designed to save water, save time, and save money, the T5 RapidSet is the only ¾" rotor needed to get the job done.

RapidSet® Arc Adjustment

Arc adjustments from 40° to 360° can be made quickly with a few twists of the turret – no tools required. The RapidSet slip clutch also protects against gear damage caused by intentional vandalism or inexperienced users.

5" Pop-up Height

Fits in the same footprint as many competing 4" rotors for hassle-free retrofits, but delivers an extra inch of pop-up height, allowing the nozzle to clear tall grasses.

Airfoil Technology™ Nozzles

The T5 RapidSet rotor comes with a full set of 8 standard nozzles (25° trajectory) and 4 low angle (10° trajectory) nozzles that utilize proprietary Airfoil Technology, which creates a zone of low pressure just below the main stream to gently guide water downward for unmatched uniformity without forcefully washing out newly-laid seeds.

Design Flexibility

T5 RapidSet rotors are available in Effluent, Shrub, 12" High Pop, and Stainless Steel models.



Stainless Steel Model Features

- ✓ 304 Stainless Steel riser and nozzle base protection
- ✓ Ideal for settings with heavy foot traffic or sandy soil conditions
- ✓ Heavy-duty construction protects the rotor from damage caused by vandalism

SPECIFICATIONS

Operational

- Inlet: ¾" NPT
- Arc Adjustment:
 - 45° to true 360°
- Operating Pressure:
 - Maximum: 65 psi
 - Minimum: 25 psi
- Trajectory:
 - 25° standard
 - 10° low angle

Dimensions

- Body Diameter: 2¼"
- Body Height:
 - Standard Pop-up: 7½"
 - Shrub: 7¾"
 - High Pop: 16¾"
- Pop-up Height: 5¾"

Warranty

- Five years

T5 SERIES ROTORS

DESCRIPTION	PART NO.
5" RapidSet Lawn Pop-up	T5P-RS
5" RapidSet Stainless Steel Lawn Pop-up	T5PSS-RS
5" RapidSet Lawn Pop-up with Check Valve	T5PCK-RS
5" RapidSet SS Pop-up with Check Valve	T5PCKSS-RS
12" RapidSet High Pop	T5HP-RS
T5 RapidSet Shrub	T5S-RS

TORO T5 RAPIDSET® SERIES PERFORMANCE

T5 RAPIDSET SERIES PERFORMANCE DATA

STANDARD 25° NOZZLES

Nozzle	psi	Radius	gpm	Precipitation Rate (in/hr) ▲ (in/hr) ■	
1.5	25	33	1.15	0.23	0.20
	35	34	1.38	0.27	0.23
	*45	35	1.59	0.29	0.25
	55	35	1.74	0.32	0.27
	65	36	1.88	0.32	0.28
2.0	25	35	1.45	0.26	0.23
	35	36	1.80	0.31	0.27
	*45	37	2.12	0.34	0.30
	55	37	2.30	0.37	0.32
	65	37	2.58	0.42	0.36
2.5	25	35	1.75	0.32	0.28
	35	36	2.20	0.38	0.33
	*45	37	2.55	0.41	0.36
	55	37	2.80	0.45	0.39
	65	37	3.05	0.50	0.43
3.0 Standard	25	36	2.20	0.38	0.33
	35	38	2.60	0.40	0.35
	*45	40	3.05	0.42	0.37
	55	40	3.52	0.49	0.42
	65	40	3.80	0.53	0.46
4.0	25	37	2.95	0.48	0.41
	35	40	3.55	0.49	0.43
	*45	42	4.10	0.52	0.45
	55	42	4.45	0.56	0.49
	65	43	4.85	0.58	0.50
5.0	25	39	3.75	0.55	0.47
	35	41	4.50	0.60	0.52
	*45	43	5.10	0.61	0.53
	55	45	5.75	0.63	0.55
	65	45	6.10	0.67	0.58
6.0	25	39	4.20	0.61	0.53
	35	43	5.20	0.63	0.54
	*45	46	6.05	0.64	0.55
	55	47	6.65	0.67	0.58
	65	48	7.25	0.70	0.61
8.0	25	36	5.75	0.99	0.85
	35	43	7.10	0.85	0.74
	*45	47	8.05	0.81	0.70
	55	48	8.95	0.86	0.75
	65	50	9.70	0.86	0.75

*Recommended operating pressure. Data based on 180°.

LOW ANGLE NOZZLES

Nozzle	psi	Radius	gpm	Precipitation Rate (in/hr) ▲ (in/hr) ■	
1.0LA	25	25	0.74	0.26	0.23
	35	28	0.94	0.27	0.23
	*45	28	1.02	0.29	0.25
	55	29	1.14	0.30	0.26
	65	29	1.25	0.33	0.29
1.5LA	25	27	1.10	0.34	0.29
	35	30	1.35	0.33	0.29
	*45	31	1.52	0.35	0.30
	55	31	1.75	0.40	0.35
	65	31	1.90	0.44	0.38
2.0LA	25	29	1.40	0.37	0.32
	35	31	1.72	0.40	0.34
	*45	32	2.05	0.45	0.39
	55	33	2.25	0.46	0.40
	65	33	2.45	0.50	0.43
3.0LA	25	29	2.20	0.58	0.50
	35	33	2.60	0.53	0.46
	*45	34	3.05	0.59	0.51
	55	36	3.40	0.58	0.51
	65	36	3.70	0.63	0.55

*Recommended operating pressure. Data based on 180°.



RapidSet® arc adjustment
requires NO TOOLS!

TORO 590GF SERIES SPRAYS



Toro's 590GF Series is the first spray head designed specifically for golf course irrigation with enhanced water management capabilities. The 590GF is built for the tough golf course environment, including harsh debris situations like top-dressing and sand, high water pressures, and daily mower and foot traffic. The 590GF is perfect around bunkers, on small tee boxes, and around the clubhouse. And with its patented X-Flow technology, the 590GF has a built-in shutoff device should a nozzle be damaged or removed and it's standard check valve feature minimizes low head drainage.

Nozzle Options

In addition to the full line of Toro MPR, TVAN and specialty nozzles the 590GF accepts the revolutionary Precision™ Spray and Precision™ Rotating Series nozzles with optimized distribution uniformity that provides exceptional turf conditions with minimal water usage.

Designed Flush Rate

Sprinkler flushes during pop-up and retraction clearing debris from around the riser to eliminate stick-ups and ensure positive sealing and retraction.

X-Flow® Shut Off Device

The X-Flow shut off feature stops the flow of water if the nozzle is damaged or removed to eliminate flooding, water waste and soil erosion.

Prevent Low Head Drainage

The standard check valve prevents low head drainage with up to 10' of elevation change minimizing soil erosion and water waste.

Additional Features

- ✓ Stainless steel retraction spring
- ✓ All bodies shipped with flush plug in place
- ✓ Ratcheting riser feature for arc adjustment



Flanged cap installs below grade to stabilize the body position and maintain optimum nozzle performance

SPECIFICATIONS

Operational

- Inlet: 1/2" NPT
- Operating Pressure:
 - Maximum: 75 psi
 - Minimum: 25 psi

Dimensions

- Body Diameter: 1½"

Warranty

- Five years

590GF SERIES SPRAYS

DESCRIPTION	PART NO.
590GF 4" Pop-up	590GF-4
590GF 6" Pop-up	590GF-6
590GF 12" Pop-up	590GF-12
6" Shrub Riser	570SR-6
12" Shrub Riser	570SR-12

TORO PRECISION™ SERIES ROTATING NOZZLES



Making use of the same patented gear drive technology found in Toro's world-leading Golf rotors, Toro Precision™ Series Rotating Nozzles are powered by a planetary drive system that delivers a pattern of multiple wind resistant, multi-trajectory streams. The full circle and adjustable arc models deliver a radius range of 14 to 26 feet with exceptional uniformity and close-in watering characteristics at a precipitation rate of .6" per hour.

Consistent, Gear-Driven Performance

Precision Series Rotating Nozzles are uniquely powered by a patented planetary gear drive, variable stator and turbine. Unlike competing rotating nozzles, the Precision Series Rotating Nozzle's gear drive is not system pressure dependent and delivers consistent rotation speed and performance across a wide range of operating pressures. The entire drive system is protected by the factory-installed fine mesh filter.

Fewer Models

Two Toro-threaded models are all that are required to cover radius requirements of 14 to 26 feet and infinitely adjustable arcs between 45° and 270° or 360°. Fewer models allow for less inventory and more flexibility.

Matched Precipitation Rate

These nozzles deliver water more slowly and evenly than standard spray nozzles, which helps prevent runoff and water waste. The 0.6" per hour precipitation rate better positions users to meet watering window requirements than competing rotating nozzles.

EZ ARC™ Visual Arc Indicators

Toro Precision Series Rotating Nozzles are the only rotating nozzles available that allow the user to dial in the nozzle's arc setting before installation. Further, the nozzle features a right edge call-out on adjustable models that assists in quick and effective installations.



The unique arc adjustment ring allows for pre-setting by hand or with the PRNTOOL.

590GF SERIES SPRAYS

DESCRIPTION	PART NO.
Rotating Adjustable Nozzle (45° - 270°)	PRN-TA
Rotating Full Circle Nozzle	PRN-TF



ROTATING NOZZLE PERFORMANCE DATA

Arc	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
45°	20	0.17	14.0	0.67	0.77
	30	0.19	15.0	0.65	0.75
	40	0.25	17.0	0.67	0.77
	50	0.31	18.5	0.70	0.81
	60	0.35	19.5	0.71	0.82
	75	0.43	22.0	0.68	0.79
90°	20	0.43	16.0	0.65	0.75
	30	0.49	17.5	0.62	0.71
	40	0.62	20.5	0.57	0.66
	50	0.75	22.5	0.57	0.66
	60	0.82	23.5	0.57	0.66
	75	0.92	25.0	0.57	0.65
120°	20	0.68	16.4	0.69	0.79
	30	0.57	17.5	0.72	0.83
	40	0.78	20.2	0.55	0.64
	50	0.97	22.5	0.55	0.64
	60	1.07	23.5	0.56	0.65
	75	1.18	25.0	0.55	0.63
180°	20	0.83	15.0	0.71	0.82
	30	0.94	17.0	0.63	0.72
	40	1.22	20.5	0.56	0.65
	50	1.46	22.5	0.56	0.64
	60	1.61	24.0	0.54	0.62
	75	1.81	26.0	0.52	0.60
240°	20	1.12	15.0	0.72	0.83
	30	1.27	17.0	0.63	0.73
	40	1.56	20.0	0.56	0.65
	50	1.80	21.5	0.56	0.65
	60	1.95	22.5	0.56	0.64
	75	2.20	24.0	0.55	0.64
270°	20	1.08	14.0	0.71	0.81
	30	1.23	16.0	0.62	0.71
	40	1.62	19.0	0.57	0.66
	50	2.00	21.5	0.55	0.64
	60	2.26	23.0	0.55	0.63
	75	2.60	25.0	0.53	0.61
360°	20	1.81	15.0	0.77	0.89
	30	2.00	17.2	0.65	0.75
	40	2.56	20.9	0.56	0.65
	50	3.09	22.9	0.57	0.65
	60	3.34	23.8	0.57	0.66
	75	3.68	25.6	0.54	0.62

TORO PRECISION™ SERIES SPRAY NOZZLES



Toro Precision Series Spray Nozzles are the most efficient spray nozzles available and feature proprietary H₂O Chip Technology. With a precipitation rate of 1" per hour, Precision Series Spray Nozzles help irrigation professionals better manage water usage, eliminate runoff, and reduce their customers' water bills. These nozzles are available in a wide variety of arcs and radii, as well as Toro (male) and female-threaded bodies, making them ideal for large scale installations and retrofits. In addition, the best-in-class Precision Series Spray nozzles are available with factory-installed Pressure Compensating Discs (PCD).

Pressure-Compensating Versions Available

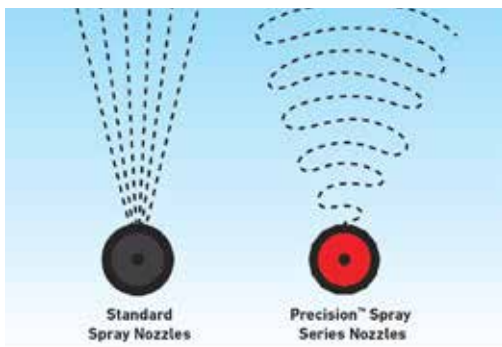
At a fraction of the cost of a pressure-regulating spray head, pressure-compensating Precision™ Series Spray Nozzles maintain a 1" per hour precipitation rate and minimize misting and water waste that results from higher pressure systems.

Third-Party Performance Validation

Third-Party Performance Validation Precision™ Series Spray Nozzles* have been tested and validated in the field and at the Center for Irrigation Technology (CIT).

Design and Retrofit Effectiveness

Each nozzle contains one or more H₂O chips that create a high frequency oscillating stream and deliver a precipitation rate of 1" per hour – an industry first – while using up to 35% less water than a standard nozzle.



Pressure Compensating Disc (PCD)

The elastomeric PCD adjusts in response to changes in inlet pressure to maintain optimal nozzle performance. Recommended for use on systems operating above 40 psi, PCD models can easily be identified by the red Toro lettering across the top of the nozzle.

SPECIFICATIONS

Operational

- Operating Pressure:
 - Maximum: 75 psi
 - Minimum: 20 psi
 - Recommended Operating Pressure:
 - Non-Comp.: 30 psi
 - Press. Comp.: 50 psi
- Nozzle Trajectory:
 - 5': 5°
 - 8': 10°
 - 10': 15°
 - 12': 20°
 - 15': 27°
 - Corner/ Side Strips: 20°
 - Two years

Ordering Information - Precision Series Spray Nozzle

O-T-XXXX-XXXX-P			
Nozzle	Radius	Arc	PCD
O-T	XXXX	XXXX	P
0 - 1" Per Hour Toro Thread	5 - 5' 8 - 8' 10 - 10' 12 - 12' 15 - 15' 4X15 - 4' x 15' (PCD Only) 4X30 - 4' x 30' (PCD Only) 4X9 - 4' x 9' 4X18 - 4' x 18'	60 - 60° Q - 90° T - 120° 150 - 150° H - 180° 210 - 210° TT - 240° TQ - 270° F - Full Circle LCS - Left Corner RCS - Right Corner SST - Side Strip	P - Pressure Compensating
Examples: Non-Compensating Precision Spray Nozzle with 12' Radius and 90° Arc = O-T-12-Q Pressure Compensating Precision Spray Nozzle with 4' x 30' Side Strip Pattern = O-T-4X30-SSTP			

TORO PRECISION™ SERIES SPRAY PERFORMANCE



PRESSURE COMPENSATING PRECISION SERIES SPRAY NOZZLE PERFORMANCE DATA

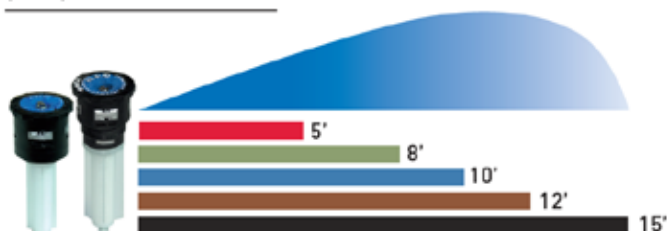
Arc	model # (0-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
60°	5-60P	40	0.07	6.0	1.2	1.4
		50	0.07	5.5	1.3	1.5
		60	0.07	6.0	1.0	1.2
		70	0.08	6.5	1.0	1.2
90°	5-QP	40	0.06	4.6	1.0	1.2
		50	0.08	5.1	1.2	1.4
		60	0.09	5.6	1.3	1.5
		70	0.11	6.2	1.5	1.7
120°	5-TP	40	0.07	4.4	1.0	1.1
		50	0.11	4.9	1.3	1.5
		60	0.15	5.5	1.7	2.0
		70	0.19	6.0	2.0	2.4
150°	5-150P	40	0.14	6.0	0.9	1.0
		50	0.14	6.0	0.9	1.0
		60	0.14	6.0	0.9	1.0
		70	0.14	6.0	0.9	1.0
180°	5-HP	40	0.10	4.4	1.0	1.2
		50	0.13	4.9	1.1	1.3
		60	0.16	5.4	1.3	1.5
		70	0.19	6.0	1.4	1.6
210°	5-210P	40	0.16	5.0	1.1	1.2
		50	0.18	5.5	1.0	1.1
		60	0.20	6.0	0.9	1.1
		70	0.21	6.0	1.0	1.1
240°	5-TTP	40	0.14	4.3	1.1	1.3
		50	0.20	4.9	1.3	1.5
		60	0.25	5.4	1.4	1.7
		70	0.31	6.0	1.6	1.8
270°	5-TQP	40	0.15	4.3	1.0	1.2
		50	0.21	4.9	1.2	1.4
		60	0.26	5.6	1.4	1.6
		70	0.32	6.2	1.5	1.7
360°	5-FP	40	0.17	4.0	1.0	1.2
		50	0.24	4.8	1.1	1.3
		60	0.31	5.5	1.2	1.4
		70	0.38	6.3	1.3	1.5

model # (0-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
8-60P	40	0.11	7.5	1.1	1.3
	50	0.11	7.5	1.2	1.3
	60	0.12	7.5	1.3	1.4
	70	0.14	8.0	1.2	1.4
8-QP	40	0.14	7.0	1.1	1.3
	50	0.17	7.7	1.2	1.3
	60	0.20	8.4	1.2	1.4
	70	0.23	9.1	1.3	1.4
8-TP	40	0.20	7.6	1.0	1.2
	50	0.24	8.0	1.1	1.3
	60	0.27	8.5	1.2	1.4
	70	0.31	8.9	1.3	1.5
8-150P	40	0.32	8.0	1.1	1.3
	50	0.32	8.5	1.0	1.2
	60	0.32	8.0	1.1	1.3
	70	0.32	8.0	1.1	1.3
8-HP	40	0.26	7.0	1.0	1.2
	50	0.33	7.6	1.1	1.3
	60	0.39	8.1	1.2	1.4
	70	0.46	8.7	1.3	1.5
8-210P	40	0.34	8.0	0.9	1.0
	50	0.38	8.0	1.0	1.1
	60	0.42	8.0	1.1	1.3
	70	0.45	8.0	1.2	1.3
8-TTP	40	0.34	7.0	1.0	1.1
	50	0.43	7.8	1.1	1.2
	60	0.52	8.5	1.2	1.4
	70	0.61	9.3	1.3	1.5
8-TQP	40	0.41	7.2	1.0	1.1
	50	0.48	7.9	1.1	1.2
	60	0.55	8.6	1.2	1.4
	70	0.62	9.3	1.3	1.5
8-FP	40	0.55	7.0	1.1	1.2
	50	0.65	7.5	1.1	1.2
	60	0.74	8.0	1.1	1.3
	70	0.84	8.5	1.1	1.3

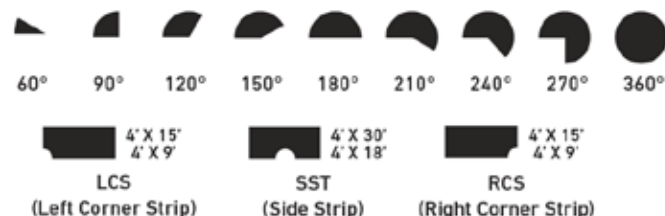
model # (0-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
10-60P	40	0.16	9.5	1.0	1.2
	50	0.18	10.5	1.0	1.1
	60	0.20	11.0	1.0	1.1
	70	0.22	11.0	1.1	1.2
10-QP	40	0.26	9.5	1.0	1.1
	50	0.28	10.0	1.1	1.2
	60	0.29	10.5	1.1	1.3
	70	0.31	11.1	1.2	1.4
10-TP	40	0.31	9.5	1.0	1.1
	50	0.36	10.0	1.1	1.2
	60	0.41	10.5	1.2	1.4
	70	0.46	11.0	1.3	1.5
10-150P	40	0.47	9.5	1.2	1.4
	50	0.49	10.0	1.1	1.3
	60	0.51	10.0	1.2	1.4
	70	0.53	10.5	1.1	1.3
10-HP	40	0.48	9.7	1.0	1.1
	50	0.53	10.1	1.1	1.2
	60	0.57	10.4	1.1	1.3
	70	0.62	10.8	1.2	1.4
10-210P	40	0.57	9.5	1.1	1.2
	50	0.64	10.0	1.1	1.2
	60	0.70	10.0	1.2	1.3
	70	0.75	10.0	1.2	1.4
10-TTP	40	0.63	9.6	1.0	1.1
	50	0.70	9.9	1.1	1.2
	60	0.77	10.3	1.1	1.3
	70	0.84	10.6	1.2	1.4
10-TQP	40	0.71	9.5	1.0	1.1
	50	0.77	9.9	1.0	1.2
	60	0.82	10.3	1.1	1.2
	70	0.88	10.7	1.1	1.3
10-FP	40	0.95	9.6	1.0	1.1
	50	1.06	10.0	1.1	1.2
	60	1.16	10.5	1.1	1.3
	70	1.27	10.9	1.2	1.4

TORO PRECISION™ SERIES SPRAY PERFORMANCE

























Five Radii Available in Toro
(Male) & Female Threads



Nine Arcs, Plus Side and Center Strips Available












PRESSURE COMPENSATING PRECISION SERIES SPRAY NOZZLE PERFORMANCE DATA

Arc	model # (O-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
	12-60P	40	0.30	13.0	1.0	1.2
		50	0.30	13.0	1.0	1.2
		60	0.30	13.0	1.0	1.2
		70	0.30	13.0	1.0	1.2
	12-QP	40	0.34	12.0	1.0	1.2
		50	0.39	12.2	1.1	1.3
		60	0.43	12.5	1.2	1.3
		70	0.48	12.7	1.2	1.4
	12-TP	40	0.46	11.5	1.0	1.2
		50	0.50	11.8	1.0	1.2
		60	0.54	12.0	1.1	1.3
		70	0.58	12.3	1.1	1.3
	12-150P	40	0.59	12.0	1.0	1.1
		50	0.66	11.5	1.2	1.3
		60	0.72	12.0	1.2	1.3
		70	0.78	12.0	1.3	1.5
	12-HP	40	0.70	11.5	1.0	1.2
		50	0.75	11.8	1.0	1.2
		60	0.80	12.2	1.1	1.2
		70	0.85	12.5	1.1	1.2
	12-210P	40	0.86	11.0	1.2	1.4
		50	0.96	11.5	1.2	1.4
		60	1.05	12.0	1.2	1.4
		70	1.13	12.0	1.3	1.5
	12-TTP	40	0.90	11.4	1.0	1.2
		50	1.03	11.5	1.1	1.3
		60	1.16	11.5	1.2	1.3
		70	1.29	11.6	1.2	1.4
	12-TQP	40	1.05	11.4	1.0	1.2
		50	1.14	11.7	1.0	1.2
		60	1.23	12.0	1.1	1.3
		70	1.32	12.3	1.1	1.3
	12-FP	40	1.35	11.5	1.0	1.1
		50	1.49	11.8	1.0	1.2
		60	1.63	12.2	1.1	1.3
		70	1.77	12.5	1.1	1.3
Arc	model # (O-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
	15-60P	40	0.36	14.0	1.1	1.2
		50	0.41	15.0	1.0	1.2
		60	0.45	15.0	1.1	1.3
		70	0.48	15.0	1.2	1.4
	15-QP	40	0.53	14.2	1.0	1.2
		50	0.59	14.5	1.1	1.2
		60	0.64	14.8	1.1	1.3
		70	0.70	15.1	1.2	1.3
	15-TP	40	0.72	14.3	1.0	1.2
		50	0.77	14.8	1.0	1.2
		60	0.82	15.2	1.1	1.2
		70	0.87	15.7	1.1	1.2
	15-150P	40	0.93	14.0	1.1	1.3
		50	1.04	14.5	1.2	1.3
		60	1.14	14.5	1.3	1.5
		70	1.23	14.5	1.4	1.6
	15-HP	40	1.10	14.5	1.0	1.2
		50	1.20	14.3	1.1	1.2
		60	1.29	14.0	1.1	1.3
		70	1.39	13.8	1.2	1.3
	15-210P	40	1.23	14.0	1.0	1.2
		50	1.44	14.0	1.2	1.4
		60	1.56	14.0	1.3	1.5
		70	1.70	15.0	1.2	1.4
	15-TTP	40	1.45	14.5	1.0	1.2
		50	1.57	14.8	1.0	1.2
		60	1.68	15.0	1.1	1.2
		70	1.80	15.3	1.1	1.3
	15-TQP	40	1.60	14.0	0.9	1.0
		50	1.70	14.4	1.0	1.1
		60	1.80	14.8	1.0	1.2
		70	1.90	15.1	1.1	1.2
	15-FP	40	2.20	14.5	1.0	1.2
		50	2.36	14.8	1.0	1.2
		60	2.52	15.1	1.1	1.2
		70	2.68	15.4	1.1	1.3
Arc	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)	
	40	0.62	4x30	1.0	1.1	
	50	0.65	4x30	1.0	1.2	
	60	0.67	4x30	1.1	1.3	
	70	0.70	4x30	1.1	1.3	
	40	0.32	4x15	1.0	1.2	
	50	0.33	4x15	1.1	1.2	
	60	0.34	4x15	1.1	1.3	
	70	0.35	4x15	1.2	1.3	
	40	0.32	4x15	1.0	1.2	
	50	0.33	4x15	1.1	1.2	
	60	0.34	4x15	1.1	1.3	
	70	0.35	4x15	1.2	1.3	
	40	0.36	4x18	1.0	1.1	
	50	0.37	4x18	1.0	1.2	
	60	0.38	4x18	1.0	1.2	
	70	0.39	4x18	1.0	1.2	
	40	0.18	4x9	1.0	1.1	
	50	0.19	4x9	1.1	1.2	
	60	0.20	4x9	1.1	1.2	
	70	0.21	4x9	1.2	1.3	
	40	0.18	4x9	1.0	1.2	
	50	0.19	4x9	1.1	1.2	
	60	0.20	4x9	1.1	1.2	
	70	0.21	4x9	1.2	1.3	

TORO PRECISION™ SERIES SPRAY PERFORMANCE

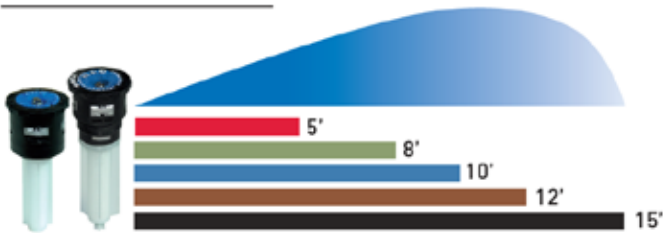


NON-COMPENSATING PRECISION SERIES SPRAY NOZZLE PERFORMANCE DATA

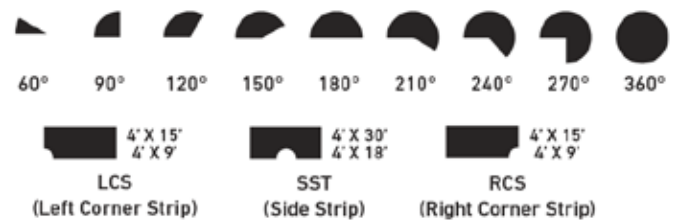
Arc	model # (0-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
 60°	5-60	20	0.04	4.7	1.0	1.2
		30	0.04	5.0	1.0	1.2
		40	0.04	5.0	1.0	1.2
		50	0.05	5.3	1.0	1.1
 90°	5-Q	20	0.06	4.6	1.0	1.2
		30	0.06	5.0	1.0	1.1
		40	0.07	5.0	1.0	1.2
		50	0.07	5.0	1.0	1.2
 120°	5-T	20	0.07	4.4	1.0	1.2
		30	0.09	5.0	1.0	1.2
		40	0.09	5.2	1.0	1.2
		50	0.10	5.4	1.0	1.1
 150°	5-150	20	0.07	4.0	1.0	1.2
		30	0.11	5.0	1.0	1.2
		40	0.12	5.2	1.0	1.2
		50	0.13	5.4	1.0	1.2
 180°	5-H	20	0.10	4.4	1.0	1.2
		30	0.13	5.0	1.0	1.2
		40	0.14	5.1	1.0	1.2
		50	0.14	5.2	1.0	1.1
 210°	5-210	20	0.10	4.4	1.0	1.2
		30	0.15	5.2	1.1	1.2
		40	0.16	5.3	1.1	1.3
		50	0.17	5.5	1.1	1.3
 240°	5-TT	20	0.14	4.3	1.1	1.3
		30	0.17	5.0	1.0	1.1
		40	0.19	5.0	1.1	1.2
		50	0.19	5.0	1.1	1.3
 270°	5-TQ	20	0.15	4.3	1.0	1.2
		30	0.20	5.0	1.0	1.2
		40	0.21	5.0	1.1	1.2
		50	0.22	5.0	1.1	1.3
 360°	5-F	20	0.17	4.0	1.0	1.2
		30	0.26	5.0	1.0	1.2
		40	0.26	5.0	1.0	1.2
		50	0.26	5.0	1.0	1.2
model # (0-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)	
8-60	20	0.10	7.6	1.0	1.2	
	30	0.11	8.0	1.0	1.1	
	40	0.12	8.1	1.1	1.2	
	50	0.13	8.3	1.1	1.3	
8-Q	20	0.14	7.0	1.1	1.3	
	30	0.17	8.0	1.0	1.1	
	40	0.18	8.2	1.0	1.2	
	50	0.18	8.4	1.0	1.1	
8-T	20	0.20	7.6	1.0	1.2	
	30	0.22	8.0	1.0	1.1	
	40	0.23	8.2	1.0	1.1	
	50	0.24	8.3	1.0	1.1	
8-150	20	0.25	7.5	1.0	1.2	
	30	0.27	8.0	1.0	1.1	
	40	0.28	8.1	1.0	1.1	
	50	0.29	8.2	1.0	1.2	
8-H	20	0.26	7.0	1.0	1.2	
	30	0.33	8.0	1.0	1.1	
	40	0.34	8.0	1.0	1.2	
	50	0.34	8.0	1.0	1.2	
8-210	20	0.33	7.6	1.1	1.3	
	30	0.36	8.0	1.1	1.3	
	40	0.37	8.1	1.1	1.3	
	50	0.38	8.2	1.1	1.3	
8-TT	20	0.34	7.0	1.0	1.2	
	30	0.44	8.0	1.0	1.1	
	40	0.46	8.0	1.0	1.2	
	50	0.46	8.0	1.0	1.2	
8-TQ	20	0.41	7.2	1.0	1.1	
	30	0.49	8.0	1.1	1.1	
	40	0.54	8.0	1.1	1.2	
	50	0.55	8.0	1.1	1.2	
8-F	20	0.55	7.0	1.1	1.2	
	30	0.66	8.0	1.0	1.1	
	40	0.68	8.0	1.0	1.2	
	50	0.71	8.0	1.1	1.2	
model # (0-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)	
10-60	20	0.16	9.5	1.0	1.2	
	30	0.17	10.0	1.0	1.1	
	40	0.18	10.0	1.0	1.2	
	50	0.19	10.0	1.1	1.3	
10-Q	20	0.26	9.5	1.0	1.1	
	30	0.23	10.0	1.0	1.2	
	40	0.28	1.2	1.0	1.2	
	50	0.28	1.3	1.0	1.2	
10-T	20	0.31	9.5	1.0	1.1	
	30	0.34	10.0	1.0	1.1	
	40	0.36	10.0	1.0	1.2	
	50	0.37	10.0	1.1	1.2	
10-150	20	0.41	9.8	1.0	1.1	
	30	0.43	10.0	1.0	1.1	
	40	0.44	10.2	1.0	1.1	
	50	0.46	10.4	1.0	1.1	
10-H	20	0.48	9.7	1.0	1.1	
	30	0.51	10.0	1.0	1.1	
	40	0.55	10.3	1.0	1.2	
	50	0.56	10.4	1.0	1.2	
10-210	20	0.56	9.8	1.1	1.3	
	30	0.58	10.0	1.1	1.3	
	40	0.60	10.4	1.1	1.2	
	50	0.62	10.5	1.1	1.3	
10-TT	20	0.63	9.6	1.0	1.1	
	30	0.69	10.0	1.0	1.2	
	40	0.73	10.3	1.0	1.1	
	50	0.74	10.4	1.0	1.1	
10-TQ	20	0.71	9.5	1.0	1.1	
	30	0.79	10.0	1.0	1.1	
	40	0.84	10.3	1.0	1.1	
	50	0.86	10.4	1.0	1.1	
10-F	20	0.95	9.6	1.0	1.1	
	30	1.03	10.0	1.0	1.1	
	40	1.08	10.3	1.0	1.1	
	50	1.12	10.4	1.0	1.2	

TORO PRECISION™ SERIES SPRAY PERFORMANCE










Five Radii Available in Toro
(Male) & Female Threads









Nine Arcs, Plus Side and Center Strips Available



NON-COMPENSATING PRECISION SERIES SPRAY NOZZLE PERFORMANCE DATA

Arc	model # (O-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
	12-60	20	0.24	11.5	1.0	1.2
		30	0.25	12.0	1.0	1.2
		40	0.26	12.1	1.0	1.2
		50	0.28	12.2	1.1	1.3
	12-Q	20	0.34	12.0	1.0	1.2
		30	0.37	12.1	1.0	1.1
		40	0.39	11.4	1.0	1.2
		50	0.39	12.0	1.0	1.1
	12-T	20	0.46	11.5	1.0	1.2
		30	0.49	12.0	1.0	1.1
		40	0.51	12.2	1.0	1.1
		50	0.52	12.3	1.0	1.1
	12-150	20	0.60	11.6	1.0	1.2
		30	0.62	12.0	1.0	1.1
		40	0.63	12.2	1.0	1.1
		50	0.64	12.3	1.0	1.1
	12-H	20	0.70	11.5	1.0	1.2
		30	0.74	12.0	1.0	1.1
		40	0.79	12.3	1.0	1.2
		50	0.80	12.4	1.0	1.2
	12-210	20	0.76	11.6	1.1	1.3
		30	0.82	12.0	1.1	1.3
		40	0.84	12.3	1.1	1.2
		50	0.85	12.4	1.1	1.2
	12-TT	20	0.90	11.4	1.0	1.2
		30	0.99	12.0	1.0	1.1
		40	1.04	12.3	1.0	1.1
		50	1.05	12.4	1.0	1.1
	12-TQ	20	1.05	11.4	1.0	1.2
		30	1.15	12.0	1.0	1.2
		40	1.19	12.2	1.0	1.2
		50	1.22	12.3	1.0	1.2
	12-F	20	1.35	11.5	1.0	1.1
		30	1.48	12.0	1.0	1.1
		40	1.59	12.4	1.0	1.1
		50	1.60	12.5	1.0	1.1

model # (O-XX-XX)	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
15-60	20	0.35	14.0	1.0	1.2
	30	0.39	15.0	1.0	1.2
	40	0.40	15.1	1.0	1.2
	50	0.42	15.3	1.0	1.2
15-Q	20	0.53	14.2	1.0	1.2
	30	0.58	15.0	1.0	1.1
	40	0.60	15.1	1.0	1.2
	50	0.61	15.3	1.0	1.2
15-T	20	0.72	14.3	1.0	1.2
	30	0.77	15.0	1.0	1.1
	40	0.81	15.3	1.0	1.2
	50	0.82	15.4	1.0	1.2
15-150	20	0.92	14.7	1.0	1.2
	30	0.96	15.0	1.0	1.2
	40	1.00	15.2	1.0	1.2
	50	1.10	15.3	1.1	1.3
15-H	20	1.10	14.5	1.0	1.2
	30	1.16	15.0	1.0	1.1
	40	1.25	15.4	1.0	1.2
	50	1.28	15.5	1.0	1.2
15-210	20	1.15	14.5	1.1	1.2
	30	1.20	15.0	1.0	1.2
	40	1.30	15.5	1.0	1.2
	50	1.40	15.6	1.1	1.3
15-TT	20	1.45	14.5	1.0	1.2
	30	1.54	15.0	1.0	1.1
	40	1.58	15.2	1.0	1.1
	50	1.61	15.3	1.0	1.1
15-TQ	20	1.72	14.5	1.0	1.2
	30	1.78	15.0	1.0	1.1
	40	1.82	15.0	1.0	1.2
	50	1.90	15.3	1.0	1.2
15-F	20	2.20	14.5	1.0	1.2
	30	2.31	15.0	1.0	1.1
	40	2.35	15.2	1.0	1.1
	50	2.40	15.3	1.0	1.1

Arc	psi	gpm	Radius	Precip. Rate ■ (in./hr.)	Precip. Rate ▲ (in./hr.)
	20	0.62	4x28	1.0	1.1
	30	0.66	4x30	1.1	1.2
	40	0.67	4x30	1.1	1.2
	50	0.68	4x30	1.1	1.3
	20	0.32	4x15	1.0	1.2
	30	0.33	4x15	1.1	1.2
	40	0.34	4x15	1.1	1.2
	50	0.34	4x15	1.1	1.3
	20	0.32	4x15	1.0	1.2
	30	0.33	4x15	1.1	1.2
	40	0.34	4x15	1.1	1.3
	50	0.34	4x15	1.1	1.3
	20	0.36	4x18	1.0	1.1
	30	0.37	4x18	1.0	1.1
	40	0.38	4x18	1.0	1.2
	50	0.38	4x18	1.0	1.2
	20	0.18	4x9	1.0	1.2
	30	0.19	4x9	1.0	1.2
	40	0.2	4x9	1.1	1.2
	50	0.2	4x9	1.1	1.1
	20	0.18	4x9	1.0	1.2
	30	0.19	4x9	1.0	1.2
	40	0.2	4x9	1.1	1.2
	50	0.2	4x9	1.1	1.2

995-15 Selector Tool



- All electric golf sprinklers
- Allows user to manually turn the sprinkler "ON", turn or leave it "OFF" or place it into the "AUTO" position awaiting a command from the controller

995-83 Multi Purpose Tool



- All Golf sprinklers
- Riser pull up for INFINITY®, FLEX800, DT and 800S Series
- Riser screen removal on all models
- Upper snap ring remover on all models

995-82 Arc Adjustment Tool



- 765, 785, 865S, 885S Arc adjustment of part circle drives
- INFINITY®, FLEX800, DT and 800S Series. Adjustment of the radius reduction screw

995-100 Valve Snap Ring Pliers with Screen Remover



- All Golf sprinklers lower snap ring removal on all models
- Rock screen removal on all INFINITY®, FLEX800, DT and 800S Series
- Valve removal on all models

Valve Removal Tools



- **995-08** All 1" golf models and 640
- **995-09** All 1.5" models and 690

Nut Drivers



- **995-105** 5/16" - INFINITY®, FLEX800, 800S Series TruJectory adjustment
- Inner, intermediate & back nozzle removal on all DT and 800S models



- **995-99** 5/8" - Dual trajectory selection
- Main nozzle removal on all models



- **995-79** 7/16" - Inner, intermediate & back nozzle removal on 650, 760, 780, 860S, 880S

- **995-81** 9/16" - 760, 780 Series Main nozzle removal

- **995-80** 1/2" - 760, 780, 860S, 880S Nozzle base jam nut

- **995-52** 1/4" - 660, 680 Drive plate nut removal

- **995-53** 3/8" - 660, 680 Cap nut removal

Valve Insertion Tools

Aligns & Installs Valve into the Body



- **995-35** 640 VIH body
- **995-76** All 1" golf models, except INFINITY®
- **995-101** All 1½" golf models, except INFINITY®
- **995-12** 690 body
- **118-1843** 1½" INFINITY® models
- **118-1844** 1" INFINITY® models

995-85 Riser Removal Tool



- Drive assembly extraction for 730, 760, 780, 860S, 880S
- *Threads onto the drive output shaft and allows removal of the drive from the body*

Riser Hold Up Tools



- **995-55** All 700 series models
- **995-102** Hold up tool, all 800S, DT, INFINITY® and FLEX800 models
- **118-0954** Red riser hold up tool

PRNTOOL Adjustment Tool



- Adjusts arc and radius for Precision Series Rotating nozzles

PNOZZTOOL

Riser Pull Up Tool



- Used on 590GF sprays

102-6527 Adjustment Tool



- T7 Rotor pull up and adjustment tool

Water Removal Tool



- **124PF-6** Beckson Water Pump with 6' Hose
- *To remove water from inside sprinkler body, valve boxes, dug out holes, etc.*

TORO SUBSURFACE IRRIGATION



Subsurface irrigation provides water directly to the root zone to ensure maximum utilization, minimizing waste from evaporation and surface runoff. These kits provide everything you need to set up a tee box, bunker system, lake perimeter or anywhere else a low volume subsurface system applies.

Pressure Compensating Emitters

Every emitter is equipped with a pressure compensating device to ensure the optimum operating pressure and precise flow rates are distributed from each point throughout the zone regardless of distance or elevation change.

DL2000™ Tubing with ROOTGUARD® Root Inhibitor

Each emitter is impregnated with a powerful root inhibitor that prevents roots from entering and clogging the emitter opening. This ensures even water distribution uniformity and maximum efficiency from each point of emission.

Filtration and Pressure Regulation Provided

Each kit includes a Y filter with 150 mesh/100 micron element to prevent debris contamination and a 25 psi fixed regulator to eliminate damage from high pressure spikes.

SPECIFICATIONS

Drip System Specifications

- Flow range:
 - Low flow: 0.1 to 8.0 gpm
 - High flow: 2.0 to 20.0 gpm
- DL2000™ range:
 - Low flow: 12' to 1,000'
 - High flow: 250' to 2,500'
- Pressure compensating emitter: 0.5 gph
- Emitter spacing: 12"
- DL2000™ maximum run length: 360'
- Application rate (12" x 12" spacing): 0.85" per hour
- 3¼" pop-up clears tall grasses

Benefits

- Uniformly applies water to areas such as fingers
- Minimizes runoff
- Eliminates overspray into bunker keeping sand dry
- Cycle/soak allows for application on steep slopes
- Reduces bunker cave-ins
- Saves labor by eliminating hand-watering

Warranty

- Two years



Ordering Information - Drip System Kits

DESCRIPTION	PART NO.
DL2000 500' Drip System - Low Flow	SSDS-LF-500
DL2000 1,000' Drip System - High Flow	SSDS-HF-1000
DL2000 500' Roll - 0.5 gph, 12" Spacing	RGP-212-05

Drip System Kits - Components Include:

- DL2000™ subsurface dripline
- Drip Zone Valve Kit
 - Includes control valve, pressure regulator, Y-filter and manual ball valve
- Air Vent Assembly
- Required inlet/outlet fittings
- Flush Assembly fittings
- Installation Fittings:
 - Loc-Eze tees, couplings, elbows and end clamps
 - 10' of Blue Stripe polyethylene tubing
 - Soil staples for secure tubing placement
- Pipe thread tape

TORO SUBSURFACE IRRIGATION



GOLF ZONE VALVE KITS

DESCRIPTION	PART NO.
P220G valve w/ DCL Solenoid, 25 psi regulator, low flow 1-8 gpm, SS filter	GZK-25-LF-DCL
P220G valve w/ Spike Guard Solenoid, 25 psi regulator, low flow 1-8 gpm, SS filter	GZK-25-LF-SG
P220G valve w/ DCL Solenoid, 25 psi regulator, med. flow 2-20 gpm, SS filter	GZK-25-MF-DCL
P220G valve w/ Spike Guard Solenoid, 25 psi reg., med. flow 2-20 gpm, SS filter	GZK-25-MF-SG
P220G valve w/ DCL Solenoid, 40 psi regulator, med. flow 2-20 gpm, SS filter	GZK-40-MF-DCL
P220G valve w/ Spike Guard Solenoid, 40 psi reg., med. flow 2-20 gpm, SS filter	GZK-40-MF-SG



REG075251-8 REG100252-20 REG100402-20

PRESSURE REGULATORS

DESCRIPTION	PART NO.
Pressure Regulator, ¾" 25 psi, 1-8 gpm	REG075251-8
Pressure Regulator, 1" 25 psi, 2-20 gpm	REG100252-20
Pressure Regulator, 1" 40 psi, 2-20 gpm	REG100402-20



FTT16-10 FEE16-10 FCC16-10 FAM16-10



FTF16-10 FJA16-10

5/8" LOC-EZE™ FITTINGS

DESCRIPTION	PART NO.
Loc-Eze Tee (Bag of 10)	FTT16-10
Loc-Eze Elbow (Bag of 10)	FEE15-10
Loc-Eze Coupling (Bag of 10)	FCC16-10
Loc-Eze x ½" MPT Adapter (Bag of 10)	FAM16-10
Loc-Eze x ½" FPT Tee (Bag of 10)	FTF16-10
Loc-Eze x ¾" MHT without Cap (Bag of 10)	FJA16-10



YD-500-34Z-10 FCH-H-FHT-10 FJQ16-10 SS6-50G

ACCESSORIES

DESCRIPTION	PART NO.
Air Vent - ½" MPT (Bag of 10)	YD-500-34Z-10
Flush Valve - ¾" FHT (Bag of 10)	FCH-H-FHT-10
¾" Figure-eight End Clamp (Bag of 10)	FJQ16-10
¾" Steel Soil Staple (Bag of 50)	SS6-50G



FILTERS

DESCRIPTION	PART NO.
Filter, ¾", 150 mesh SS Screen	ALFS75150-SG
Filter, 1", 150 mesh SS Screen	ALFS10150-SG
Filter Replacement, 150 mesh SS Screen	AMP0004-1SG

TORO SWING JOINTS



Toro offers a full line of swing joints that cover all Golf sprinkler thread types. Swing joints provide the flexibility to align the sprinkler to proper grade and level positioning to ensure optimum water use through maximum nozzle distribution uniformity.

Minimize Friction Loss

1", 1¼" and 1½" models are available to cover flows exceeding 80 gpm, and minimize friction loss to ensure optimum pressure is available at each sprinkler.

Standard 2X90 And Ultra 4X90 Outlet Configurations

The standard 2x90 models provide two 90's at the outlet for alignment in two directions and the Ultra 4x90 models provide four 90's at the outlet for maximum alignment flexibility in four directions.

Saddle And Glue Tee Models

Glue tees for PVC piping applications and saddle tees for HDPE and PVC piping applications. Both tee styles are available with 1", 1¼" and 1½" double o-ring sealing outlets.

Quick Coupler Models

All swing joint styles are available with a quick coupler outlet that includes both an anti-rotation and position stabilizing feature to ensure the quick coupling valve stays secure during key installation and removal.

Warranty

Swing joints are warranted for 5 years and **Toro Golf sprinkler warranty is extended to 5 years when purchased and installed with a Toro Swing Joint.**



**1¼" Female ACME x 1" Male ACME Adapter
Part #TA36-132**

Allows you to upgrade existing Rain Bird® Eagle™ 700 1¼" sprinklers to any Toro Flex or Infinity Series Sprinkler

Additional Features

- Schedule 80 PVC Construction
- Double o-ring swivel joints
- 315 psi pressure rating (800 psi burst)
- Standard models with 2x90 outlet configuration
- Ultra models with 4x90 outlet configuration
- 8", 12" and 18" lay lengths



Glue Tees & Saddles

Standard 2x90 & Ultra 4x90



Quick Coupler Lock

Toro Tool Tip:

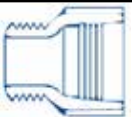
Use a 1¼" hole saw for the 1" Saddle Tee.

Use a 1½" hole saw for the 1¼" and 1½" Saddles.

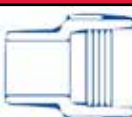


TSJ-XXXX-XX-XX-X-XXX							
Description	Inlet Size	Inlet Type	Size	Length	Number of Elbows	Outlet Size	Outlet Type
TSJ	XX	XX	XX	XX	X	XX	X
TSJ - Toro Swing Joint	50 - ½"	M - MPT (Male Pipe Thread)	Blank - same as inlet size	8 - 8"	3 - Standard (Side Pipe Mount)	10 - 1"	M - MPT
	75 - ¾"	S - 4" Spigot	10 - 1"	12 - 12"	4 - Standard (Top Pipe Mount)	15 - 1½"	A - ACME
	15 - 1½"	A - ACME Thread	12 - 1¼"	18 - 18"	5 - Ultra (Side Pipe Mount)		QC - Quick Coupler Lock
	10 - 1"	GE - Glue Elbow	15 - 1½"		6 - Ultra (Top Pipe Mount)		
	12 - 1¼"	GT - Glue Tee					
	15 - 1½"	ST - Saddle Tee					
		AF - Aqua Fuse					
Examples: Toro 1½" SJ with ACME inlet, 12" lay length, Standard side mount & 1½" ACME outlet = TSJ-15A-12-3-15A Toro 1" SJ for a 1½" ACME fitting, 12" length, Standard top mount & 1" ACME outlet = TSJ-15A10-12-4-10A							


MPT x FS* INLET ADAPTER

ITEM	SIZE	PART NUMBER
	1"	T887-010
	1¼"	T887-012
	1½"	T887-015


4" SPIGOT x FS* INLET ADAPTER

ITEM	SIZE	PART NUMBER
	1"	T888-010
	1¼"	T888-012
	1½"	T888-015

2" SLIP x FS* ELBOW

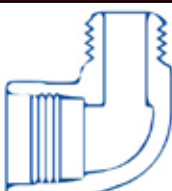
ITEM	SIZE	PART NUMBER
	1"	T481-249
	1¼"	T481-250
	1½"	T481-251

2" SLIP x 2" SLIP x FS* TEE

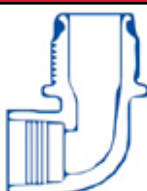
ITEM	SIZE	PART NUMBER
	1"	T480-249
	1¼"	T480-250
	1½"	T480-251

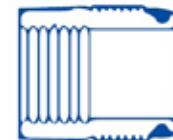
***FS = FEMALE SWING JOINT THREAD
NOT ACME THREAD!**

FS* x MPT ELBOW

ITEM	SIZE	PART NUMBER
	1"	T890-010
	1¼"	T890-012
	1½"	T890-015
	1¼" x 1"	T890-168
	1¼" x 1½"	T890-169

FS* x MALE ACME ELBOW

ITEM	SIZE	PART NUMBER
	1"	TA90-010
	1¼"	TA90-012
	1½"	TA90-015
	1¼" x 1"	TA90-168
	1¼" x 1½"	TA90-169



ADAPTERS

DESCRIPTION	PART NUMBER
1¼" F ACME (RB) x 1" Male ACME	TA36-132
1" FPT x 1" Male ACME	TOA39-010
1½" FPT x 1½" Male ACME	TOA39-015
1¼" FPT x 1½" Male ACME	TOA39-212

TORO FLEX SWING PIPE



Toro Super Funny Pipe is practical and saves time. Whether you are installing a new system or replacing an old sprinkler, Super Funny Pipe makes the job easier.

Specifications

- Maximum pressure: 120 psi
- Cushions sprinkler from external impact
- Connects to sprinklers and Toro fittings
- Wall thickness: .10"
- Inside diameter: .49"
- Outside diameter: .70"



SUPER FUNNY PIPE FRICTION LOSS							
gpm:	1	2	3	4	5	6	7
psi loss:	0.01	0.02	0.06	0.09	0.15	.021	0.27

This chart indicates the amount of pressure loss (psi) per foot.



ASSEMBLED FUNNY PIPE SWING JOINTS

DESCRIPTION	PART NUMBER
8" X ½" MPT INLET & OUTLET	SPFA-585
8" X ¾" MPT INLET & OUTLET	SPFA-5875
12" X ½" MPT INLET & OUTLET	SPFA-5125
12" X ¾" MPT INLET & OUTLET	SPFA-51275



SUPER FUNNY PIPE & FITTINGS

DESCRIPTION	PART NUMBER
20' LENGTH, SUPER FUNNY PIPE	850-23
50' COIL, SUPER FUNNY PIPE	850-24
100' COIL SUPER FUNNY PIPE	850-25
COUPLING	850-20
MALE ELBOW, ½" MPT	850-31
MALE ELBOW, ¾" MPT	850-32
FEMALE ADAPTER, ½" FPT	850-33
FEMALE ADAPTER, ¾" FPT	850-34
MALE ADAPTER, ½" MPT	850-35
MALE ADAPTER, ¾" MPT	850-36
TEE	850-37

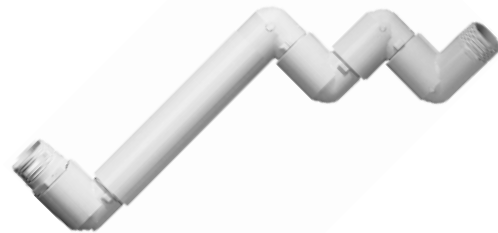
LASCO SWING JOINTS



LASCO Swing Joints are molded of rigid polyvinyl chloride (PVC). Type 1, Cell classification 12454-B per ASTM specification D 1784, with NPT threads and pipe sockets per ASTM D 2464 and D2466, respectively. Each rotating joint is sealed with a Buna rubber O-ring, installed pre-compressed in a sealing groove free of parting lines to prevent leakage. Modified stub ACME threads have special engineered (S.E.) diameters and clearances to allow full circle (360°) movement and to reduce stress concentrations and joint fracture at thread roots.

Ordering Information - Lasco Swing Joints

LAS-G XXX - XXX					
Description	Size	Inlet Type	Outlet Type	Style	Length
LAS	GX	X	XX	X	XX
LAS - Lasco Swing Joint	1 - 1"	1 - Socket	2 - MPT	2 - Standard	08 - 8"
	2 - 1¼"	2 - Spigot (Short)	3 - Increasing MPT	4 - Triple Top	12 - 12"
	3 - 1½"	3 - MPT	7 - Reducing MPT		18 - 18"
		4 - Male ACME 7 - Spigot (Long) M - 1½" ACME x SJ Size (Side Pipe Mount) P - 1½" ACME x SJ Size (Top Pipe Mount)	8 - Increasing ACME 0 - ACME C - Reducing ACME S - Snaplok (QCV) T - Reducing Snaplok		
Examples: Lasco 1½" SJ with MPT inlet, 12" lay length & 1½" outlet = LAS-G330-212 Lasco 1" SJ for a 1½" ACME Saddle, 12" length, Triple-top & 1" ACME outlet = LAS-G1P0-412					



COMMON STANDARD SWING JOINTS

SJ SIZE	INLET TYPE x OUTLET	PART NO.
1"	1 MPT x 1 MPT	LAS-G132-212
1"	1 MPT x 1 ACME	LAS-G130-212
1"	1½ ACME (side) x 1 ACME	LAS-G1M0-212
1"	1½ ACME (top) x 1 ACME	LAS-G1P0-212
1¼"	1½ ACME (side) x 1 ACME	LAS-G2MC-212
1¼"	1½ ACME (top) x 1 ACME	LAS-G2PC-212
1½"	1½ MPT x 1½ MPT	LAS-G332-212
1½"	1½ MPT x 1½ ACME	LAS-G330-212
1½"	1½ ACME (side) x 1½ ACME	LAS-G3M0-212
1½"	1½ ACME (side) x 1½ ACME	LAS-G3PC-212

COMMON TRIPLE-TOP SWING JOINTS

SJ SIZE	INLET TYPE x OUTLET	PART NO.
1"	1 MPT x 1 MPT	LAS-G132-412
1"	1 MPT x 1 ACME	LAS-G130-412
1"	1½ ACME (side) x 1 ACME	LAS-G1M0-412
1"	1½ ACME (top) x 1 ACME	LAS-G1P0-412
1¼"	1½ ACME (side) x 1 ACME	LAS-G2MC-412
1¼"	1½ ACME (top) x 1 ACME	LAS-G2PC-412
1½"	1½ MPT x 1½ MPT	LAS-G332-412
1½"	1½ MPT x 1½ ACME	LAS-G330-412
1½"	1½ ACME (side) x 1½ ACME	LAS-G3M0-412
1½"	1½ ACME (side) x 1½ ACME	LAS-G3PC-412

LASCO SWING JOINTS



COMMON QCV SNAPLOK SWING JOINTS

SJ SIZE	INLET TYPE x OUTLET x LGTH	PART NO.
1"	1" MPT x 1" MPT x 12"	LAS-G13S-212
1"	1" MPT x 1" MPT x 18"	LAS-G13S-218
1"	1½" ACME (side) x 1" MPT x 12"	LAS-G1MS-212
1"	1½" ACME (side) x 1" MPT x 18"	LAS-G1MS-218
1"	1½" ACME (top) x 1" MPT x 12"	LAS-G1PS-212
1"	1½" ACME (top) x 1" MPT x 18"	LAS-G1PS-218

SMALL DIAMETER SWING JOINTS

SJ SIZE	INLET TYPE x OUTLET x LGTH	PART NO.
1/2"	½" MPT x ½" MPT x COMPACT	LAS-T1205
1/2"	½" MPT x ½" MPT x 12"	LAS-T532-212
1/2"	1½" ACME (side) x ½" MPT x 12"	LAS-T5M2-212
1/2"	1½" ACME (top x ½" MPT x 12"	LAS-T5P2-212
3/4"	¾" MPT x ¾" MPT x COMPACT	LAS-T1207
3/4"	¾" MPT x ¾" MPT x 12"	LAS-T732-212
3/4"	1½" ACME (side) x ¾" MPT x 12"	LAS-T7M2-212
3/4"	1½" ACME (top) x ¾" MPT x 12"	LAS-T7P2-212

LASCO SWING JOINT ADAPTERS & MISC.

ITEM	DESCRIPTION	PART NO.
LASCO SWING JOINT WIRE HOLDERS		
	WIRE HOLDER FOR 1" SJ	LAS-G004-010
	WIRE HOLDER FOR 1¼" SJ	LAS-G004-012
	WIRE HOLDER FOR 1½" SJ	LAS-G004-015
LASCO ACME TEST CAPS		
	ACME TEST CAP FOR 1" SJ	LAS-G548-010
	ACME TEST CAP FOR 1" SJ	LAS-G548-012
	ACME TEST CAP FOR 1" SJ	LAS-G548-015
SWING JOINT OUTLET ADAPTERS (FPT X M ACME)		
	1" FPT x 1" M ACME	LAS-G102-010
	1" FPT x 1¼" M ACME	LAS-G002-132
	1" FPT x 1½" M ACME	LAS-G002-133
	1¼" FPT x 1½" M ACME	LAS-G002-169
	1½" FPT x 1½" M ACME	LAS-G302-015
SWING JOINT OUTLET ADAPTERS (M ACME X F ACME)		
	1" M ACME X 1¼" F ACME	LAS-G539-132
	1" M ACME X 1½" F ACME	LAS-G539-133
	1¼" M ACME X 1" F ACME	LAS-G539-168
	1¼" M ACME X 1½" F ACME	LAS-G539-169
	1½" M ACME X 1" F ACME	LAS-G539-211
	1½" M ACME X 1¼" F ACME	LAS-G539-212

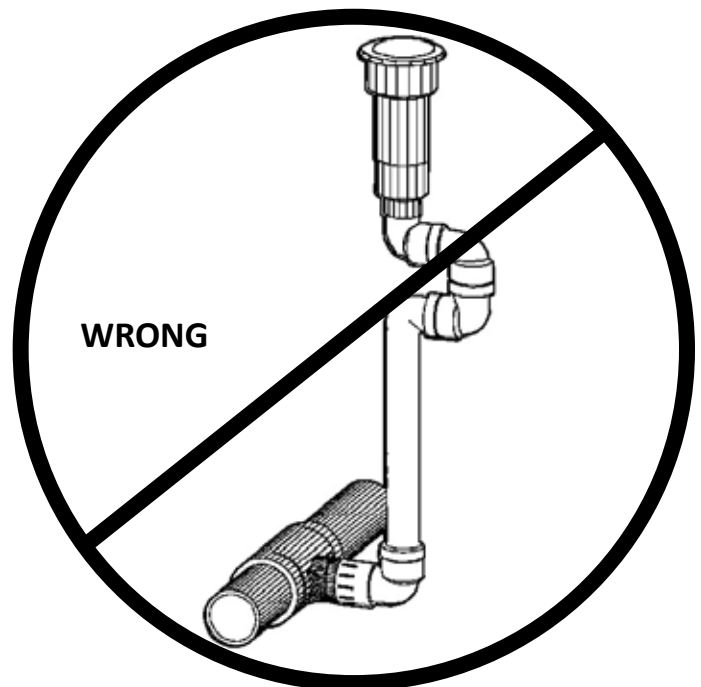
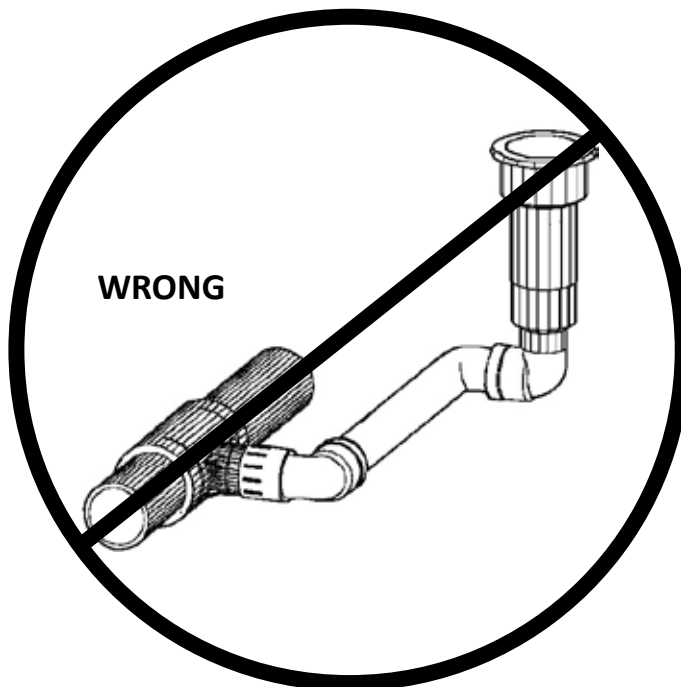
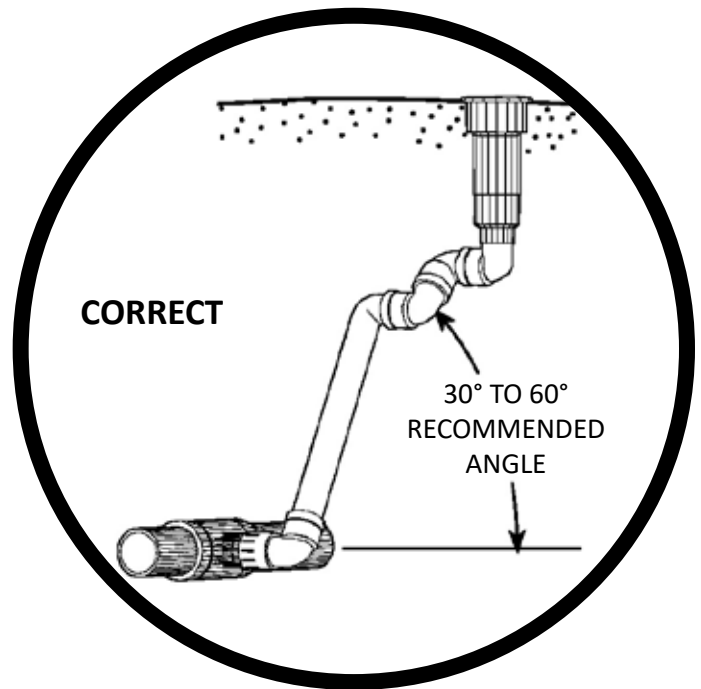
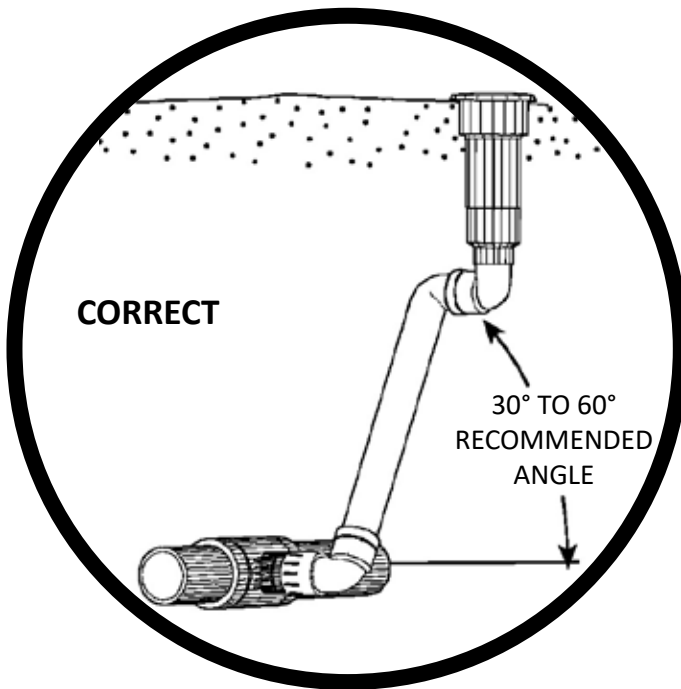
LASCO SWING JOINT FITTINGS

ITEM	INLET X OUTLET	PART NO.
	1" MPT x 1" M ACME	LAS-G130-000
	1¼" MPT x 1¼" M ACME	LAS-G230-000
	1½" MPT x 1½" M ACME	LAS-G330-000
	1" M ACME X 1" M ACME	LAS-G001-006
	1¼" M ACME X 1¼" M ACME	LAS-G001-005
	1½" M ACME x 1" M ACME	LAS-G001-014
	1½" M ACME x 1¼" M ACME	LAS-G001-016
	1½" M ACME x 1½" M ACME	LAS-G001-004
	1½" M ACME x 1" M ACME	LAS-G001-017
	1½" M ACME x 1¼" M ACME	LAS-G001-018
	1½" M ACME x 1½" M ACME	LAS-G001-019
	1" ACME X 1" MPT	LAS-G102-000
	1¼" ACME X 1¼" MPT	LAS-G202-000
	1½" ACME X 1½" MPT	LAS-G302-000
	1" ACME X 1" ACME	LAS-G100-002
	1¼" ACME X 1¼" ACME	LAS-G200-002
	1¼" ACME X 1" ACME	LAS-G208-168
	1¼" ACME X 1½" ACME	LAS-G208-212
	1½" ACME X 1½" ACME	LAS-G300-002
	1½" ACME X 1" ACME	LAS-G308-133

SWING JOINT INSTALLATION

INSTALLATION NOTES:

- ACME o-ring sealed threads should be Finger Tightened and “Backed Off” one full rotation.
- Do not use thread sealant or Teflon tape on any ACME threads.
- Do not use swing joints for compressed air, gases or liquids not recommended by the manufacturer.
- Do not test systems with compressed air or gases.



TORO 220G BRASS SERIES VALVES



Heavy-duty brass construction for superior performance under the harshest conditions. Toro 220G Brass Series valves are rugged and reliable, and offer dependable performance within the toughest of situations and settings.

Leading Lighting Protection

A lightning rating that exceeds 20,000 volts – nearly three times the protection of competing products.

Dirty Water Ready

A stainless steel 120-mesh filter enables dependable valve operation in dirty and reclaimed water applications with a greatly reduced likelihood of clogging or failure to close.

Spike Guard™ Solenoid

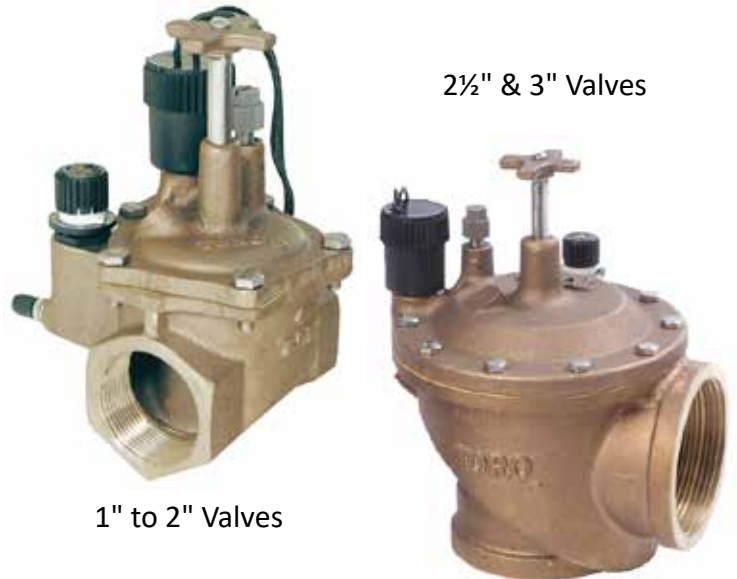
Reduces wire size requirements and allows 2X as many valves to run simultaneously on a transformer, all while lowering power consumption and related costs.

EZReg® Pressure Regulator compatible

Available in two fully-adjustable models, Toro EZReg Pressure Regulators allow the consistent regulation of pressure within a zone, ensuring optimal operation of all downstream sprinklers. EZReg Pressure Regulators thread directly to the valve bonnet – no special adapter required and no need to remove the solenoid. The desired pressure can be set fast and with a high level of accuracy thanks to an easy-to-read turn dial design.

Additional Features

- ✓ EZReg Pressure Regulator can be installed as a service kit without having to drain the mainline
- ✓ Pressure regulates in electric or manual modes, and is serviceable under pressure
- ✓ Built-in Schrader-type valve is standard on all models for fast downstream pressure verification
- ✓ Manual Flow Control; adjustable to full shut-off
- ✓ Robust, double-beaded, fabric-reinforced rubber diaphragm
- ✓ Commercial-grade 316 Stainless Steel stem for maximum corrosion resistance



1" to 2" Valves

2½" & 3" Valves

SPECIFICATIONS

Operational

- Flow Range:
 - 1" model: 1 - 40 gpm
 - 1¼" model: 20 - 100 gpm
 - 1½" model: 20 - 120 gpm
 - 2" model: 30 - 170 gpm
 - 2½" model: 60 - 250 gpm
 - 3" model: 80 - 300 gpm
- Operating Pressure: 10 - 220 psi
- Pressure Regulating:
 - Outlet (EZR-100): 5 - 100 psi
 - Minimum flow requirement: 5 gpm
- Body Styles:
 - 1" - 2": Globe (straight through), FPT threads
 - 2½" and 3": Angle, FPT threads
- Spike Guard Solenoid: 24 VAC:
 - Inrush: 0.12 amps
 - Holding: 0.1 amps

Dimensions

- 1" model: 5¼" H x 5" W
- 1¼" model: 6½" H x 6" W
- 1½" model: 6½" H x 6" W
- 2" model: 7½" H x 7" W
- 2½" model: 8¾" H x 8½" W
- 3" model: 8¾" H x 8½" W

Warranty

- Five years

TORO 220G BRASS SERIES VALVES

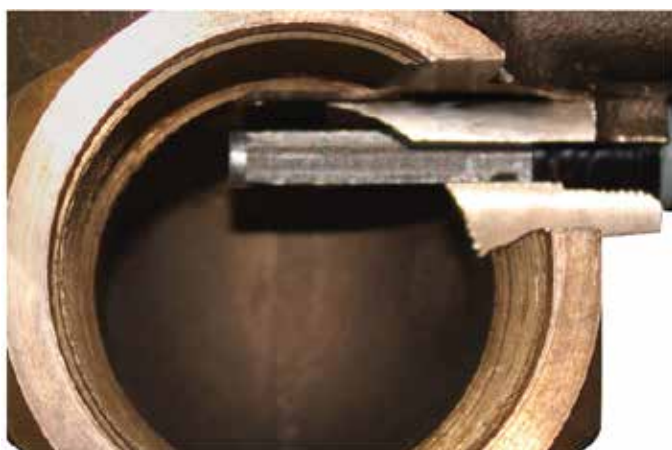
Ordering Information - 220 Brass Series

220G-27-XXXX			
Type	Pressure Regulation	Size	Optional
220	27	XX	XX
220G - 1"-2" 220 - 2½ & 3"	27 - Pressure Regulated (5 - 100 psi)	04 - 1" 05 - 1¼" 06 - 1½" 08 - 2" 09 - 2½" 00 - 3"	DL - Latching Solenoid (2-wire) E - Effluent
Examples: 1½" Brass Electric Valve with DC Latching Solenoid for 2-wire System = 220G-27-06DL 3" Brass Electric Valve for standard 24V System = 220-27-00			

220G BRASS SERIES PRESSURE LOSS DATA

Model	Type	Gallons Per Minute																		
		5	10	15	20	30	40	50	60	70	80	100	120	150	170	180	200	250	300	350
1"	Electric	1.8	2.0	2.2	3.1	5.1	7.8													
1 ¼"	Electric				1.9	2.5	2.7	3.5	4.1	5.6										
1 ½"	Electric				2.2	2.5	2.8	3.1	3.8	5.0	6.6									
2"	Electric					3.1	3.2	2.9	3.0	3.3	3.4	4.5	6.6	10.1	13.5	14.9				
2 ½"	Electric								2.0	2.2	2.3	2.4	2.5	3.0	4.0	4.5	5.5			
3"	Electric										2.2	2.4	2.5	3.0	4.0	4.5	5.5	6.5	7.0	7.5

Notes: For optimal performance when designing a system, it is recommended that total Pressure Loss be calculated to ensure sufficient downstream pressure.
 For optimum pressure regulation performance, size regulating valves towards the higher flow ranges.
 Flow rates are recommended not to exceed 5 psi loss.



Dirty Water Resistance

The 120 mesh stainless steel filter screen is positioned on the supply side of the water stream. It is constantly flushed by the flow, enabling the use of very dirty water without clogging. Stainless steel construction of both the filter screen and the valve solenoid seat ensures long component life in all types of water and pressures.

Maximum One-way Distance (ft) Between Controller and Valve with Spike Guard™ Solenoid

Ground Wire	Control Wire						
	18	16	14	12	10	8	6
18	2040	2520	2940	3280	3540	3720	3860
16	2520	3260	4000	4660	5220	5620	5920
14	2940	4000	5180	6360	7420	8300	8960
12	3280	4660	6360	8240	10100	11800	13180
10	3540	5220	7420	10100	13180	16060	18770
8	3720	5260	8300	11800	16060	20800	25540
6	3860	5960	8960	13180	18700	25540	33080

* Solenoid Model: 24 V ac
 Pressure: 150 psi
 Voltage Drop: 4 V
 Minimum Operating Voltage: 20 V
 Amperage (peak) 0.12 A

TORO P220G & P220GS SERIES VALVES



The P220G and P220GS Series provide a full family of plastic valves that can deliver the water to meet the challenging needs of today's courses. With precise pressure regulation these valves deliver the optimum pressure and flow requirements to every sprinkler on the zone ensuring maximum uniformity of the water to the turf.

EZReg® Pressure Regulating System

Can be adjusted from 5-100 psi to deliver the optimum pressure for every need.

Spike Guard™ Solenoid

With its 20,000 volt lightning rating, it virtually eliminates the need for solenoid replacements in high lightning environments.

Internal Manual Bleed

Ensures the optimum pressure of the system even when being operated manually.

Fabric Reinforced Diaphragm

Provides superior performance and extended life without tearing in high-pressure golf applications.

Additional Features

- ✓ Glass-filled nylon and stainless steel construction
- ✓ No external tubing
- ✓ Built-in Schrader-type valve is standard on all models for fast downstream pressure verification
- ✓ Manual Flow Control; adjustable to full shut-off
- ✓ Self-aligning bonnet to ensure correct installation
- ✓ Self-cleaning, stainless steel metering rod
- ✓ Low-flow capability down to 5 gpm



Self Cleaning Metering Pin
A self-cleaning feature that operates two times during every valve cycle ensuring smooth positive opening and closing.



SPECIFICATIONS

Operational

- Flow Range:
 - 1" model: 5- 40 gpm
 - 1½" model: 30 - 110 gpm
 - 2" model: 80 - 180 gpm
 - 3" model: 130 - 300 gpm
- Operating Pressure: 10 - 220 psi
- Pressure Regulating:
 - Outlet (EZR-100): 5 - 100 psi
 - Minimum flow requirement: 5 gpm
- Body Styles:
 - Globe / Angle, FPT threads
- Spike Guard Solenoid: 24 VAC:
 - Inrush: 0.12 amps
 - Holding: 0.1 amps

Dimensions

- 1" model: 6¼" H x 3⅝" W
- 1½" model: 7¼" H x 3⅝" W
- 2" model: 9½" H x 6¼" W
- 3" model: 10¾" H x 6¼" W

Warranty

- Five years

TORO P220G AND P220GS SERIES VALVES

Ordering Information - P220 Series

P220GS-27-XXXX			
Type	Pressure Regulation	Size	Optional
P220	27	XX	XX
220G - 1"-2" 220 - 3" 220GS - 1"-2" Scrubber 220S - 3" Scrubber	27 - Pressure Regulated (5 - 100 psi)	04 - 1" 06 - 1½" 08 - 2" 00 - 3"	DL - Latching Solenoid (2-wire) E - Effluent
Examples: 2" Electric Valve with DC Latching Solenoid for 2-wire System = P220G-27-08DL 3" Electric Scrubber Valve for standard 24V System = 220S-27-10			

P220G SERIES PRESSURE LOSS DATA

Size	Config.	gpm Flow																							
		5	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	180	200	225	250	275	300		
1"	Globe	4.00	4.20	3.20	4.10	7.20																			
	Angle	4.00	4.20	3.10	2.70	4.80																			
1½"	Globe				1.60	2.30	3.60	5.20	7.00	9.20	11.20	13.60	16.40												
	Angle				1.30	1.60	2.80	4.00	5.50	7.10	8.90	10.90	13.50												
2"	Globe									2.10	2.70	3.30	4.00	4.80	5.60	6.50	7.50	8.70							
	Angle									1.20	1.60	2.00	2.40	2.80	3.30	3.90	4.40	5.20							
3"	Globe																2.50	3.00	4.10	5.30	6.70	8.30	10.10		
	Angle																1.90	2.40	3.30	4.30	5.50	6.90	8.50		

*Note: For optimum performance when designing a system, be sure to calculate total Pressure Loss to ensure sufficient downstream pressure.
 For optimum regulation performance, size regulating valves toward the higher flow ranges.
 Flow rates are recommended not to exceed 5 psi loss.*

P220GS SCRUBBER SERIES PRESSURE LOSS DATA

Size	Config.	Flow																			
		5	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	180	200	250	300
1"	Globe	4.63	4.74	3.10	6.05	10.75															
	Angle	4.14	4.64	2.54	5.53	9.46															
1½"	Globe			1.14	1.56	2.85	4.36	6.28	8.57	11.20	14.03	17.20	20.46								
	Angle			0.95	1.51	2.28	3.69	5.29	6.97	9.26	11.80	14.60	17.40								
2"	Globe									3.57	4.62	5.33	6.80	8.20	9.02	10.46	11.61				
	Angle									2.79	3.50	4.41	5.62	6.39	7.35	8.81	9.37				
3"	Globe														2.06	2.34	2.70	3.88	4.86	7.26	10.23
	Angle														1.86	2.16	2.44	3.35	4.11	6.42	9.31

*Note: For optimum performance when designing a system, be sure to calculate total Pressure Loss to ensure sufficient downstream pressure.
 For optimum regulation performance, size regulating valves toward the higher flow ranges.
 Flow rates are recommended not to exceed 5 psi loss.*



TORO 470 QUICK COUPLER VALVES



Whether it's for hand watering the hot spots, fertilizer wash in, washing down equipment or filling the sprayer and lakes the 400 Series provides a full family of quick coupling valves and accessories that connect you directly to the main water source to fill all your hand watering needs.

Features

- ✓ Full range of flows from 0 to 100 gallons per minute
- ✓ ¾", 1" and 1½" one- and two-piece single-lug models including ACME thread key connections to meet a variety of installation requirements
- ✓ Hose swivel provides 360° movement without hose tangling for ease of use
- ✓ Metal and vinyl locking and non-locking covers
- ✓ Effluent (lavender-colored) locking cover
- ✓ 5-Year warranty



QUICK COUPLER KEYS & SWIVELS

Part Number	Description
463-01	¾" QC Key - ½" Female, ¾" Male
464-01	1" QC Key - ¾" Female, 1" Male
464-02	1" QC Key - 1" Female Threads
464-03	1" QC Key - 1" ACME Thread
465-01	1¼" QC Key - ¾" Female, 1" Male
466-01	1½" QC Key - 1¼" Female, 1½" Male
477-00	¾" Female NPT x ¾" MHT Hose Swivel
477-01	1" Female NPT x ¾" MHT Hose Swivel
477-02	1" Female NPT x 1" MHT Hose Swivel

Ordering Information - Quick Couplers

Part Number	Description	Inlet Size (FPT)	Outlet Key Size	Corresponding Key(s)
473-00	¾" QCV with Stainless Steel Cover	¾"	¾"	463-01
474-00	1" QCV with Stainless Steel Cover	1"	1"	464-01 / 464-02
474-01	1" QCV with Yellow Vinyl Cover	1"	1"	464-01 / 464-02
474-03	1" QCV with Yellow Locking Vinyl Cover	1"	1"	464-01 / 464-02
474-04	1" QCV with Lavender Vinyl Locking Cover	1"	1"	464-01 / 464-02
474-40	1" QCV with Stainless Steel Cover, ACME Key	1"	1"	464-03
474-41	1" QCV with Yellow Locking Vinyl Cover, ACME Key	1"	1"	464-03
474-44	1" QCV with Lavender Vinyl Locking Cover, ACME Key	1"	1"	464-03
475-00	1¼" QCV with Stainless Steel Cover	1"	1¼"	465-01
475-01	1¼" QCV with Yellow Vinyl Cover	1"	1¼"	465-01
476-00	1½" QCV with Stainless Steel Cover	1½"	1½"	466-01
476-01	1½" QCV with Yellow Vinyl Cover	1½"	1½"	466-01
476-04	1½" QCV with Lavender Vinyl Locking Cover	1½"	1½"	466-01



VALVES WITH PUSH-ON ENDS

- Resilient wedge
- 2" Square Operating Nut (wheel handle available)
- Epoxy Coated In & Out
- 10-year Warranty



SIZE	ENDS	PART NO.
2"	PUSH-ON (GASKETED)	CLOW2630-DD-2
2½"	PUSH-ON (GASKETED)	CLOW2630-DD-2.5
3"	PUSH-ON (GASKETED)	CLOW2630-DD-3
4"	PUSH-ON (GASKETED)	CLOW2630-DD-4
6"	PUSH-ON (GASKETED)	CLOW2630-DD-6
8"	PUSH-ON (GASKETED)	CLOW2630-DD-8
10"	PUSH-ON (GASKETED)	CLOW2630-DD-10
12"	MJ WITH PUSH-ON ADAPTER	CLOW2630-AA-12
12" valves have mechanical joint ends and include adapters for push-on connections.		



VALVES WITH FLANGED ENDS

- Resilient wedge
- 2" Square Operating Nut (wheel handle available)
- Epoxy Coated In & Out
- 10-year Warranty



SIZE	ENDS	PART NO.
3"	FLANGED (NO ACCESSORIES)	CLOW2630-20-3
4"	FLANGED (NO ACCESSORIES)	CLOW2630-20-4
6"	FLANGED (NO ACCESSORIES)	CLOW2630-20-6
8"	FLANGED (NO ACCESSORIES)	CLOW2630-20-8
10"	FLANGED (NO ACCESSORIES)	CLOW2630-20-10
12"	FLANGED (NO ACCESSORIES)	CLOW2630-20-12
Flange gaskets and hardware must be ordered separately.		



VALVES WITH HDPE ENDS

- Resilient wedge
- 2" Square Operating Nut
- Epoxy Coated In & Out
- 10-year Warranty



SIZE	ENDS	PART NO.
3"	HDPE BUTT FUSION, DR11	HAR74-315503
4"	HDPE BUTT FUSION, DR11	HAR74-315504
6"	HDPE BUTT FUSION, DR11	HAR74-315506
8"	HDPE BUTT FUSION, DR11	HAR74-315508
10"	HDPE BUTT FUSION, DR11	HAR74-315510
12"	HDPE BUTT FUSION, DR11	HAR74-315512



VALVES WITH MECHANICAL JOINT ENDS

- Resilient wedge
- 2" Square Operating Nut (wheel handle available)
- Epoxy Coated In & Out
- 10-year Warranty



SIZE	ENDS	PART NO.
3"	MJ (NO ACCESSORIES)	CLOW2638-30-3
4"	MJ (NO ACCESSORIES)	CLOW2638-30-4
6"	MJ (NO ACCESSORIES)	CLOW2638-30-6
8"	MJ (NO ACCESSORIES)	CLOW2638-30-8
10"	MJ (NO ACCESSORIES)	CLOW2638-30-10
12"	MJ (NO ACCESSORIES)	CLOW2638-30-12
MJ adapters and hardware must be ordered separately.		

GATE VALVES - HDPE ADAPTERS



Simplify Installation of Mainline Gate Valves

Use standard push-on valves without fusion of awkward gate valves with HDPE ends. With HDPE-stub valves, there's the risk of the valve not perfectly vertical after fusing. This issue is eliminated with the Push Joint Adapter System from HARCO.

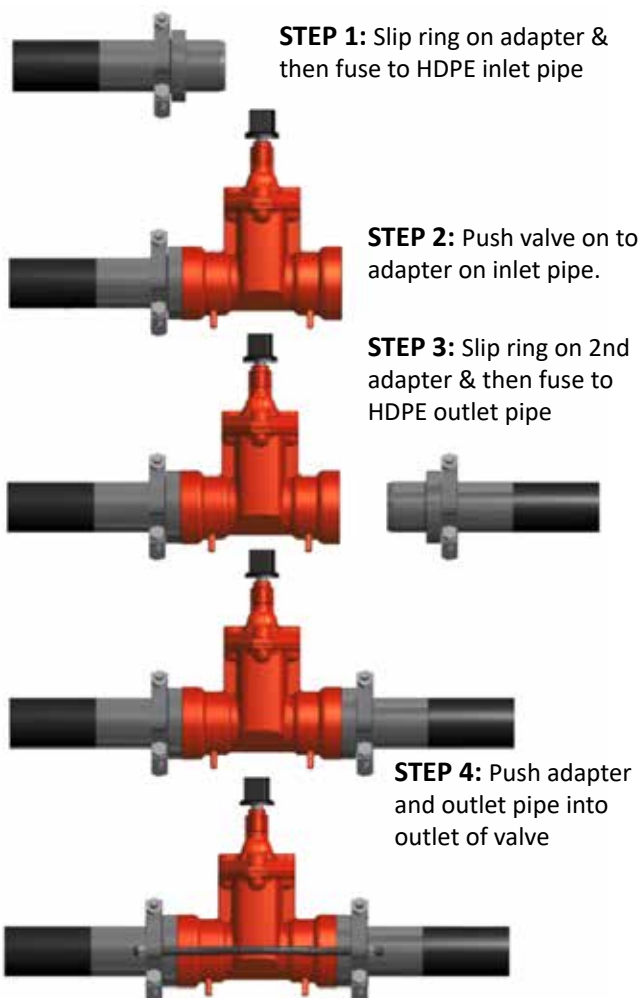


Fits Any IPS Push-On Gate Valve

The HARCO Push Joint Adapter System fits push-on valves for IPS pipe in common usage in the irrigation market. Typical brands it will work with are made by American, AVK, Clow, Kennedy, Matco-Norca, M&H and Nibco.

Eliminate Flange & MJ Joints Torquing

Installation of flange and mechanical joints in HDPE piping is especially time-consuming. Assembly of these joints requires a long waiting period and then re-torquing. HARCO's Push Joint Adapter System has fewer parts and allows for speedy installation requiring no torquing of bolts. With this system there is no "wait time" for re-torquing.



STEP 1: Slip ring on adapter & then fuse to HDPE inlet pipe

STEP 2: Push valve on to adapter on inlet pipe.

STEP 3: Slip ring on 2nd adapter & then fuse to HDPE outlet pipe

STEP 4: Push adapter and outlet pipe into outlet of valve

STEP 5: Install restraint rods through rings and tighten once to 40 ft-lbs.

PUSH-JOINT ADAPTER

SIZE	DESCRIPTION	PART NO.
3"	DR11 ADAPTER W/DR11 ENDS	HAR65-317503
3"	DR11 ADAPTER W/DR13.5 ENDS	HAR65-327503
4"	DR11 ADAPTER W/DR11 ENDS	HAR65-317504
4"	DR11 ADAPTER W/DR13.5 ENDS	HAR65-327504
6"	DR11 ADAPTER W/DR11 ENDS	HAR65-317506
6"	DR11 ADAPTER W/DR13.5 ENDS	HAR65-327506
8"	DR11 ADAPTER W/DR11 ENDS	HAR65-317508
8"	DR11 ADAPTER W/DR13.5 ENDS	HAR65-327508
10"	DR11 ADAPTER W/DR11 ENDS	HAR65-317510
10"	DR11 ADAPTER W/DR13.5 ENDS	HAR65-327510
12"	DR11 ADAPTER W/DR11 ENDS	HAR65-317512
12"	DR11 ADAPTER W/DR13.5 ENDS	HAR65-327512

Order (1) adapter for each END of the valve.
Ex: If HDPE on inlet and outlet - order (2) adapters.

PUSH-JOINT RESTRAINTS

SIZE	DESCRIPTION	PART NO.
3"	(2) RINGS, RODS & NUTS, STND	HAR65-077503
3"	(2) RINGS, RODS & NUTS, SS	HAR65-077503S
4"	(2) RINGS, RODS & NUTS, STND	HAR65-077504
4"	(2) RINGS, RODS & NUTS, SS	HAR65-077504S
6"	(2) RINGS, RODS & NUTS, STND	HAR65-077506
6"	(2) RINGS, RODS & NUTS, SS	HAR65-077506S
8"	(2) RINGS, RODS & NUTS, STND	HAR65-077508
8"	(2) RINGS, RODS & NUTS, SS	HAR65-077508S
10"	(2) RINGS, (4) RODS & NUTS, STND	HAR65-077510
10"	(2) RINGS, (4) RODS & NUTS, SS	HAR65-077510S
12"	(2) RINGS, (4) RODS & NUTS, STND	HAR65-077512
12"	(2) RINGS, (4) RODS & NUTS, SS	HAR65-077512S

Order (1) restraint kit for each valve.

LEEMCO DUCTILE IRON GATE VALVES



LEEMCO Mainline Gate Valves bodies and outlet clamps are made of durable ductile iron and have a fused epoxy finish inside and out. The non-rising bronze stem is sealed with a lifetime lubricated high grade EPDM rubber O-ring, attached to a ductile iron resilient wedge. LEEMCO valves include a slotted shroud designed for a sleeve (4" for 2" & 2½" valves, 6" for all others) around the 2" operating nut.

VALVES WITH SPIGOT X BELL ENDS

Designed for the spigot end to insert into a LEEMCO gasket tee. Includes self-restraint clamp on one end.



SIZE	ENDS	PART NO.
2"	SPIGOT x BELL (GASKETED)	LMV-11SB
2½"	SPIGOT x BELL (GASKETED)	LMV-22SB
3"	SPIGOT x BELL (GASKETED)	LMV-33SB
4"	SPIGOT x BELL (GASKETED)	LMV-44SB
6"	SPIGOT x BELL (GASKETED)	LMV-66SB
8"	SPIGOT x BELL (GASKETED)	LMV-88SB
10"	SPIGOT x BELL (GASKETED)	LMV-1010SB
12"	SPIGOT x BELL (GASKETED)	LMV-1212SB

VALVES WITH BELL X BELL ENDS

Both valve ends are deep bell and include self-restrained clamps.



SIZE	ENDS	PART NO.
2"	BELL x BELL (GASKETED)	LMV-11BB
2½"	BELL x BELL (GASKETED)	LMV-22BB
3"	BELL x BELL (GASKETED)	LMV-33BB
4"	BELL x BELL (GASKETED)	LMV-44BB
6"	BELL x BELL (GASKETED)	LMV-66BB
8"	BELL x BELL (GASKETED)	LMV-88BB
10"	BELL x BELL (GASKETED)	LMV-1010BB
12"	BELL x BELL (GASKETED)	LMV-1212BB

VALVES WITH FLANGE X FLANGE ENDS

Flange bolt, nut and gasket kits are sold separately.



SIZE	ENDS	PART NO.
2"	FLANGE x FLANGE	LMV-11FF
2½"	FLANGE x FLANGE	LMV-22FF
3"	FLANGE x FLANGE	LMV-33FF
4"	FLANGE x FLANGE	LMV-44FF
6"	FLANGE x FLANGE	LMV-66FF
8"	FLANGE x FLANGE	LMV-88FF
10"	FLANGE x FLANGE	LMV-1010FF
12"	FLANGE x FLANGE	LMV-1212FF

VALVES WITH BELL X BELL ENDS

For HDPE pipe applications. Includes double restraints and internal pipe stiffeners.



SIZE	ENDS	PART NO.
2"	BELL x BELL W/STIFFENERS	LMV-11BBHDSS
3"	BELL x BELL W/STIFFENERS	LMV-33BBHDSS
4"	BELL x BELL W/STIFFENERS	LMV-44BBHDSS
6"	BELL x BELL W/STIFFENERS	LMV-66BBHDSS
8"	BELL x BELL W/STIFFENERS	LMV-88BBHDSS
10"	BELL x BELL W/STIFFENERS	LMV-1010BBHDSS
12"	BELL x BELL W/STIFFENERS	LMV-1212BBHDSS

HARCO SWIVEL LATERAL VALVES



HARCO Lateral Isolation Valves easily assemble into HARCO swivel outlet tees and saddles and can be used on PVC or HDPE systems. The swivel joint maintains the seal while orienting for lateral alignment without the risk of over tightening failures common with MPT thread joints. The valves are manufactured with stainless steel bonnets, bodies and stem assemblies.

SEE HARCO FITTINGS FOR COMPATIBLE TEES & SADDLES

FULL PORT SWIVEL VALVES

Stainless steel valve with stainless steel grip ring.
Choice of cross handle or 2" square operating nut.



SIZE	HANDLE	PART NO.
2" x 6"	2" SQUARE NUT	HAR8411062PR
2" x 6"	CROSS HANDLE	HAR8411062PQ
2" x 12"	2" SQUARE NUT	HAR8411122PR
2" x 12"	CROSS HANDLE	HAR8411122PQ
2½" x 6"	2" SQUARE NUT	HAR8412062PR
2½" x 6"	CROSS HANDLE	HAR8412062PQ
3" x 6"	2" SQUARE NUT	HAR8413062PR
3" x 6"	CROSS HANDLE	HAR8413062PQ
4" x 6"	2" SQUARE NUT	HAR8414062PR
4" x 6"	CROSS HANDLE	HAR8414062PQ

SWIVEL EXTENSION WITH 1" SIDE OUTLET

4" Rise, stainless steel

OUTLET	PART NO.
OPEN	HAR874030804
PLUGGED	HAR874030805



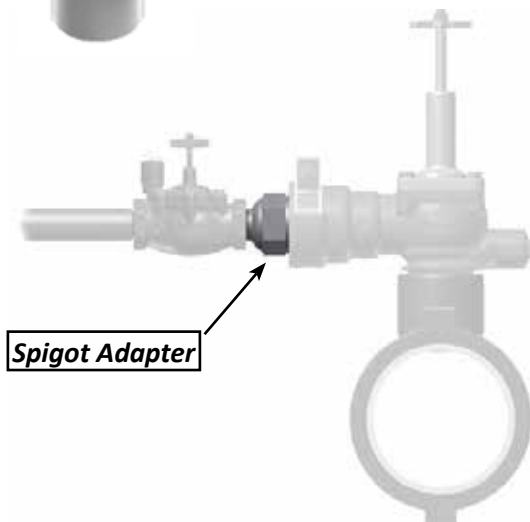
SPIGOT x MALE ADAPTER



SPIGOT x REDUCING MALE ADAPTER



SIZE	PART NO.
2" x 1"	HAR874030804
2" x 1¼"	HAR874030805
2" x 1½"	HAR874030806
2" x 2"	HAR874030808
2" x 2½"	HAR874030810



SIZE	PART NO.
1½" x 6"	HAR8740606
2" x 4"	HAR8740408
2" x 6"	HAR8740608
2" x 8"	HAR8740808
2" x 10"	HAR8741008
2" x 12"	HAR8741208
2½" x 6"	HAR8740610
3" x 6"	HAR8740612

LEEMCO ANGLE LATERAL VALVES



square operating nut. Valves have a true 360-degree rotation and are designed to insert into a LEEMCO lateral fitting without the use of threaded fittings.

LEEMCO Lateral Valves are available in either ductile iron with a fused epoxy finish inside and out, or in stainless steel. Valves include a slotted skirt on top for a sleeve (3" for 2" valves & 4" for all others) to protect the cross handle or optional 2" square operating nut. Valves have a true 360-degree rotation and are designed to insert into a LEEMCO lateral fitting without the use of threaded fittings. **** SEE LEEMCO FITTINGS FOR COMPATIBLE TEES & SADDLES ****



DUCTILE IRON ANGLE VALVE

Choice of Cross Handle or
2" Square Operating Nut

Lateral Valve spigot inlet inserts into the lateral tee or lateral saddle outlet. If the valve remains in the original installed position, two LV-Clips are needed to secure the valve in place. LV-Clips slide between the lugs of the lateral outlet to prevent the valve from dislodging. LV-Clips are sold separately.



STAINLESS STEEL ANGLE VALVE

Choice of Cross Handle or
2" Square Operating Nut



SIZE	OPERATION	PART NO.
2" x 9"	CROSS HANDLE	LV-200
2" x 9"	2" SQUARE NUT	LV-200-SON
2" x 12"	CROSS HANDLE	LV-212
2" x 12"	2" SQUARE NUT	LV-212-SON
2" x 18"	CROSS HANDLE	LV-218
2" x 18"	2" SQUARE NUT	LV-218-SON
2½" x 12"	CROSS HANDLE	LV-250
2½" x 12"	2" SQUARE NUT	LV-250-SON
3" x 12"	CROSS HANDLE	LV-300
3" x 12"	2" SQUARE NUT	LV-300-SON
4" x 12"	CROSS HANDLE	LV-400
4" x 12"	2" SQUARE NUT	LV-300-SON

SIZE	OPERATION	PART NO.
2" x 9"	CROSS HANDLE	LV-200S
2" x 9"	2" SQUARE NUT	LV-200S-SON
3" x 12"	CROSS HANDLE	LV-300S
3" x 12"	2" SQUARE NUT	LV-300S-SON
4" x 12"	CROSS HANDLE	LV-400S
4" x 12"	2" SQUARE NUT	LV-300S-SON

SPIGOT x MALE ADAPTER



SIZE	PART NO.
2" x 1"	LMN-10
2" x 1¼"	LMN-12
2" x 1½"	LMN-15
2" x 2"	LMN-20
2½" x 2½"	LMN-25
3" x 2"	LMN-31
3" x 3"	LMN-30

GATE VALVES & BALL VALVES



T113 THREADED BRONZE GATE VALVES

Choice of Wheel Handle or Cross Handle



SIZE	OPERATION	PART NO.
1"	WHEEL HANDLE	NIB-T113-010-BHW
1"	CROSS HANDLE	NIB-T113K-010
1¼"	WHEEL HANDLE	NIB-T113-012-BHW
1¼"	CROSS HANDLE	NIB-T113K-012
1½"	WHEEL HANDLE	NIB-T113-015-BHW
1½"	CROSS HANDLE	NIB-T113K-015
2"	WHEEL HANDLE	NIB-T113-020-BHW
2"	CROSS HANDLE	NIB-T113K-020
2½"	WHEEL HANDLE	NIB-T113-025-BHW
2½"	CROSS HANDLE	NIB-T113K-025
3"	WHEEL HANDLE	NIB-T113-030-BHW
3"	CROSS HANDLE	NIB-T113K-030



THREADED STAINLESS STEEL GATE VALVES

Choice of Wheel Handle or Cross Handle



SIZE	OPERATION	PART NO.
1"	WHEEL HANDLE	LGT11SS304W
1"	CROSS HANDLE	LGT11SS304X
1½"	WHEEL HANDLE	LGT1515SS304W
1½"	CROSS HANDLE	LGT1515SS304X
2"	WHEEL HANDLE	LGT22SS304W
2"	CROSS HANDLE	LGT22SS304X
2½"	WHEEL HANDLE	LGT2525SS304W
2½"	CROSS HANDLE	LGT2525SS304X
3"	WHEEL HANDLE	LGT33SS304W
3"	CROSS HANDLE	LGT33SS304X
4"	WHEEL HANDLE	LGT44SS304W
4"	CROSS HANDLE	LGT44SS304X



BRONZE BALL VALVES

Choice of Lever Handle or Tee Handle



SIZE	OPERATION	PART NO.
1"	LEVER HANDLE	APOLLO-70-105-32
1"	TEE HANDLE	APOLLO-70-105-10
1¼"	LEVER HANDLE	APOLLO-70-106-32
1¼"	TEE HANDLE	APOLLO-70-106-10
1½"	LEVER HANDLE	APOLLO-70-107-32
1½"	TEE HANDLE	APOLLO-70-107-10
2"	LEVER HANDLE	APOLLO-70-108-32
2"	TEE HANDLE	APOLLO-70-108-10
2½"	LEVER HANDLE	APOLLO-70-109A-32
2½"	TEE HANDLE	APOLLO-70-109A-10
3"	LEVER HANDLE	APOLLO-70-100-32
3"	TEE HANDLE	APOLLO-70-100-10



THREADED STAINLESS STEEL BALL VALVES



SIZE	OPERATION	PART NO.
½"	LEVER HANDLE	LBT0505SS304
¾"	LEVER HANDLE	LBT075075SS304
1"	LEVER HANDLE	LBT11SS304
1¼"	LEVER HANDLE	LBT125125SS304
1½"	LEVER HANDLE	LBT1515SS304
2"	LEVER HANDLE	LBT22SS304
2½"	LEVER HANDLE	LBT2525SS304
3"	LEVER HANDLE	LBT33SS304
4"	LEVER HANDLE	LBT44SS304

HDPE FULL BORE BALL VALVES

With 2" Square Operating Nut



SIZE	ENDS	PART NO.
2"	BUTT FUSION DR11 ENDS	HAR74-5102
2"	BUTT FUSION DR13.5 ENDS	HAR74-325102
3"	BUTT FUSION DR11 ENDS	HAR74-5103
3"	BUTT FUSION DR13.5 ENDS	HAR74-325103
4"	BUTT FUSION DR11 ENDS	HAR74-5104
4"	BUTT FUSION DR13.5 ENDS	HAR74-325104

PHILMAC BALL VALVES FOR HDPE

With Tee Handle



SIZE	ENDS	PART NO.
1"	COMPRESSION x COMPRESSION	HAR76-30104
1"	FPT x FPT	HAR76-70304
1¼"	COMPRESSION x COMPRESSION	HAR76-30105
1¼"	FPT x FPT	HAR76-70305
1½"	COMPRESSION x COMPRESSION	HAR76-30106
2"	COMPRESSION x COMPRESSION	HAR76-30108
2"	FPT x FPT	HAR76-70308

WYE STRAINER

Threaded Cast Bronze
with ½" FPT Outlet



SIZE	DESCRIPTION	PART NO.
1"	W/ 20 MESH SS SCREEN	WILK-1-SXL
2"	W/ 20 MESH SS SCREEN	WILK-2-SXL



AIR RELEASE / VACUUM VALVES

Ductile Iron



SIZE	DESCRIPTION	PART NO.
1"	1" INLET w/1" OUTLET	CRISP-IC10
2"	2" INLET w/1" OUTLET	CRISP-IC10A

BOILER DRAIN

Threaded Brass



SIZE	ENDS	PART NO.
½"	MPT x HOSE THREAD	447P27
¾"	MPT x HOSE THREAD	WEB11703



ARV-1-A

ARV-2-KA

CONTINUOUS ACTING AIR RELEASE VALVES

Plastic

SIZE	DESCRIPTION	PART NO.
1"	1" Single Acting AR Valve	ARV-1-A
2"	2" Dual Acting AR Valve	ARV-2-KA

VALVE KEYS



ENDS	PART NO.
30" Long Key for X Handle Valves	SK30
5' Long Key for 2" Square Operating Nut	LEW-OW22

TORO VALVE BOXES



T-Lip Lid Design

The T-lip design keeps dirt out to prevent jamming and provides improved grip for lid removal and easy access to the equipment inside.

Wide Range of Sizes

Toro offers a wide range of round and rectangular boxes to meet every need. 6", 7" and 10" round; and 12" x 17" and 15" x 21" rectangular in both 12" standard depth and 6" shallow depth. With the reverse stack capability and rectangular 6" extensions tackling deeper installations can be easily accomplished.

Variety of Colors

Toro valve boxes and covers come in a variety of colors to blend into the surrounding environment or to identify specific applications. Green for grass, tan for sand and purple for non-potable water applications. Black and brown to blend in with soils and mulches and gray for electrical applications.

Durable Construction

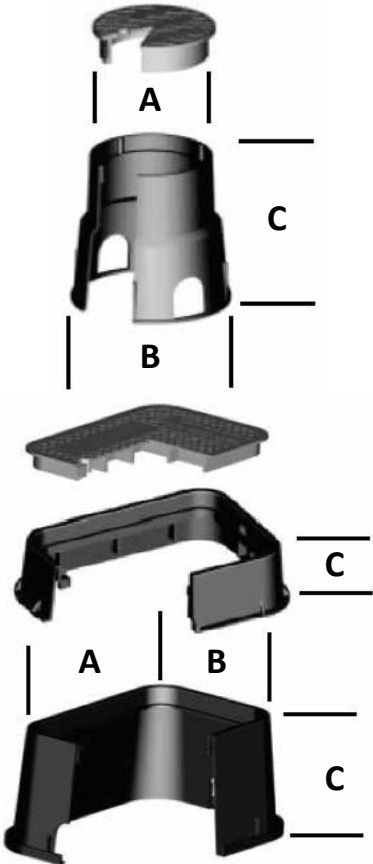
Valve boxes are constructed of HDPE (High Density Polyethylene) with heavy-duty wall sections designed to provide a secure enclosure to protect your equipment.



12" Reverse Stack



6" Extension




Toro Valve Box Dimensions

DESCRIPTION	A LNTH	B WIDTH	C HGHT
6" ROUND VALVE BOX W/COVER	6.3"	8.1"	9.0"
7" ROUND VALVE BOX W/COVER	6.8"	9.3"	9.0"
10" ROUND VALVE BOX W/COVER	9.9"	13.0"	10.3"
STANDARD 6" RECTANGULAR BOX W/COVER	18.8"	13.8"	6.8"
STANDARD 12" RECTANGULAR BOX W/COVER	21.0"	16.0"	12.3"
JUMBO 6" RECTANGULAR BOX W/COVER	18.8"	18.8"	7.2"
JUMBO 12" RECTANGULAR BOX W/COVER	19.1"	19.1"	12.3"
6" STANDARD RECTANGULAR EXTENSION	18.8"	13.8"	6.8"
6" JUMBO RECTANGULAR EXTENSION	24.3"	17.8"	6.9"



Ordering Information - 4" Toro Round Valve Boxes

Description	Part Number
4" Round x 8" High 4" Round Valve Cover * * Replaced #850-00	TVB-4RND-BK TVB-4LID-BK
	

Ordering Information - Toro Round Valve Boxes

TVB-XXRND-XX		
Description	Size	Color Description
TVB	XXRND	XX
TVB - Toro Valve Box	6 - 6" Round 7 - 7" Round 10 - 10" Round	Blank - Green Lid & Black Box G - Green Lid & Box GY - Gray Lid & Box (Elect.) T - Tan Lid & Box E - Purple Lid & Box (Effnt) BK - Black Lid & Box BR - Brown Lid & Black Box
Example: Toro 10" standard Round Box with Green Lid = TVB-10RND		

Ordering Information - Toro Round Valve Box Separates

TVB-XXXXXX-XX		
Description	Description	Color
TVB	XXXXXX	XX
TVB - Toro Valve Box	6LID - 6" Round Lid 7LID - 7" Round Lid 10LID - 10" Round Lid BOX6 - 6" Black Box BOX7 - 7" Black Box BOX10 - 10" Black Box	G - Green Lid GY - Gray Lid T - Tan E - Purple Lid BK - Black Lid BR - Brown Lid
Examples: Toro 7" replacement Purple Lid = TVB-7LID-E Toro 10" replacement box = TVB-BOX10		

Ordering Information - Toro Rectangular Valve Boxes

TVB-XXXX-XX-XX			
Desc.	Size	Height	Color Description
TVB	XXXX	XX	XX
TVB - Toro Valve Box	1217 - Standard 1521 - Jumbo	6 - 6" 12 - 12"	Blank - Green Lid & Black Box G - Green Lid & Box GY - Gray Lid & Box T - Tan Lid & Box E - Purple Lid & Box BK - Black Lid & Box BR - Brown Lid & Black Box
Example: Toro Standard Box, 12" high with Green Lid = TVB-1217-12			

Ordering Information - Toro Rectangular Extensions

TVB-XXXX-EXT6BOX-XX			
Desc.	Size	Height	Color
TVB	XXXX	EXT6BOX	XX
TVB - Toro Valve Box	1217 - Standard 1521 - Jumbo	EXT6BOX - 6" High	Blank - Black Box G - Green Box GY - Gray Box T - Tan Box E - Purple Box

Ordering Information - Toro Rectangular Valve Box Separates

TVB-XXXXXX-XX		
Desc.	Description	Color
TVB	XXXXXX	XX
TVB - Toro Valve Box	1217-LID - Standard Lid 1521-LID - Jumbo Lid 1217-6BOX - Standard 6" Box 1217-12BOX - Standard 12" Box 1521-6BOX - Jumbo 6" Box 1521-12BOX - Jumbo 12" Box	G - Green Lid GY - Gray Lid T - Tan E - Purple Lid BK - Black Lid BR - Brown Lid
Examples: Toro Standard replacement Green Lid = TVB-1217-LID-G Toro 12" Jumbo replacement box = TVB-1521-12BOX		

TORO DRY BOXES



Dual Bolt & Dual Seal Design

Lids are available in Green, Tan, Purple, Black, Gray and Brown. Covers have Dual Bolt Retention and Dual Seals for vandal resistance and to keep water and critters from creeping in from the top.

Heavy-Duty Construction

Construction molded from High Density Polyethylene (HDPE).

Optional Dirt Skirt

Attaches directly to the bottom of the valve box and provides an outer seal to prevent intrusion from burrowing rodents, water and critters.

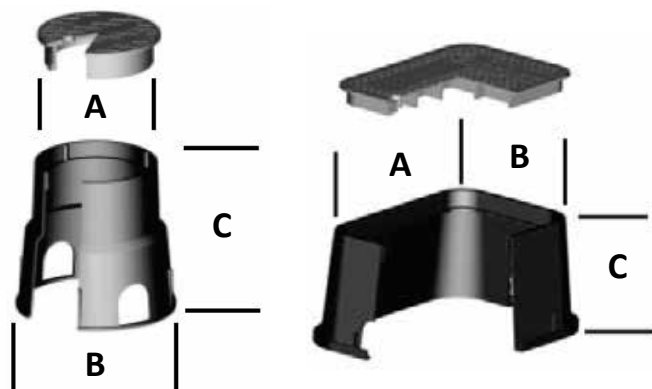
Optional Accessory Plate

Attaches to lid and allows attachments of various components like 2-wire modules, surge protectors, battery operated controllers and more.



Toro Dry Box Dimensions

DESCRIPTION	A LNTH	B WIDTH	C HGHT
12" ROUND DRY BOX W/COVER	11.5"	14.5"	12.75"
12" RECT. DRY BOX W/COV	21.0"	16.0"	12.3"



Ordering Information - Toro Round Dry Boxes

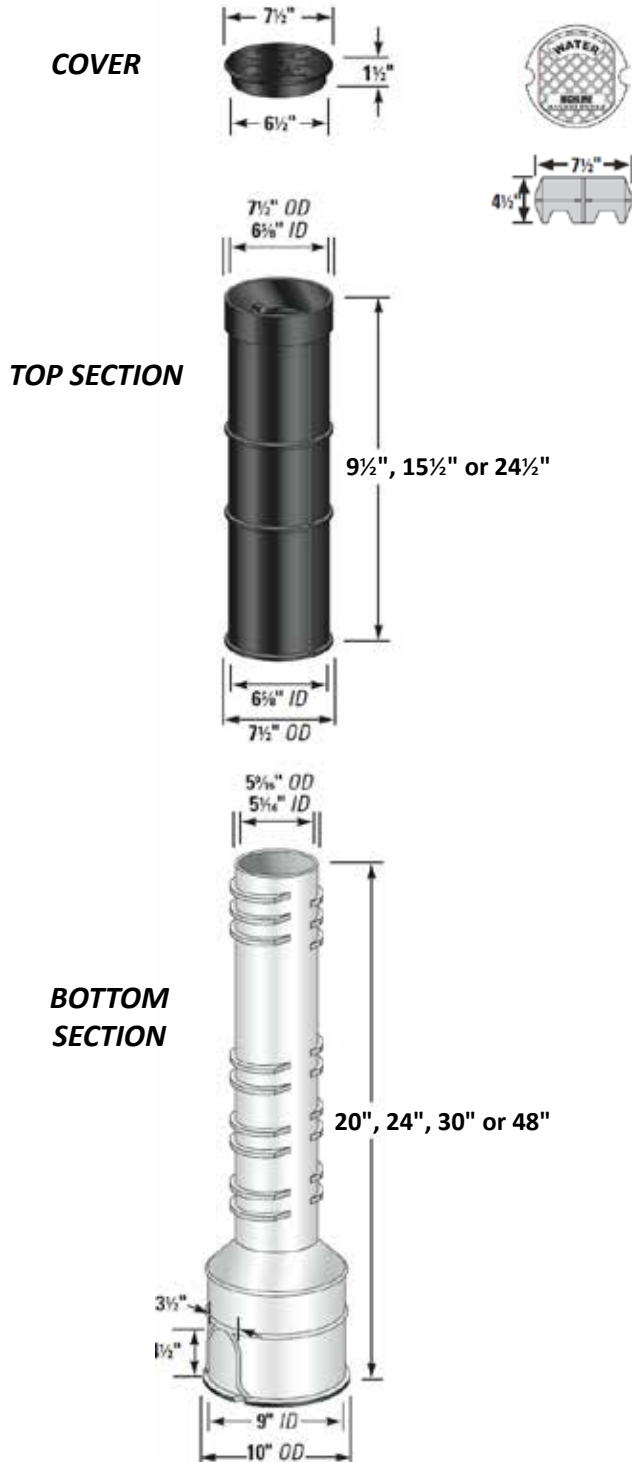
TVB-12RND-DB-XX		
Description	Size	Color Description
TVB	XXRND	XX
TVB - Toro Valve Box	12RND-DB - 12" Round Dry Box	G - Green Lid GY - Gray Lid T - Tan Lid E - Purple Lid BK - Black Lid BR - Brown Lid
Example: Toro Round Dry Box with Black Lid = TVB-12RND-DB-BK		

Ordering Information - Toro Rectangular Dry Boxes

TVB-1217-12DB-XX			
Desc.	Size	Height	Color Description
TVB	1217	12DB	XX
TVB - Toro Valve Box	1217 - Standard	12DB - 12" High	Blank - Green Lid & Black Box G - Green Lid & Box GY - Gray Lid & Box T - Tan Lid & Box E - Purple Lid & Box BK - Black Lid & Box BR - Brown Lid & Black Box
Example: Toro Dry Box, black box with Green Lid = TVB-1217-12DB Options: Dry Box Accessory Plate = TVB-1217-DBAP Dry Box Dirt Skirt = TVB-1217-DBDS			

MAINLINE VALVE BOXES

Highline access boxes for mainline valves have adjustable heights ranging from 25 to 71 inches. Top is constructed of Polyiron for easy magnetic identification. Bottom is constructed of Superflexon, a light weight, plastic composite material with high tensile strength.



Features:

Lids are available in Green, Tan, Purple, Black,

- Polyiron® top section
- One third the weight of CI boxes
- Magnetically locatable
- White molded bottom reflects light inside box for greater visibility
- Screw type valve box
- Pipe knock-outs molded in
- Optional cast iron cover and adapter ring

HIGHLINE COVERS

DESCRIPTION	PART NUMBER
Standard Plastic 5 1/4" Green Cover	AMP10111031
Standard Plastic 5 1/4" Black Cover	AMP10111030
Cast Iron Cover (Requires CI Ring)	AMP111026
Cast Iron Ring for CI Cover	AMP111028
<i>Covers will have "WATER" on top.</i>	

HIGHLINE TOP SECTIONS

DESCRIPTION	PART NUMBER
9 1/2" Polyiron® Valve Box Top	AMP10111036
15 1/2" Polyiron® Valve Box Top	AMP10111037
24 1/2" Polyiron® Valve Box Top	AMP10111038

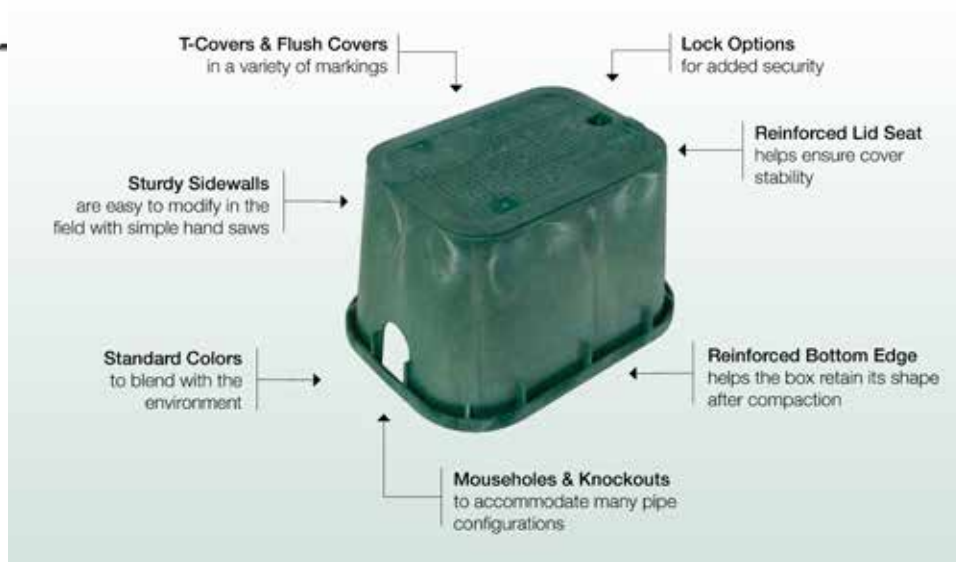
HIGHLINE BOTTOM SECTIONS

DESCRIPTION	PART NUMBER
20" Valve Box White Bottom	AMP10111048
24" Valve Box White Bottom	AMP10111049
30" Valve Box White Bottom	AMP10111050
48" Valve Box White Bottom	AMP10111051

CARSON VALVE BOXES



Carson Specification Grade valve boxes are made of structural foam high-density polyethylene (HDPE) with UV inhibitors to provide a lifetime of consistent performance in a variety of weather conditions.



CARSON 6" ROUND ECONO BOX

DESCRIPTION	PART NUMBER
6" ROUND BOX WITH GREEN T-COVER	BKS60-WC
6" ROUND BOX ONLY - NO COVER	BKS60-NC
6" GREEN T-COVER ONLY	BKS60-COV



CARSON 7" ROUND DELUXE ECONO BOX

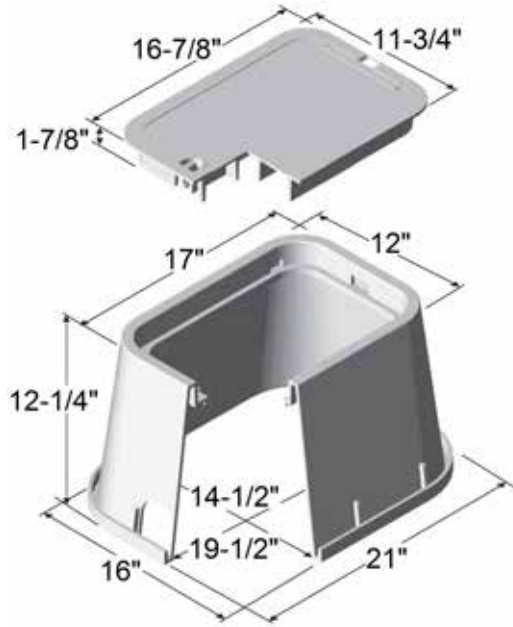
DESCRIPTION	PART NUMBER
DELUXE BOX WITH GREEN T-COVER	BKS809-9-4
DELUXE ROUND BOX ONLY - NO COVER	BKS809
DELUXE GREEN T-COVER ONLY	BKS809-4

CARSON 10" ROUND VALVE BOX

DESCRIPTION	PART NUMBER
10" ROUND BOX WITH GREEN T-COVER	BKS1100-WC
10" ROUND BOX ONLY - NO COVER	BKS1100-NC
10" GREEN T-COVER ONLY	BKS1100-COV

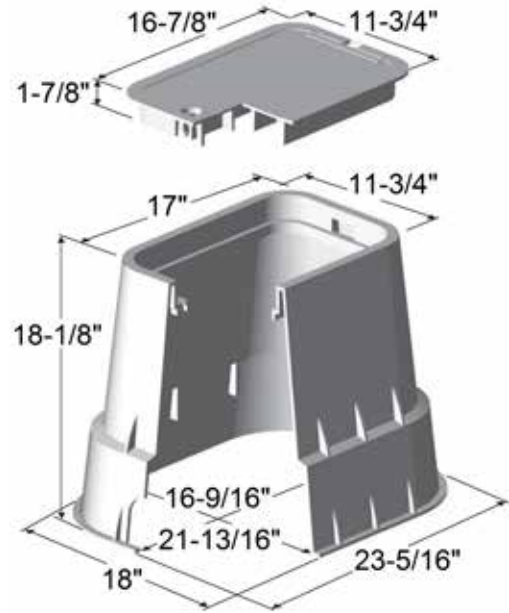


CARSON VALVE BOXES



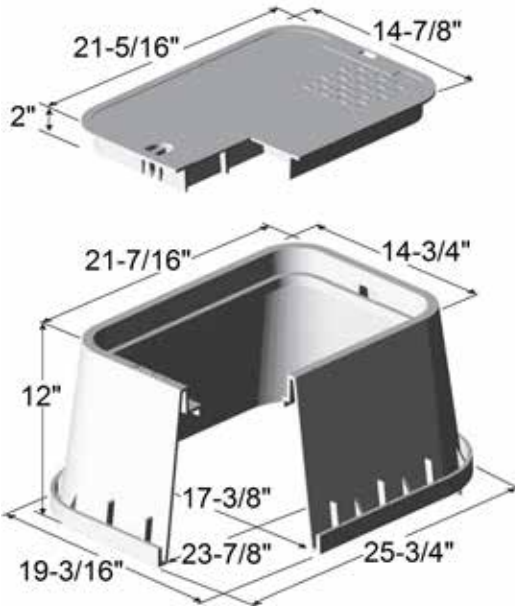
CARSON 12" STANDARD VALVE BOX

DESCRIPTION	PART NUMBER
STANDARD BOX WITH GREEN T-COVER	BKS1419-12WC
STANDARD BOX ONLY - NO COVER	BKS1419-12NC
STANDARD GREEN T-COVER ONLY	BKS1419-COV



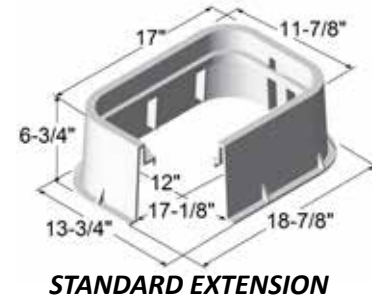
CARSON STANDARD DEEP VALVE BOX

DESCRIPTION	PART NUMBER
DEEP BOX WITH GREEN T-COVER	BKS1419-18WC
DEEP BOX ONLY - NO COVER	BKS1419-18NC
STANDARD GREEN T-COVER ONLY	BKS1419-COV

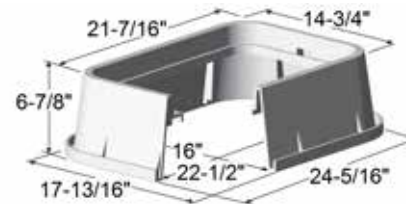


CARSON 12" JUMBO VALVE BOX

DESCRIPTION	PART NUMBER
JUMBO BOX WITH GREEN T-COVER	BKS1220-12WC
JUMBO BOX ONLY - NO COVER	BKS1220-12NC
JUMBO GREEN T-COVER ONLY	BKS1220-COV



STANDARD EXTENSION



JUMBO EXTENSION

CARSON VALVE BOX EXTENSIONS

DESCRIPTION	PART NUMBER
6" EXTENSION FOR STANDARD BOX	BKS1419-6NC
6" EXTENSION FOR JUMBO BOX	BKS1220-6NC

HOSES & NOZZLES

IRRIGATION HOSE

150 psi Rating

- Abrasion resistant smooth cover
- Smooth black PVC inner tube
- Superior weather, ozone and UV resistant
- Smooth, PVC cover with high tensile strength yarn



DESCRIPTION	PART NUMBER
¾" x 50' Irrigation Hose	DGM-GH075-001
¾" x 75' Irrigation Hose	DGM-GH075-002
¾" x 100' Irrigation Hose	DGM-GH075-003
¾" x 125' Irrigation Hose	DGM-GH100-125
1" x 50' Irrigation Hose	DGM-GH100-001
1" x 75' Irrigation Hose	DGM-GH100-002
1" x 100' Irrigation Hose	DGM-GH100-003

DURA FLOW HOSE

250 psi Rating

- Easily recoiled after use
- Silicone FREE core
- Lightweight
- UV and weather resistant; retains flexibility
- Heavy duty and designed for maximum flow



DESCRIPTION	PART NUMBER
¾" x 50' Dura Flow Hose	DGM-DF075-001
¾" x 75' Dura Flow Hose	DGM-DF075-002
¾" x 100' Dura Flow Hose	DGM-DF075-003
1" x 50' Dura Flow Hose	DGM-DF100-001
1" x 75' Dura Flow Hose	DGM-DF100-002
1" x 100' Dura Flow Hose	DGM-DF100-003

NOZZLES

Nozzles are precision engineered and machined to meet all your water distribution needs. Manufactured from the highest quality aluminum and stainless steel components. From a Straight Stream to a Wide Fog to Unique Dual Gallonage and Shutoff features. Includes Bumper Guard.



DESCRIPTION	PART NUMBER
¾" Constant Flow, 35 GPM	DGM-NZ017
¾" Dual Range, 10-24 GPM	DGM-NZ016
¾" Shower Head Nozzle	DGM-NZ023
1" Constant Flow, 35 GPM	DGM-NZ010
1" Dual Range, 10-24 GPM	DGM-NZ009
1" Dual Range, 20-60 GPM	DGM-NZ015
1" Flat Spray Nozzle	DGM-022

¾" nozzles have Garden Hose Thread (GHT) and 1" nozzles have National Pipe Straight Hose (NPSH) thread.

ULTRALITE HOSE

300 psi Rating

- Pliable and abrasion resistant cover
- Lightweight and Kink Resistant
- UV and weather resistant; retains flexibility



DESCRIPTION	PART NUMBER
1" x 50' Ultralite Hose	DGM-IRKBH10P-50
1" x 75' Ultralite Hose	DGM-IRKBH10P-75
1" x 100' Ultralite Hose	DGM-IRKBH10P-100

QUICK CONNECT ADAPTERS

Quarter turn quick connection (Storz) to eliminate threading. High quality aluminum and powder coated.



DESCRIPTION	PART NUMBER
1" Storz x ¾" Male GHT	DGM-IRS36S1G
1" Storz x ¾" Female GHT	DGM-IRS37S1G
1" Storz x 1" Male NPSH	DGM-IRS36S11P
1" Storz x 1" Female NPSH	DGM-IRS37S11P

PELLET APPLICATORS & ADAPTERS

HOSE ADAPTERS

Convert a sprinkler head from any manufacturer into a hose adapter, or use the 1" flexible hose to attach to a quick coupler key instead of brass 90-degree hose swivels. The PVC braided hose rotates 360° supporting movement in any direction and are rated for 200 psi.



DESCRIPTION	PART NUMBER
Adapter for Toro 1" Sprinkler Body	DGM-USR-1-FL
Adapter for Toro 1½" Sprinkler Body	DGM-USR-2-FL
Adapter for Rainbird 700 Series	DGM-USR-3-FL
Adapter for Rainbird 900 Series	DGM-USR-4-FL
Adapter for QC Key, 1" Male NPT	DGM-USR-5-FL
Adapter for QC Key, 1" Female NPT	DGM-USR-6-FL

SPRINKLER ADAPTERS

Inserts into Toro sprinkler body and provides a 1" Female Pipe Thread outlet for attachment of hose. Pipe nipple not included.



DESCRIPTION	PART NUMBER
Adapter for Toro 1" Sprinkler Body	KL-630
Adapter for Toro 1½" Sprinkler Body	KL-650

HOSE SWIVELS

For attachment to quick coupler keys providing hose thread connection and allowing 360° swivel.



DESCRIPTION	PART NUMBER
¾" MHT (Hose) x ¾" Female NPT	477-00
¾" MHT (Hose) x 1" Female NPT	477-01
1" MHT (Hose) x 1" Female NPT	477-02

PELLET APPLICATOR

The Deluxe Pellet Applicator is designed to apply pelletized wetting agents, surfactants, adjuvants to turf and ornamentals. It's ergonomic handle design has a Full Time Swivel at the supply end along with a shut-off ball providing maximum control and comfort to the user. The Deluxe model comes with the Flat Spray and Shower Head Nozzle. The nylon pellet container twists on easily while an o-ring keeps it water-tight. The Standard Pellet Applicator works the same as the Deluxe, but it comes with the only the Flat Spray and Thumb Valve.



DESCRIPTION	PART NUMBER
Standard Pellet Applicator	DGM-IRBWPS-A01
Deluxe Pellet Applicator	DGM-IRBWPS-A02

SPRINKLER BASES

Used for temporary placement of sprinklers. Each base has an inlet for hose attachment.



DESCRIPTION	PART NUMBER
¾" FHT (Hose) Roller Base with ¾" FPT	RAT-RB1507
1" FHT (Hose) Roller Base with 1" FPT	RAT-RB2210

PVC PIPE

- All PVC pipe is sold in 20' length, unless indicated otherwise.
- SDR Series PVC pipe meets ASTM D2241 specification.
- PVC pipe is not recommended for compressed air or gas service.

SOLVENT WELD CLASS 160, SDR26 (160 PSI Rated)



SIZE	OD	ID	WALL THICKNESS	PART NUMBER
1"	1.315"	1.175"	0.070"	SW160-010
1¼"	1.660"	1.512"	0.074"	SW160-012
1½"	1.900"	1.720"	0.083"	SW160-015
2"	2.375"	2.173"	0.101"	SW160-020
2½"	2.875"	2.635"	0.120"	SW160-025
3"	3.500"	3.210"	0.145"	SW160-030
4"	4.500"	4.133"	0.183"	SW160-040

Requires PVC Primer & Cement for assembly.

SOLVENT WELD CLASS 200, SDR21 (200 PSI Rated)

SIZE	OD	ID	WALL THICKNESS	PART NUMBER
½"	0.840"	0.696"	0.084"	SW200-005
¾"	1.050"	0.910"	0.070"	SW200-007
1"	1.315"	1.169"	0.073"	SW200-010
1¼"	1.660"	1.482"	0.089"	SW200-012
1½"	1.900"	1.700"	0.100"	SW200-015
2"	2.375"	2.129"	0.123"	SW200-020
2½"	2.875"	2.581"	0.147"	SW200-025
3"	3.500"	3.146"	0.177"	SW200-030
4"	4.500"	4.046"	0.227"	SW200-040

Requires PVC Primer & Cement for assembly.

GASKETED (RING-TITE) CLASS 160, SDR26 (160 PSI Rated)



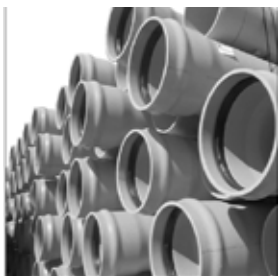
SIZE	OD	ID	WALL THICKNESS	PART NUMBER
1½"	1.900"	1.720"	0.083"	RTP160-015
2"	2.375"	2.173"	0.101"	RTP160-020
2½"	2.875"	2.635"	0.120"	RTP160-025
3"	3.500"	3.210"	0.145"	RTP160-030
4"	4.500"	4.133"	0.183"	RTP160-040
6"	6.500"	6.084"	0.255"	RTP160-060
8"	8.625"	7.921"	0.332"	RTP160-080
10"	10.750"	9.874"	0.413"	RTP160-100
12"	12.750"	11.711"	0.490"	RTP160-120

Requires PVC Lube assembly.

GASKETED (RING-TITE) CLASS 200, SDR21 (200 PSI Rated)

SIZE	OD	ID	WALL THICKNESS	PART NUMBER
1½"	1.900"	1.700"	0.100"	RTP200-015
2"	2.375"	2.129"	0.123"	RTP200-020
2½"	2.875"	2.581"	0.147"	RTP200-025
3"	3.500"	3.146"	0.177"	RTP200-030
4"	4.500"	4.046"	0.227"	RTP200-040
6"	6.500"	5.955"	0.316"	RTP200-060
8"	8.625"	7.754"	0.410"	RTP200-080
10"	10.750"	9.667"	0.511"	RTP200-100
12"	12.750"	11.465"	0.606"	RTP200-120

Requires PVC Lube assembly.



GASKETED (RING-TITE) 235 PSI, DR18, C905 - Other DR ratings and larger sizes available upon request.

SIZE	OD	ID	WALL THICKNESS	PART NUMBER
14"	15.30"	13.50"	0.850"	RTP18-140
16"	17.40"	15.35"	0.967"	RTP18-160
18"	19.06"	17.20"	1.083"	RTP18-180
20"	21.60"	19.06"	1.200"	RTP18-200

PVC PIPE FLOW CHART

VELOCITY & PRESSURE LOSS CHART - FOR CLASS 200, SDR21 PVC PIPE

• Solvent Weld & Ring-Tite

VELOCITY IS INDICATED AS FEET PER SECOND (FPS) & LOSS IS PSI LOST PER 100' OF PIPE

	1"		1½"		2"		2½"		3"		4"		6"		8"		10"		12"	
GPM	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS
16	4.78	3.38	2.26	0.55	1.44	0.18														
20	5.97	5.11	2.82	0.83	1.80	0.28														
25	7.46	7.73	3.53	1.25	2.25	0.42	1.53	0.16												
30	8.96	10.83	4.24	1.75	2.70	0.58	1.84	0.23												
35	10.45	14.41	4.94	2.33	3.15	0.78	2.14	0.30	1.44	0.12										
40	11.94	18.45	5.65	2.98	3.60	1.00	2.45	0.39	1.65	0.15										
50	14.93	27.89	7.06	4.51	4.50	1.51	3.06	0.59	2.06	0.23										
60			8.47	6.31	5.40	2.11	3.67	0.83	2.47	0.32	1.50	0.09								
70			9.88	8.40	6.30	2.81	4.29	1.10	2.89	0.42	1.74	0.12								
80			11.29	10.76	7.20	3.60	4.90	1.41	3.30	0.54	1.99	0.16								
90			12.71	13.38	8.10	4.47	5.51	1.75	3.71	0.67	2.24	0.20								
100			14.12	16.26	9.00	5.44	6.12	2.13	4.12	0.81	2.49	0.24	1.15	0.04						
120					10.80	7.62	7.35	2.99	4.95	1.14	2.99	0.33	1.38	0.05						
140					12.60	10.14	8.57	3.97	5.77	1.52	3.49	0.45	1.61	0.07						
170					15.30	14.53	10.41	5.69	7.01	2.17	4.24	0.64	1.96	0.10	1.15	0.03				
200							12.25	7.69	8.24	2.93	4.98	0.86	2.30	0.13	1.36	0.04				
240							14.70	10.78	9.89	4.11	5.98	1.21	2.76	0.18	1.63	0.05				
280									11.54	5.47	6.98	1.61	3.22	0.24	1.90	0.07				
300									12.37	6.22	7.48	1.83	3.45	0.28	2.04	0.08	1.31	0.03		
340									14.02	7.84	8.47	2.30	3.91	0.35	2.31	0.10	1.48	0.03		
380											9.47	2.83	4.37	0.43	2.58	0.12	1.66	0.04		
400											9.97	3.11	4.60	0.47	2.71	0.13	1.75	0.04		
450											11.22	3.87	5.18	0.59	3.05	0.16	1.96	0.06		
500											12.46	4.70	5.75	0.72	3.39	0.20	2.18	0.07	1.55	0.03
550											13.71	5.61	6.33	0.86	3.73	0.24	2.40	0.08	1.71	0.04
600													6.90	1.00	4.07	0.28	2.62	0.10	1.86	0.04
650													7.48	1.17	4.41	0.32	2.84	0.11	2.02	0.05
700													8.05	1.34	4.75	0.37	3.06	0.13	2.17	0.06
750													8.63	1.52	5.09	0.42	3.27	0.14	2.33	0.06
800													9.20	1.71	5.43	0.47	3.49	0.16	2.48	0.07
850													9.78	1.92	5.77	0.53	3.71	0.18	2.64	0.08
900													10.35	2.13	6.11	0.59	3.93	0.20	2.79	0.09
1000													11.51	2.59	6.79	0.72	4.37	0.24	3.10	0.11
1200													13.81	3.63	8.14	1.00	5.24	0.34	3.72	0.15
1700															11.54	1.91	7.42	0.65	5.28	0.28
2000															13.57	2.58	8.73	0.88	6.21	0.39

POLY PIPE & HDPE

POLY PIPE (Polyethylene)

- 100 PSI Rated
- IPS Sized - ID Controlled



SIZE	OD	ID	COIL	PART NUMBER
¾"	0.954"	0.824"	100' 400'	PP-13310 PP-13314
1"	1.207"	1.049"	100' 300'	PP-13320 PP-13323
1¼"	1.572"	1.380"	100' 250'	PP-13330 PP-13332
1½"	1.838"	1.610"	100' 250'	PP-13340 PP-13342
2"	2.353"	2.067"	100' 200'	PP-13350 PP-13352

VELOCITY & PRESSURE LOSS CHART - POLY PIPE

VELOCITY IS INDICATED AS FEET PER SECOND (FPS) &
LOSS = PSI LOST PER 100' OF PIPE

	¾"		1"		1¼"		1½"		2"	
GPM	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS
5	3.00	2.44	1.85	0.76	1.07	0.20	0.79	0.09	0.38	0.02
10	6.01	8.82	3.71	2.73	2.14	0.72	1.57	0.34	1.05	0.10
16	9.61	21.07	5.93	6.51	3.43	1.71	2.52	0.81	1.53	0.24
20	12.02	31.85	7.42	9.84	4.28	2.59	3.15	1.22	1.91	0.36
24			8.90	13.79	5.14	3.63	3.78	1.72	2.29	0.51
30			11.12	20.85	6.43	5.49	4.72	2.59	2.86	0.77
35			12.98	27.74	7.50	7.30	5.51	3.45	3.34	1.02
40					8.57	9.35	6.30	4.42	3.82	1.31
50					10.71	14.14	7.87	6.68	4.77	1.98
60					12.85	19.82	9.44	9.36	5.73	2.77
70							11.02	12.45	6.68	3.69
80							12.59	15.95	7.64	4.73
90									8.59	5.88
100									9.55	7.15
120									12.41	11.62
140									13.37	13.33

HDPE (High Density Polyethylene)

DR11, PE4710

- 200 PSI Rated
- IPS Sized - OD Controlled



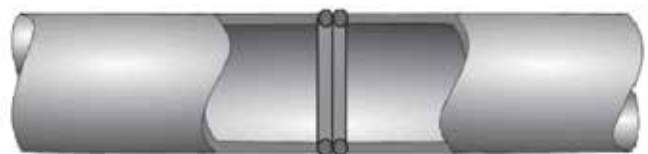
**DR13.5 Available
as Special Order for
large projects.**

SIZE	OD	ID	WALL THICKNESS	PART NUMBER
1½"	1.900"	1.53"	0.173"	PE4101511
2"	2.375"	1.91"	0.216"	PE410211
3"	3.500"	2.82"	0.318"	PE410311
4"	4.500"	3.63"	0.409"	PE410411
6"	6.500"	5.34"	0.602"	PE410611
8"	8.625"	6.96"	0.784"	PE410811
10"	10.75"	8.67"	0.977"	PE411011
12"	12.75"	10.29"	1.159"	PE411211

HDPE pipe is typically sold in 40' lengths.
Coils are available upon request

HDPE PIPE JOINING - BUTT FUSION

The most widely used method for joining lengths of HDPE pipe is by heat fusion of the pipe butt ends. Quality butt fusion joints are produced by using trained operators and quality butt fusion machines.



HDPE DR11 FLOW CHART

VELOCITY & PRESSURE LOSS CHART - FOR PE4710 DR11 HDPE PIPE

VELOCITY IS INDICATED AS FEET PER SECOND (FPS) & LOSS IS PSI LOST PER 100' OF PIPE

	2" DR11		3" DR11		4" DR11		6" DR11		8" DR11		10" DR11		12" DR11		14" DR11		16" DR11	
GPM	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS
10	1.12	0.15																
15	1.68	0.31																
20	2.24	0.53	1.03	0.08														
25	2.80	0.80	1.28	0.12														
30	3.36	1.13	1.54	0.17														
35	3.91	1.50	1.80	0.23														
40	4.47	1.92	2.05	0.29	1.24	0.08												
50	5.59	2.90	2.57	0.44	1.55	0.13												
60	6.71	4.07	3.08	0.61	1.86	0.18												
70	7.83	5.42	3.59	0.81	2.17	0.24	1.00	0.04										
80	8.95	6.93	4.10	1.04	2.48	0.30	1.14	0.05										
90	10.07	8.62	4.62	1.29	2.79	0.38	1.2	0.06										
100	11.18	10.48	5.13	1.57	3.10	0.46	1.43	0.07	0.84	0.02								
120	13.42	14.69	6.16	2.20	3.72	0.65	1.72	0.10	1.01	0.03								
140			7.18	2.93	4.33	0.86	2.00	0.13	1.18	0.04								
170			8.72	4.20	5.26	1.23	2.43	0.19	1.43	0.05								
200			10.26	5.68	6.19	1.66	2.86	0.25	1.68	0.07	1.09	0.02	0.77	0.01				
240			12.31	7.96	7.43	2.33	3.43	0.36	2.02	0.10	1.30	0.03	0.92	0.01				
280					8.67	3.10	4.01	0.47	2.36	0.13	1.52	0.04	1.08	0.02				
300					9.29	3.52	4.29	0.54	2.53	0.15	1.63	0.05	1.16	0.02	0.96	0.01		
340					10.53	4.44	4.86	0.68	2.86	0.19	1.85	0.06	1.31	0.03	1.09	0.02		
380					11.77	5.45	5.44	0.83	3.20	0.23	2.06	0.08	1.46	0.03	1.22	0.02		
400							5.72	0.92	3.37	0.25	2.17	0.09	1.54	0.04	1.28	0.02		
450							6.44	1.14	3.79	0.31	2.44	0.11	1.73	0.05	1.44	3.03		
500							7.15	1.38	4.21	0.38	2.71	0.13	1.93	0.06	1.60	0.03	1.22	0.02
550							7.87	1.65	4.63	0.45	2.99	0.16	2.12	0.07	1.76	0.04	1.35	0.02
600							8.58	1.94	5.05	0.53	3.26	0.18	2.31	0.08	1.92	0.04	1.47	0.02
650							9.30	2.25	5.47	0.62	3.53	0.21	2.50	0.09	2.08	0.05	1.59	0.03
700							10.02	2.58	5.90	0.71	3.80	0.24	2.70	0.11	2.24	0.06	1.71	0.03
750							10.73	2.93	6.32	0.81	4.07	0.28	2.89	0.12	2.40	0.07	1.83	0.04
800							11.45	3.31	6.74	0.91	4.34	0.31	3.08	0.14	2.56	0.08	1.96	0.04
850									7.16	1.02	4.61	0.35	3.28	0.15	2.72	0.09	2.08	0.04
900									7.58	1.13	4.88	0.39	3.47	0.17	2.88	0.09	2.20	0.05
1000									8.42	1.38	5.43	0.47	3.85	0.21	3.20	0.12	2.45	0.06
1200									10.11	1.93	6.51	0.66	4.62	0.29	3.84	0.16	2.94	0.08
1700									14.32	3.68	9.23	1.26	6.55	0.55	5.44	0.30	4.16	0.16
2000											10.86	1.71	7.71	0.74	6.40	0.41	4.90	0.21

HDPE DR13.5 FLOW CHART

VELOCITY & PRESSURE LOSS CHART - FOR PE4710 DR13.5 HDPE PIPE

VELOCITY IS INDICATED AS FEET PER SECOND (FPS) & LOSS IS PSI LOST PER 100' OF PIPE

	2" DR13.5		3" DR13.5		4" DR13.5		6" DR13.5		8" DR13.5		10" DR13.5		12" DR13.5		14" DR13.5		16" DR13.5	
GPM	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS	VEL FPS	PSI LOSS
10	1.02	0.10	0.47	0.02	0.28	0.00												
16	1.63	0.10	0.75	0.04	0.45	0.01												
20	2.04	0.37	0.94	0.06	0.57	0.02												
26	2.65	0.61	1.22	0.09	0.74	0.03												
30	3.05	.079	1.41	0.12	0.85	0.04												
35	3.56	1.05	1.64	0.16	0.9	0.05												
40	4.07	1.35	1.88	0.20	1.13	0.06												
50	5.09	2.04	2.34	0.31	1.42	0.09												
60	6.11	2.85	2.81	0.43	1.70	0.13												
70	7.13	3.80	3.28	0.58	1.99	0.17												
80	8.14	4.86	3.75	0.74	2.27	0.22												
90	9.16	6.04	4.22	0.92	2.55	0.27												
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	0.60	0.01						
140			6.56	2.08	3.97	0.61	1.83	0.09	1.08	0.03	0.70	0.01						
180			8.44	3.31	5.10	0.97	2.35	0.15	1.31	0.04	0.84	0.01						
200			9.38	4.02	5.67	1.18	2.62	0.18	1.54	0.05	0.71	0.01						
250			11.72	6.08	7.09	1.79	3.27	0.27	1.93	0.08	1.24	0.03						
275					7.80	2.13	3.60	0.32	2.12	0.09	1.37	0.03						
300					8.51	2.51	3.92	0.38	2.32	0.11	1.49	0.04	1.06	0.02				
350					9.93	3.34	4.58	0.51	2.70	0.14	1.74	0.05	1.24	0.02				
375					10.63	3.79	4.91	0.58	2.89	0.16	1.86	0.05	1.32	0.02				
400					11.34	4.27	5.23	0.65	3.09	0.18	1.99	0.06	1.41	0.03				
450							5.89	0.81	3.47	0.22	2.24	0.08	1.59	0.03				
500							6.54	0.98	3.86	0.27	2.48	0.09	1.77	0.04				
550							7.19	1.17	4.24	0.32	2.73	0.11	1.94	0.05				
600							7.85	1.38	4.63	0.38	2.98	0.13	2.12	0.06				
650							8.50	1.60	5.02	0.44	3.23	0.15	2.30	0.07				
700							9.16	1.83	5.40	0.51	3.48	0.17	2.47	0.08				
750							9.81	2.08	5.79	0.58	3.73	0.20	2.65	0.09				
800									6.17	0.65	3.97	0.22	2.83	0.10	2.34	0.06	1.79	0.03
850									6.56	0.73	4.22	0.25	3.00	0.11	2.49	0.07	1.91	0.04
900									6.95	0.81	4.47	0.28	3.18	0.12	2.64	0.08	2.02	0.04
1000									7.72	0.98	4.97	0.34	3.53	0.15	2.93	0.09	2.24	0.05
1200									9.26	1.38	5.96	0.47	4.24	0.21	3.52	0.13	2.69	0.07
1500									11.58	2.08	7.45	0.71	5.30	0.31	4.98	0.25	3.81	0.13
2000											9.94	1.22	5.86	0.34	5.86	0.34	4.49	0.18



Fittings Designed For Flexibility

Harco's DI push-on joint fittings are designed to offer the best possible balance of strength, impact, and corrosion resistance. Fittings are manufactured for ASTM A536, Grade 65-45-12 ductile iron with a tensile strength of 65,000 psi. These fittings are designed for use on IPS PVC pipe irrigation systems.

HARCO Full Line of Fittings

Ductile Iron fittings provide greater strength for underground PVC piping systems than PVC fittings. Harco's DI fittings come in 1-1/2" through 18" diameters, and are available in tees, bends, reducers, plugs, service tees, flange adapters, wyes, and male thread by bell adapters. Our 28 different SEB (Small End Bell) reducers combine with 77 basic patterns to create over 800 possible configurations. Deep bell push-on joints allow quick and easy installation. They also provide extra room in the bells to allow for pipe movement always present in underground systems.



All The Strength You Need . . . And Then Some

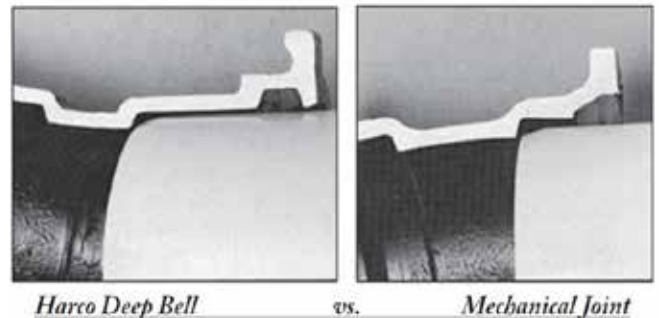
Harco fittings are pressure rated at 350 psi. They are cast of ductile iron with 65,000 psi tensile strength and a wall thickness of 0.31". This high strength capacity is vital in withstanding the critical cyclical surges and high mechanical stresses present in golf course irrigation systems.

Superior Corrosion Resistance

Ductile cast iron is the standard underground material in the waterworks industry. In ductile and cast iron, this corrosion resistance is created from a layer of insoluble graphite that is formed from initial corrosion that becomes a protective barrier against additional corrosion attack. This phenomenon is the reason that ductile iron and cast iron has such longevity in direct bury application in the majority of soils. *(Caution, The presence of highly corrosive soils or aggressive carried waters may require the use of protective measures, such as polyethylene encasement or epoxy coating. For those areas, Harco offers fusion bonded epoxy coatings or Ductile Iron Pipe Research Association recommended polyethylene encasement.)*

Deep Bells With Gasket Joints

Harco's push-on joint design provides for a deep socket bell to accommodate the expansion and contraction of a PVC piping system. The design incorporates a massive gasket in a square groove to prevent roll out and fish mouths. All fittings are designed to work directly on IPS size pipes — without the problems of using transition gaskets. The push-on joint allows easy, all-weather installation for bottle-type joints every time. The joint assembles exactly like the pipe joints, eliminating all the potential errors that solvent cement voids, incorrect procedures, and inclement weather can cause. The Harco joint is 2 to 4 times deeper behind the gasket than mechanical joints. The standard MJ joint was designed in 1930 specifically for iron pipe. It wasn't designed to handle the greater expansion and contraction of modern PVC pipe.



HARCO DUCTILE IRON FITTINGS

REPAIR COUPLING (Knock-On)



SIZE	PART NUMBER	WT (lbs)
1½"	HAR80040	6
2"	HAR80140	6
2½"	HAR80240	7
3"	HAR80340	10
4"	HAR80440	12
6"	HAR80640	23
8"	HAR80840	33
10"	HAR81040	57
12"	HAR81240	71

90° BEND (1/4 Bend)



SIZE	PART NUMBER	WT (lbs)
1½"	HAR80020	4
2"	HAR80120	7
2½"	HAR80220	7
3"	HAR80320	10
4"	HAR80420	15
6"	HAR80620	27
8"	HAR80820	42
10"	HAR81020	77
12"	HAR81220	102

45° BEND (1/8 Bend)



SIZE	PART NUMBER	WT (lbs)
1½" *	HAR80022	7
2"	HAR80122	5
2½"	HAR80222	6
3"	HAR80322	9
4"	HAR80422	13
6"	HAR80622	23
8"	HAR80822	37
10"	HAR81022	56
12"	HAR81222	75
* Assembled from subcomponents.		

1½" - 12" Bells and spigots are IPS size.

Most fittings are also available in
14" - 18" DIPS for C905 PVC Pipe or
Ductile Iron Pipe. Call for sizes not listed.

HARCO Ductile Iron Fittings can be used on
HDPE pipe with the use of internal stiffeners
in the pipe ends.

22½° BEND (1/16 Bend)



SIZE	PART NUMBER	WT (lbs)
2½"	HAR80224	7
3"	HAR80324	8
4"	HAR80424	12
6"	HAR80624	21
8"	HAR80824	32
10"	HAR81024	51
12"	HAR81224	71

11¼° BEND (1/32 Bend)



SIZE	PART NUMBER	WT (lbs)
4"	HAR80426	10
6"	HAR80626	21
8"	HAR80826	35
10"	HAR81026	56
12"	HAR81226	77

REDUCER (Bell x Bell)



SIZE	PART NUMBER	WT (lbs)
2" x 1½"	HAR80130BB	13
2½" x 1½"	HAR80232BB	19
2½" x 2"	HAR80230BB	16
3" x 2"	HAR80332BB	17
3" x 2½"	HAR80330BB	17
4" x 2"	HAR80434BB	21
4" x 2½"	HAR80432BB	22
4" x 3"	HAR80430BB	23
6" x 2"	HAR80638BB	43
6" x 2½"	HAR80636BB	44
6" x 3"	HAR80634BB	38
6" x 4"	HAR80630	40
8" x 2½"	HAR80838BB	60
8" x 3"	HAR80836BB	61
8" x 4"	HAR80834BB	55
8" x 6"	HAR80830	58
10" x 6"	HAR81032BB	106
10" x 8"	HAR81030BB	107
12" x 6"	HAR81234BB	130
12" x 8"	HAR81232BB	134
12" x 10"	HAR81230BB	143

HARCO DUCTILE IRON FITTINGS

TEE (B x B x B)



SIZE	PART NUMBER	WT (lbs)
1½"	HAR8000000	6
2" x 2" x 1½"	HAR8010100	12
2"	HAR8010101	8
2" x 2" x 2½"	HAR8010102	9
2" x 2" x 3"	HAR8010103	10
2½" x 2½" x 1½"	HAR8020200	11
2½" x 2½" x 2"	HAR8020201	9
2½"	HAR8020202	10
2½" x 2½" x 3"	HAR80020203	12
2½" x 2½" x 4"	HAR8020204	40
3" x 2" x 2"	HAR8030101	13
3" x 3" x 1½"	HAR8030300	14
3" x 3" x 2"	HAR8030301	12
3" x 3" x 2½"	HAR8030302	12
3"	HAR8030303	14
3" x 3" x 4"	HAR8030304	42
3" x 3" x 6"	HAR8030606	66
4" x 4" x 1½"	HAR8040400	16
4" x 4" x 2"	HAR8040401	16
4" x 4" x 2½"	HAR8040402	17
4" x 4" x 3"	HAR8040403	18
4"	HAR8040404	21
4" x 4" x 6"	HAR8040406	70
4" x 4" x 8"	HAR8040408	86
6" x 3" x 3"	HAR8060303	44
6" x 4" x 4"	HAR8060404	48
6" x 6" x 1½"	HAR8060600	18
6" x 6" x 2"	HAR8060601	25
6" x 6" x 2½"	HAR8060602	26
6" x 6" x 3"	HAR8060603	28
6" x 6" x 4"	HAR8060604	31
6"	HAR8060606	37
6" x 6" x 8"	HAR8060608	88
6" x 6" x 10"	HAR8060610	164
Tees may come assembled from multiple components.		

TEE (continued) (B x B x B)



SIZE	PART NUMBER	WT (lbs)
8" x 4" x 4"	HAR8080404	67
8" x 6" x 6"	HAR8080606	76
8" x 8" x 2"	HAR8080801	36
8" x 8" x 2½"	HAR8080802	36
8" x 8" x 3"	HAR8080803	39
8" x 8" x 4"	HAR8080803	44
8" x 8" x 6"	HAR8080803	51
8"	HAR8080803	61
8" x 8" x 10"	HAR8080810	205
8" x 8" x 12"	HAR8080812	265
10" x 6" x 6"	HAR8100606	127
10" x 8" x 8"	HAR8100808	138
10" x 10" x 2"	HAR8101001	70
10" x 10" x 2½"	HAR8101002	79
10" x 10" x 3"	HAR8101003	80
10" x 10" x 4"	HAR8101004	70
10" x 10" x 6"	HAR8101006	79
10" x 10" x 8"	HAR8101008	89
10"	HAR8101010	109
10" x 10" x 12"	HAR8101012	286
12" x 10" x 10"	HAR8121010	285
12" x 12" x 2"	HAR8121201	89
12" x 12" x 2½"	HAR8121202	90
12" x 12" x 3"	HAR8121203	133
12" x 12" x 4"	HAR8121204	116
12" x 12" x 6"	HAR8121206	100
12" x 12" x 8"	HAR8121208	112
12" x 12" x 10"	HAR8121210	214
12"	HAR8121212	147
Tees may come assembled from multiple components.		

1½" - 12" Bells and spigots are IPS size.
Most fittings are also available in
14" - 18" DIPS for C905 PVC Pipe or
Ductile Iron Pipe. Call for sizes not listed.

HARCO Ductile Iron Fittings can be used on
HDPE pipe with the use of internal stiffeners
in the pipe ends.

HARCO DUCTILE IRON FITTINGS

S.E.B. REDUCER (Spigot x Bell)



SIZE	PART NUMBER	WT (lbs)
2" x 1½"	HAR80130	9
2½" x 1½"	HAR80232	11
2½" x 2"	HAR80230	6
3" x 2"	HAR80332	7
3" x 2½"	HAR80330	8
4" x 2"	HAR80434	9
4" x 2½"	HAR80432	9
4" x 3"	HAR80430	10
6" x 2"	HAR80638	19
6" x 2½"	HAR80636	20
6" x 3"	HAR80634	14
6" x 4"	HAR80632	16
8" x 2½"	HAR80838	26
8" x 3"	HAR80836	27
8" x 4"	HAR80834	21
8" x 6"	HAR80832	25
10" x 3"	HAR81036	31
10" x 4"	HAR81034	57
10" x 6"	HAR81032	42
10" x 8"	HAR81030	43
12" x 4"	HAR81236	67
12" x 6"	HAR81234	52
12" x 8"	HAR81232	55
12" x 10"	HAR81230	69

(2) links and (2) wedges for each spigot side of reducer are included.

CROSS (Bell x Bell x Bell x Bell)



SIZE	PART NUMBER	WT (lbs)
3" x 3" x 2" x 2"	HAR803150404	21
3" x 3" x 2½" x 2½"	HAR802150505	24
4" x 4" x 2" x 2"	HAR804150404	26
4" x 4" x 2½" x 2½"	HAR804150505	28
4" x 4" x 3" x 3"	HAR804150606	30
6" x 6" x 2" x 2"	HAR806150404	40
6" x 6" x 2½" x 2½"	HAR806150505	41
6" x 6" x 3" x 3"	HAR806150606	44
8" x 8" x 2½" x 2½"	HAR808150505	54
8" x 8" x 3" x 3"	HAR808150606	57

Any combination of outlets available

L.E.B. REDUCER (Bell x Spigot)



SIZE	PART NUMBER	WT (lbs)
4" x 3"	HAR80431	10

MALE ADAPTER (Bell x MPT)



SIZE	PART NUMBER	WT (lbs)
1½" x 1½"	HAR80070	3
2" x 1½"	HAR80172	3
2" x 2"	HAR80170	4
2½" x 2"	HAR80272	3
2½" x 2½"	HAR80270	5
3" x 2½"	HAR80372	5
3" x 3"	HAR80370	6
4" x 4"	HAR80470	8

ACME ADAPTER

(Male NPT x Female ACME)



SIZE	PART NUMBER	WT (lbs)
2" x 1"	HAR872-204	3
2" x 1¼"	HAR872-205	3
2" x 1½"	HAR872-206	2

CROSSOVER RING

(Links Sold Separately)



SIZE	PART NUMBER	WT (lbs)
3"	HAR82103	3
4"	HAR82104	4
6"	HAR82106	8

Designed to rotate "lug" axis 90°.

LINKS



SIZE	PART NUMBER	WT (lbs)
1½" - 8"	HAR82000	1
10" - 12"	HAR82003	4
10"-12" Transition *	HAR82004	1

Links are included with fittings as noted.

* Used to assemble old style lug to new thicker lug.

HARCO DUCTILE IRON FITTINGS

TAPPED SERVICE TEE (Female NPT Outlet)



SIZE	PART NUMBER	WT (lbs)
1½" x 1"	HAR800502	8
1½" x 1½"	HAR800503	8
2" x 1"	HAR801502	7
2" x 1¼"	HAR8015025	6
2" x 1½"	HAR801503	6
2" x 2"	HAR801504	30
2½" x 1"	HAR802502	7
2½" x 1¼"	HAR8025025	7
2½" x 1½"	HAR802503	7
2½" x 2"	HAR802504	9
2½" x 2½"	HAR802505	15
3" x 1"	HAR803502	10
3" x 1¼"	HAR8035025	11
3" x 1½"	HAR803503	10
3" x 2"	HAR803504	9
3" x 2½"	HAR803505	11
3" x 3"	HAR803506	20
4" x 1"	HAR804502	14
4" x 1¼"	HAR8045025	14
4" x 1½"	HAR804503	13
4" x 2"	HAR804504	13
4" x 2½"	HAR804505	16
4" x 3"	HAR804506	16
6" x 1"	HAR806502	16
6" x 1¼"	HAR8065025	16
6" x 1½"	HAR806503	15
6" x 2"	HAR806504	16
6" x 2½"	HAR806505	22
6" x 3"	HAR806506	21
8" x 1"	HAR808502	32
8" x 1¼"	HAR8085025	32
8" x 1½"	HAR808503	32
8" x 2"	HAR808504	31
8" x 2½"	HAR808505	31
8" x 3"	HAR808506	30
10" x 1"	HAR810502	66
10" x 1¼"	HAR8105025	66
10" x 1½"	HAR810503	67
10" x 2"	HAR810504	66
10" x 2½"	HAR810505	66

TAPPED SERVICE TEE (Continued)



SIZE	PART NUMBER	WT (lbs)
10" x 3"	HAR810506	66
12" x 1"	HAR812502	84
12" x 1¼"	HAR8125025	84
12" x 1½"	HAR812503	85
12" x 2"	HAR812504	84
12" x 2½"	HAR812505	84
12" x 3"	HAR812506	84

Some Tapped Tees assembled from sub-components with threaded bushings for smaller threads sizes.

ACME SERVICE TEE (Fem. ACME)



SIZE	PART NUMBER	WT (lbs)
2" x 1½"	HAR8015303	6
2½" x 1½"	HAR8025303	7
3" x 1½"	HAR8035303	11
4" x 1½"	HAR8045303	13
6" x 1½"	HAR8065303	19
8" x 1½"	HAR8085303	33

SIDE OUTLET TAPPED CAP (FPT / FACME)



SIZE	PART NUMBER	WT (lbs)
2" x 1½" FNPT	HAR80168	12
2" x 1½" ACME	HAR801683	12
2½" x 1½" FNPT	HAR80268	6
2½" x 1½" ACME	HAR802683	6

HARCO DUCTILE IRON FITTINGS

PLUG

(Solid x Spigot)



SIZE	PART NUMBER	WT (lbs)
2"	HAR80155	5
2½"	HAR80255	6
3"	HAR80355	6
4"	HAR80455	12
6"	HAR80655	17
8"	HAR80855	20
10"	HAR81055	37
12"	HAR81255	51

(2) links and (2) wedges for each Plug are included.

CAP

(Solid x Bell)



SIZE	PART NUMBER	WT (lbs)
1½"	HAR80066	4
2"	HAR80166	8
2½"	HAR80266	4
3"	HAR80366	17
4"	HAR80466	25
6"	HAR80666	40
8"	HAR80866	55
10"	HAR81066	97
12"	HAR81266	127

Some Caps assembled from subcomponents.

TAPPED PLUG

(Spigot x FPT)



SIZE	PART NUMBER	WT (lbs)
2½" x 1"	HAR8025602	6
2½" x 1½"	HAR8025603	6
2½" x 2"	HAR8025604	6
3" x 1"	HAR8035602	6
3" x 1½"	HAR8035603	6
3" x 2"	HAR8035604	6
3" x 2½"	HAR8035605	6
4" x 1½"	HAR8045603	12
4" x 2"	HAR8045604	12
4" x 2½"	HAR8045605	12
4" x 3"	HAR8045606	12
6" x 1½"	HAR8065603	16
6" x 2"	HAR8065604	16
8" x 1½"	HAR8085603	20
8" x 2"	HAR8085604	20
10" x 1½"	HAR8105603	37
10" x 2"	HAR8105604	36
12" x 1½"	HAR8125603	51
12" x 2"	HAR8125604	51

(2) links and (2) wedges for each Tapped Plug are included.

TAPPED CAP

(Bell x FPT)



SIZE	PART NUMBER	WT (lbs)
2½" x 1"	HAR8026702	6
2½" x 1½"	HAR8026703	6
2½" x 2"	HAR8026704	6
3" x 1"	HAR8036702	6
3" x 1½"	HAR8036703	6
3" x 2"	HAR8036704	6
3" x 2½"	HAR8036705	6
4" x 1½"	HAR8046703	12
4" x 2"	HAR8046704	12
4" x 2½"	HAR8046705	12
4" x 3"	HAR8046706	12
6" x 1½"	HAR8066703	16
6" x 2"	HAR8066704	16
8" x 1½"	HAR8086703	20
8" x 2"	HAR8086704	20
10" x 1½"	HAR8106703	37
10" x 2"	HAR8106704	36
12" x 1½"	HAR8126703	51
12" x 2"	HAR8126704	51

Call for tap sizes not listed.

POLYETHYLENE ENCASEMENT

(For Use in Corrosive Soils)

Supplied in rolls in tubular form, 8 mils thick. Use 20" for fittings up to 8", 30" for fittings 10" to 14" and 37" for fittings 16" to 20". Complies with AWWA C105.

SIZE	PART NUMBER	WT (lbs)
20" x 400'	HAR82320	34
30" x 200'	HAR82330	28
37" x 200'	HAR82337	35
2" x 100' Tape	HAR823PT	1

HARCO DUCTILE IRON FITTINGS

FLANGE x BELL ADAPTER



SIZE	PART NUMBER	WT (lbs)
3" x 3"	HAR80360FB	22
3" x 4"	HAR80360-04	35
4" x 4"	HAR80460FB	29
4" x 6"	HAR80460-06	57
6" x 6"	HAR80660FB	47
6" x 8"	HAR80660-08	93
8" x 8"	HAR80860FB	67
8" x 10"	HAR80860-10	141
10" x 8"	HAR81060-08	99
10" x 10"	HAR81060FB	56
10" x 12"	HAR81060-12	216
12" x 10"	HAR81260-10	145
12" x 12"	HAR81260FB	76

SPIGOT X FLANGE ADAPTER



SIZE	PART NUMBER	WT (lbs)
3"	HAR80360	13
4"	HAR80460	17
6"	HAR80660	24
8"	HAR80860	33
10"	HAR81060	71
12"	HAR81260	94

(2) links and (2) wedges for each Spigot x Flange Adapter are included.

FLANGE OUTLET TEE (Bell x Bell X Flange)



SIZE	PART NUMBER	WT (lbs)
3" x 3"	HAR80300F	27
4" x 4"	HAR80400F	39
6" x 4"	HAR80601F	49
6" x 6"	HAR80600F	62
8" x 6"	HAR80801F	76
8" x 8"	HAR80800F	94
10" x 6"	HAR81002F	111
10" x 8"	HAR81001F	130
10" x 10"	HAR81000F	180
12" x 6"	HAR81203F	128
12" x 8"	HAR81202F	145
12" x 12"	HAR81200F	240

FLANGE ACCESSORIES (For Class 125 & 150)



SIZE	PART NUMBER	WT (lbs)
3"	HAR856031	2
4"	HAR856041	4
6"	HAR856061	6
8"	HAR856081	6
10"	HAR856101	13
12"	HAR856121	14

Each kit includes 1/8" red rubber full-face gasket and zinc plated bolts and nuts

REPLACEMENT GASKETS



SIZE	PART NUMBER	WT (lbs)
1½"	HAR851015	0.1
2"	HAR85102	0.1
2½"	HAR851025	0.1
3"	HAR85103	0.1
4"	HAR85504	0.2
6"	HAR85506	0.4
8"	HAR85508	0.7
10"	HAR85510	1.3
12"	HAR85512	2

HDPE PIPE STIFFENERS



SIZE	HDPE DR	PART NUMBER
2"	11	HAR65-90481102
	13.5	HAR65-90481302
3"	11	HAR65-90481103
	13.5	HAR65-90481303
4"	11	HAR65-90481104
	13.5	HAR65-90481304
6"	11	HAR65-90481106
	13.5	HAR65-90481306
8"	11	HAR65-90481108
	13.5	HAR65-90481308
10"	11	HAR65-90481110
	13.5	HAR65-90481310
12"	11	HAR65-90481112
	13.5	HAR65-90481312

Always use Stiffeners when using Ductile Iron Fittings on HDPE pipe.

HARCO DUCTILE IRON SADDLES

SADDLE - SINGLE STRAP (Female NPT)



SIZE	PART NUMBER	WT (lbs)
3" x 1"	HAR803802	5
3" x 1½"	HAR803803	5
3" x 2"	HAR803804	4
3" x 2½"	HAR803805	4
4" x 1"	HAR804802	5
4" x 1½"	HAR804803	5
4" x 2"	HAR804804	5
4" x 2½"	HAR804805	4
6" x 1"	HAR806802	6
6" x 1½"	HAR806803	6
6" x 2"	HAR806804	5
6" x 2½"	HAR806805	5
8" x 1"	HAR808802	7
8" x 1½"	HAR808803	7
8" x 2"	HAR808804	6
8" x 2½"	HAR808805	6
10" x 1½"	HAR810803	8
10" x 2"	HAR810804	6
10" x 2½"	HAR810805	6
12" x 1½"	HAR812803	8
12" x 2"	HAR812804	7
12" x 2½"	HAR812805	7

*1" and 1½" taps produced by using 2" taps with ductile iron bushings.
Bolt torque: 40-50 ft-lbs.*

SADDLE - DOUBLE STRAP (Female NPT)



SIZE	PART NUMBER	WT (lbs)
2" x 1"	HAR80180H2	5
2½" x 1"	HAR80280H2	5
3" x 2"	HAR80380H4	6
4" x 2"	HAR80480H4	6
6" x 2"	HAR80680H4	16
8" x 2"	HAR80880H4	20
10" x 2"	HAR81080H4	36
12" x 2"	HAR81280H4	51

Bolt torque: 40-50 ft-lbs.

SADDLE - SINGLE STRAP (2" Gasketed Bell Outlet)



SIZE	PART NUMBER	WT (lbs)
3"	HAR80382	7
4"	HAR80482	5
6"	HAR80682	6
8"	HAR80882	6
10"	HAR81082	7
12"	HAR81282	8

Do not use Single Strap Saddles on HDPE pipe. Bolt torque: 40-50 ft-lbs.

HARCO Double Strap Saddles can be used on HDPE pipe, but it is recommended to use Electrofusion HDPE Saddles when possible.

*2" - 12" saddles are IPS size.
Some saddles are also available in 14" - 18" DIPS for C905 PVC Pipe or Ductile Iron Pipe. Call for sizes not listed.*

Quick & Easy Lateral Connections

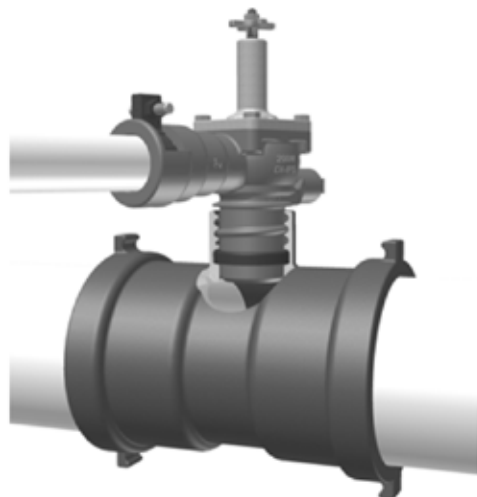
HARCO ductile iron Laterals, Tees, Saddles and Lateral Valves equipped with the Swivel Joint make for quick and problem-free connections that are easy to seal and orient, unlike conventional NPT pipe joints.

No Teflon & True 360° Orientation

Simply lube the gasket and spigot with ordinary pipe lube, thread the connection home, then rotate the joint back to the desired direction. No risk or strain of over-tightening a joint or risk of losing the seal.

Universal Branch Connection

Swivel Tees and Saddles are provided with a universal branch design serving all sizes of laterals. The joint is based on the proven 2½" joint used in HARCO ductile iron fittings. The flow way is maximized and transitions are tapered for smooth flow through the joint.



SWIVEL TEE



SIZE	PART NUMBER	WT (lbs)
2"	HAR8015405	23
2½"	HAR8025405	10
3"	HAR8035405	12
4"	HAR8045405	16
6"	HAR8065405	26
8"	HAR8085405	35
10"	HAR8105405	62
12"	HAR8125405	79

SADDLE - SINGLE STRAP

(Swivel Outlet)



SIZE	PART NUMBER	WT (lbs)
3"	HAR80381	7
4"	HAR80481	6
6"	HAR80681	7
8"	HAR80881	7
10"	HAR81081	8
12"	HAR81281	9

Do not use Single Strap Saddles on HDPE pipe. Bolt torque: 40-50 ft-lbs.

SWIVEL EXTENSION

(Male Swivel x Female Swivel)



RISE	PART NUMBER	WT (lbs)
6"	HAR87106	6
12"	HAR87112	11

SADDLE - DOUBLE STRAP

(Swivel Outlet)



SIZE	PART NUMBER	WT (lbs)
3"	HAR80381H	11
4"	HAR80481H	14
6"	HAR80681H	14
8"	HAR80881H	16
10"	HAR81081H	18
12"	HAR81281H	20

Bolt torque: 40-50 ft-lbs.

2" SWING ARM KIT



SIZE	PART NUMBER	WT (lbs)
2"	HAR881-0101K	14

HARCO's standard Swivel System utilizes one unique size for the female and male swivel joint connection. All swivel male parts, regardless of size, fit all female swivel outlets of Swivel Tees and Swivel Saddles.

HARCO LATERAL CONNECTIONS

LATERAL 90° (Male NPT Outlet x Male Swivel)



SIZE x RISE	WT (lbs)	No Side Outlet	w/1" Side Outlet	w/1" Plugged Outlet
		PART NUMBER	PART NUMBER	PART NUMBER
1" x 6"	4	HAR80B86	HAR80B862	HAR80B862P
1½" x 6"	4	HAR80086	HAR800862	HAR800862P
2" x 6"	5	HAR80186	HAR801862	HAR801862P
2" x 12"	7	HAR8018612	HAR80186122	HAR80186122P
2½" x 6"	5	HAR80286	HAR802862	HAR802862P
3" x 7"	6	HAR80386	HAR803862	HAR803862P

LATERAL 90° (Male NPT Outlet x Male NPT)



SIZE	WT (lbs)	No Side Outlet	w/1" Side Outlet	w/1" Plugged Outlet
		PART NUMBER	PART NUMBER	PART NUMBER
1½"	5	HAR80088	HAR800882	HAR800882P
2"	7	HAR80188	HAR801882	HAR801882P
2½"	8	HAR80288	HAR802882	HAR802882P
3"	9	HAR80388	HAR803882	HAR803882P

LATERAL 90° (Spigot Outlet x Male Swivel)



SIZE x RISE	WT (lbs)	No Side Outlet	w/1" Side Outlet	w/1" Plugged Outlet
		PART NUMBER	PART NUMBER	PART NUMBER
2" x 6"	6	HAR8018506	HAR80185062	HAR80185062P
2½" x 6"	7	HAR8028506	HAR80285062	HAR80285062P
3" x 7"	8	HAR8038507	HAR80385072	HAR80385072P

LATERAL NIPPLE (Male NPT Outlet x Male Swivel)



SIZE x RISE	WT (lbs)	No Side Outlet	w/1" Side Outlet	w/1" Plugged Outlet
		PART NUMBER	PART NUMBER	PART NUMBER
2" x 8"	4	HAR8720808	HAR87208082	HAR87208082P
2" x 12"	6	HAR8721208	HAR87212082	HAR87212082P
2" x 14"	6	HAR8721408	HAR87214082	HAR87214082P
2" x 18"	8	HAR8721808	HAR87218082	HAR87218082P
2½" x 8"	4	HAR8720810	HAR87208102	HAR87208102P
3" x 10"	5	HAR8721012	HAR87210122	HAR87210122P

LATERAL NIPPLE (Spigot Outlet x Male Swivel)



SIZE x RISE	WT (lbs)	No Side Outlet	w/1" Side Outlet	w/1" Plugged Outlet
		PART NUMBER	PART NUMBER	PART NUMBER
2" x 10"	4	HAR8731008	HAR87310082	HAR87310082P
2" x 12"	5	HAR8731208	HAR87312082	HAR87312082P
2" x 18"	5	HAR8731808	HAR87318082	HAR87318082P

HARCO LATERAL CONNECTIONS

SPIGOT x MALE NPT ADAPTER



SIZE	PART NUMBER	WT (lbs)
1½" x 6"	HAR8740606	3
2" x 4"	HAR8740408	2
2" x 6"	HAR8740608	3
2" x 8"	HAR8740808	5
2" x 10"	HAR8741008	6
2" x 12"	HAR8741208	7
2½" x 6"	HAR8740610	4
3" x 6"	HAR8740612	5

Part has groove on the spigot end for restraint to HARCO Bell with a Knuckle Restraint. Knuckles sold separately.

ADAPTER

(Female Swivel x MPT Thread)



SIZE	PART NUMBER	WT (lbs)
2"	HAR873-008	3

ADAPTER

(Female NPT x Male Swivel)



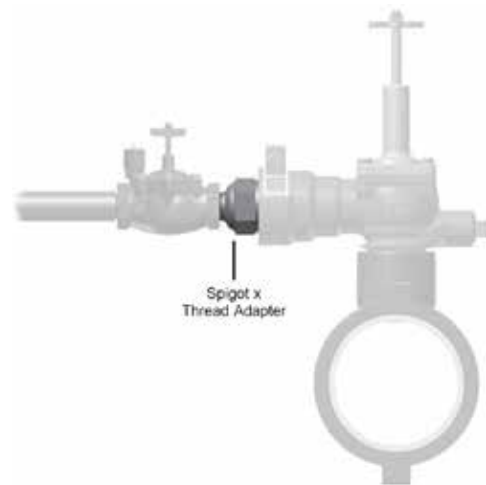
SIZE	PART NUMBER	WT (lbs)
1½"	HAR875-025-06	6
2"	HAR875-025-08	5
2½"	HAR875-025-10	5
3"	HAR875-025-12	4

SPIGOT x MALE NPT ADAPTER, COMPACT



SIZE	PART NUMBER	WT (lbs)
2" x 1"	HAR874030804	3
2" x 1¼"	HAR874030805	3
2" x 1½"	HAR874030806	3
2" x 2"	HAR874030808	3
2" x 2½"	HAR874030810	3

Part has groove on the spigot end for restraint to HARCO Bell with a Knuckle Restraint. Knuckles sold separately.



HARCO DUCTILE IRON THREADED FITTINGS

TEE



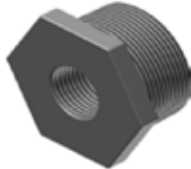
SIZE	PART NUMBER
1½"	HAR88115
2"	HAR88120
2½"	HAR88125
3"	HAR88130

UNION



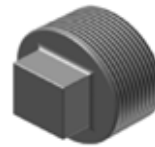
SIZE	PART NUMBER
1½"	HAR88615
2"	HAR88620
2½"	HAR88625
3"	HAR88630

BUSHING



SIZE	PART NUMBER
1¼" x 1"	HAR8851210
1½" x 1"	HAR8851510
1½" x 1¼"	HAR8851512
2" x 1"	HAR8852010
2" x 1¼"	HAR8852012
2" x 2½"	HAR8852015
2½" x 1½"	HAR8852515
2½" x 2"	HAR8852520
3" x 2"	HAR8853020
3" x 2½"	HAR8853025

PLUG



SIZE	PART NUMBER
1½"	HAR88103
2"	HAR88104
2½"	HAR88105
3"	HAR88106

NIPPLE



SIZE	PART NUMBER
1½" x 2"	HAR87015-20
1½" x 3"	HAR87015-02
1½" x 4"	HAR87015-04
1½" x 6"	HAR87015-06
1½" x 8"	HAR87015-08
1½" x 12"	HAR87015-12
1½" x 18"	HAR87015-18
2" x 3"	HAR87020-03
2" x 4"	HAR87020-04
2" x 6"	HAR87020-06
2" x 8"	HAR87020-08
2" x 12"	HAR87020-12
2" x 18"	HAR87020-18
2" x 24"	HAR87020-24
2" x 36"	HAR87020-36
2½" x 4"	HAR87025-04
2½" x 6"	HAR87025-06
2½" x 8"	HAR87025-08
2½" x 12"	HAR87025-12
2½" x 18"	HAR87025-18
3" x 3"	HAR87030-03
3" x 4"	HAR87030-04
3" x 6"	HAR87030-06
3" x 8"	HAR87030-00
3" x 12"	HAR87030-12
3" x 18"	HAR87030-18

CAP



SIZE	PART NUMBER
1½"	HAR88403
2"	HAR88404
2½"	HAR88405
3"	HAR88406

COUPLING



SIZE	PART NUMBER
1½"	HAR88015
2"	HAR88020
2½"	HAR88025
3"	HAR88030

90° BEND



SIZE	PART NUMBER
1½"	HAR88215
2"	HAR88220
2½"	HAR88225
3"	HAR88230

45° BEND



SIZE	PART NUMBER
1½"	HAR88315
2"	HAR88320
2½"	HAR88325
3"	HAR88330

Many other lengths of each size are available.

HARCO JOINT RESTRAINTS



KNUCKLE RESTRAINT

SIZE	PART NUMBER	WT (lbs)
1½"	HAR60-100-01	2
2"	HAR60-100-02	3
2½"	HAR60-100-25	3
3"	HAR60-100-30	3
4"	HAR60-100-40	6
<i>Knuckle bolt torque: 35 ft-lbs.</i>		

FITTING TO PIPE RESTRAINT

(Clamshell Restraint)



SIZE	PART NUMBER	WT (lbs)
4"	HAR820411	11
6"	HAR820611	12
8"	HAR820811	16
10"	HAR821011	29
12"	HAR821211	38
<i>Set includes (2) clamp halves and (4) clamp bolts with nuts.</i>		

FITTING TO PIPE RESTRAINT



SIZE	PART NUMBER	WT (lbs)
2"	HAR820110	4
2½"	HAR820210	4
3"	HAR820310	5
4"	HAR820410	8
6"	HAR820610	10
8"	HAR820810	15
<i>Set includes (1) clamp and bolt set and (2) eye bolts with nuts.</i>		

QUICK COUPLER ANCHOR



SIZE	PART NUMBER	WT (lbs)
¾" or 1"	HAR82201	2
1½"	HAR82202	2

PIPE TO PIPE RESTRAINT (Style A)



SIZE	PART NUMBER	WT (lbs)
2"	HAR820115	7
2½"	HAR820215	7
3"	HAR821315	10
4"	HAR821415	14
6"	HAR820615	18
8"	HAR821815	26
10"	HAR821015	47
12"	HAR821215	52
<i>Set includes (2) clamp and bolt sets and (2) restraint rods with nuts.</i>		

PIPE TO PIPE RESTRAINT (Style B)



SIZE	PART NUMBER	WT (lbs)
3"	HAR820316	8
4"	HAR820416	12
6"	HAR820616	16
8"	HAR820816	34
<i>Set includes (1) clamp and bolt set, (1) backup ring and (2) T-bolts with nuts.</i>		

MECHANICAL JOINT BELL RESTRAINT



SIZE	PART NUMBER	WT (lbs)
3"	HAR820335	5
4"	HAR820435	7
6"	HAR820635	9
8"	HAR820835	13
10"	HAR821035	22
12"	HAR821235	25
<i>Set includes (1) clamp and bolt sets and restraint rods with nuts as required.</i>		

*Grip Ring bolt torque: 100 ft-lbs.
Knock Restraint bolt torque: 35 ft-lbs.*

HARCO JOINT RESTRAINTS

FITTING TO VALVE RESTRAINT



SIZE	PART NUMBER	WT (lbs)
3"	HAR820320	5
4"	HAR820420	7
6"	HAR820620	8
8"	HAR820820	11

Set includes (1) backup ring and (2) eye bolts with nuts.

VALVE TO PIPE RESTRAINT (Style A)



SIZE	PART NUMBER	WT (lbs)
3"	HAR820325	10
4"	HAR820425	14
6"	HAR820625	18
8"	HAR820825	26

Set includes (2) clamp and bolt sets, (2) backup rings and (4) T-bolts with nuts.

FITTING TO VALVE RESTRAINT (Style B)



SIZE	PART NUMBER	WT (lbs)
3"	HAR820321	8
4"	HAR820421	10
6"	HAR820621	14
8"	HAR820821	22

Set includes (2) backup rings, (1) clamp and bolt set, (2) eye bolts with nuts, and (2) T-bolts with nuts.

VALVE TO PIPE RESTRAINT (Style B)



SIZE	PART NUMBER	WT (lbs)
2"	HAR820125	7
2½"	HAR820225	7
3"	HAR820326	13
4"	HAR820426	17
6"	HAR820626	22
8"	HAR820826	33
10"	HAR821025	47
12"	HAR821225	52

Set includes (2) clamp and bolt sets and restraint rods with nuts.

FITTING TO VALVE RESTRAINT (Style A)



SIZE	PART NUMBER	WT (lbs)
2"	HAR820121	6
2½"	HAR820221	6
3"	HAR820322	8
4"	HAR820422	10
6"	HAR820622	14
8"	HAR820822	22
10"	HAR821021	50
12"	HAR821221	60

Set includes (1) clamp and bolt set and restraint rods with nuts.

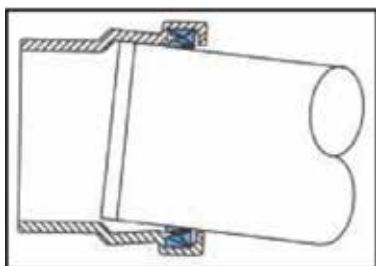
Grip Ring bolt torque: 100 ft-lbs.

PVC PIPE SPIGOTS FOR VALVE RESTRAINTS (Factory Beveled, SDR21)



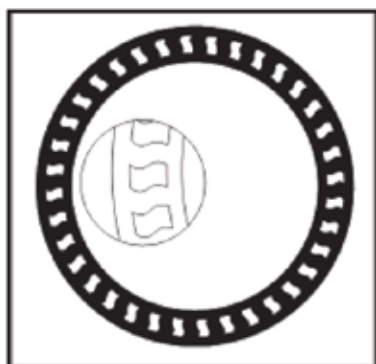
SIZE	PART NUMBER	WT (lbs)
2"	HAR821123	1
2½"	HAR820223	1
3"	HAR820323	1
4"	HAR820423	2
6"	HAR820623	5
8"	HAR820823	8
10"	HAR821023	12
12"	HAR821223	16

Length is compatible with valves and HARCO valve restraints



Slant Bell Design

The unique deep "slant" bell design allows the pipe to deflect within the bell end of the fittings up to 5 degrees in all directions, relieving stress on the pipe that might be snaked through a trench (up, down and sideways). This unique feature also makes installation easier. Trenches do not have to be cut precisely. Leemco fittings allow +/- 5 degrees on each end. That means a 45 degree bend fits within a trench cut of 35 to 55 degrees.



Superior Gasket Design

All Leemco gaskets are made of high quality EPDM rubber and have the unique ribbed "U-Cup" gasket design. Ribbed segments assure compression of the gasket against the side walls to seal under low pressures. With higher pressures, U-Cup gasket spreads inwardly and outwardly to seal and grab surfaces on both sides. Results are that the gasket takes care of sealing and assisting to restrain the pipe from coming off the fitting under any pressures. The gasket design makes inserting pipe into a Leemco fitting effortless.

Easy Installation

Compared to conventional mechanical joint fittings, Leemco deep bell push-on fittings will save the installer valuable time and labor. There are no accessory packs with multiple parts needed with Leemco fittings due to our deep bell push-on design.



LEEMCO Fittings Mechanically Link Together

Leemco fittings mechanically attach to one another with SB-LK links that are supplied and attached to the purchased fitting. As an example, all SBR's and plugs are supplied with SB-LK links that attach to a fitting. There is no need to order separate links or wooden wedges.

LEEMCO Fittings Have Four Lugs

Four lugs on fittings enable Leemco joint restraints to be attached conveniently for different applications. Vertically located lugs are ideal for Leemco LH-Series joint restraints. Horizontal lugs are convenient for SBR's and plugs.



Durable Epoxy Coating

Fused epoxy coating is applied to the inside and outside of the fitting which helps protect against high corrosive soil conditions and acidic water created by today's chemical injector and sulfur burner systems.

LEEMCO DUCTILE IRON FITTINGS

90° BEND (1/4 Bend)



SIZE	PART NUMBER	WT (lbs)
1½"	SB-1590B	4
2"	SB-190B	5
2½"	SB-290B	8
3"	SB-390B	10
4"	SB-490B	22
6"	SB-690B	35
8"	SB-890B	62
10"	SB-1090B	97
12"	SB-1290B	137

45° BEND (1/8 Bend)



SIZE	PART NUMBER	WT (lbs)
1½"	SB-1545B	4
2"	SB-145B	5
2½"	SB-245B	6
3"	SB-345B	9
4"	SB-445B	19
6"	SB-645B	34
8"	SB-845B	50
10"	SB-1045B	75
12"	SB-1245B	103

22° BEND (1/16 Bend)



SIZE	PART NUMBER	WT (lbs)
2½"	SB-222B	7
3"	SB-322B	10
4"	SB-422B	15
6"	SB-622B	27
8"	SB-822B	42
10"	SB-1022B	77
12"	SB-1222B	102

11° BEND (1/32 Bend)



SIZE	PART NUMBER	WT (lbs)
6"	SB-611B	25
8"	SB-811B	35
10"	SB-1011B	71
12"	SB-1211B	87

REPAIR COUPLING (No Pipe Stop)



SIZE	PART NUMBER	WT (lbs)
3"	SB-300RC	10
4"	SB-400RC	14
6"	SB-600RC	26
8"	SB-800RC	46
10"	SB-1000RC	86
12"	SB-1200RC	110

BELL x BELL REDUCER



SIZE	PART NUMBER	WT (lbs)
2" x 1½"	SB-115R	9
2½" x 2"	SB-21R	11
3" x 2"	SB-31R	16
3" x 2½"	SB-32R	17
4" x 2"	SB-41R	30
4" x 2½"	SB-42R	31
4" x 3"	SB-43R	33
6" x 2"	SB-61R	45
6" x 2½"	SB-62R	45
6" x 3"	SB-63R	42
6" x 4"	SB-64R	46
8" x 3"	SB-83R	73
8" x 4"	SB-84R	72
8" x 6"	SB-86R	73
10" x 3"	SB-103R	105
10" x 4"	SB-104R	105
10" x 6"	SB-106R	110
10" x 8"	SB-108R	111
12" x 3"	SB-123R	151
12" x 4"	SB-124R	156
12" x 6"	SB-126R	149
12" x 8"	SB-128R	163
12" x 10"	SB-1210R	164

Links are included and attached to fitting.

1½" - 12" Bells and spigots are IPS size.

*Most fittings are also available in
14" - 18" DIPS for C905 PVC Pipe or
Ductile Iron Pipe. Call for sizes not listed.*

LEEMCO DUCTILE IRON FITTINGS

TEE (Bell x Bell x Bell)



SIZE	PART NUMBER	WT (lbs)
2" x 2" x 2"	SB-111T	9
2" x 2" x 1½"	SB-1115T	8
2" x 2" x 2½"	SB-112T	15
2" x 2" x 3"	SB-113T	10
2½" x 2½" x 1½"	SB-2215T	13
2½" x 2½" x 2"	SB-221T	13
2½" x 2½" x 2½"	SB-222T	11
2½" x 2½" x 3"	SB-223T	13
2½" x 2½" x 4"	SB-224T	16
3" x 2" x 2"	SB-311T	10
3" x 2½" x 2½"	SB-322T	25
3" x 3" x 1½"	SB-3315T	18
3" x 3" x 2"	SB-331T	19
3" x 3" x 2½"	SB-332T	19
3" x 3" x 3"	SB-333T	13
3" x 3" x 4"	SB-334T	18
3" x 3" x 6"	SB-336T	26
4" x 2" x 2"	SB-411T	26
4" x 2½" x 2½"	SB-422T	16
4" x 4" x 1½"	SB-4415T	23
4" x 4" x 2"	SB-441T	24
4" x 4" x 2½"	SB-442T	30
4" x 4" x 3"	SB-443T	22
4" x 4" x 4"	SB-444T	32
4" x 4" x 6"	SB-446T	32
4" x 4" x 8"	SB-448T	139
6" x 6" x 2"	SB-661T	30
6" x 6" x 2½"	SB-662T	32
6" x 6" x 3"	SB-663T	33
6" x 6" x 4"	SB-664T	40
6" x 6" x 6"	SB-666T	51
6" x 6" x 8"	SB-668T	140
8" x 8" x 2"	SB-881T	40
8" x 8" x 2½"	SB-882T	54
8" x 8" x 3"	SB-883T	47
8" x 8" x 4"	SB-884T	49
8" x 8" x 6"	SB-886T	71
8" x 8" x 8"	SB-888T	89
8" x 8" x 10"	SB-8810T	221

TEE (Continued)



SIZE	PART NUMBER	WT (lbs)
10" x 10" x 2"	SB-10101T	71
10" x 10" x 2½"	SB-10102T	74
10" x 10" x 3"	SB-10103T	75
10" x 10" x 4"	SB-10104T	77
10" x 10" x 6"	SB-10106T	109
10" x 10" x 8"	SB-10108T	110
10" x 10" x 10"	SB-101010T	132
10" x 10" x 12"	SB-101012T	300
12" x 12" x 2"	SB-12121T	104
12" x 12" x 2½"	SB-12122T	106
12" x 12" x 3"	SB-12123T	107
12" x 12" x 4"	SB-12124T	109
12" x 12" x 6"	SB-12126T	234
12" x 12" x 8"	SB-12128T	248
12" x 1"2 x 10"	SB-121210T	250
12" x 12" x 12"	SB-121212T	187

Some reducing tees are assembled with one-piece tees and reducers.

SWIVEL CROSS

(Bell x Bell x Bell x Bell)

SIZE	PART NUMBER	WT (lbs)
3" x 3" x 2" x 2"	SB-3311X	23
3" x 3" x 2½" x 2½"	SB-3322X	25
4" x 4" x 2" x 2"	SB-4411X	32
4" x 4" x 2½" x 2½"	SB-4422X	34
4" x 4" x 3" x 3"	SB-4433X	36
6" x 6" x 2" x 2"	SB-6611X	43
6" x 6" x 2½" x 2½"	SB-6622X	45
6" x 6" x 3" x 3"	SB-6633X	47
8" x 8" x 2½" x 2½"	SB-8822X	59
8" x 8" x 3" x 3"	SB-8833X	61
10" x 10" x 2" x 2"	SB-101011X	85
10" x 10" x 2½" x 2½"	SB-101022X	87
10" x 10" x 3" x 3"	SB-101033X	89
12" x 12" x 2" x 2"	SB-121211X	117
12" x 12" x 2½" x 2½"	SB-121222X	119
12" x 12" x 3" x 3"	SB-121233X	121

LEEMCO DUCTILE IRON FITTINGS

TAPPED SERVICE TEE (FPT Outlet)



SIZE	PART NUMBER	WT (lbs)
2" x 1"	SB-102ST	6
2" x 1¼"	SB-1025ST	6
2" x 1½"	SB-103ST	6
2" x 2"	SB-104ST	14
2½" x 1"	SB-202ST	8
2½" x 1¼"	SB-2025ST	8
2½" x 1½"	SB-203ST	8
2½" x 2"	SB-204ST	8
3" x 1"	SB-302ST	10
3" x 1¼"	SB-3025ST	10
3" x 1½"	SB-303ST	10
3" x 2"	SB-304ST	10
3" x 2½"	SB-305ST	10
4" x 1"	SB-402ST	22
4" x 1¼"	SB-4025ST	22
4" x 1½"	SB-403ST	22
4" x 2"	SB-404ST	22
4" x 2½"	SB-405ST	22
4" x 3"	SB-406ST	22
6" x 1"	SB-602ST	29
6" x 1¼"	SB-6025ST	29
6" x 1½"	SB-603ST	29
6" x 2"	SB-604ST	29
6" x 2½"	SB-605ST	29
6" x 3"	SB-606ST	29
8" x 1"	SB-802ST	47
8" x 1¼"	SB-8025ST	47
8" x 1½"	SB-803ST	47
8" x 2"	SB-804ST	47
8" x 2½"	SB-805ST	47
8" x 3"	SB-806ST	47
10" x 1"	SB-1002ST	68
10" x 1½"	SB-1003ST	68
10" x 2"	SB-1004ST	68
10" x 2½"	SB-1005ST	68
10" x 3"	SB-1006ST	68
12" x 1"	SB-1202ST	101
12" x 1½"	SB-1203ST	101
12" x 2"	SB-1204ST	101
1"2 x 2½"	SB-1205ST	101

SBR REDUCER (Spigot x Bell)



SIZE	PART NUMBER	WT (lbs)
2" x 1½"	SB-115SBR	4
2½" x 1½"	SB-215SBR	5
2½" x 2"	SB-21SBR	5
3" x 2"	SB-31SBR	7
3" x 2½"	SB-32SBR	8
4" x 2"	SB-41SBR	9
4" x 2½"	SB-42SBR	9
4" x 3"	SB-43SBR	11
6" x 2"	SB-61SBR	16
6" x 2½"	SB-62SBR	16
6" x 3"	SB-63SBR	13
6" x 4"	SB-64SBR	17
8" x 2"	SB-81SBR	22
8" x 2½"	SB-82SBR	25
8" x 3"	SB-83SBR	25
8" x 4"	SB-84SBR	24
8" x 6"	SB-86SBR	25
10" x 2"	SB-101SBR	37
10" x 2½"	SB-102SBR	38
10" x 3"	SB-103SBR	40
10" x 4"	SB-104SBR	40
10" x 6"	SB-106SBR	45
1"0 x 8"	SB-108SBR	46
12" x 2"	SB-121SBR	47
12" x 2½"	SB-122SBR	47
12" x 3"	SB-123SBR	49
12" x 4"	SB-124SBR	54
12" x 6"	SB-126SBR	47
12" x 8"	SB-128SBR	62
12" x 10"	SB-1210SBR	62

Links are included with SBR Reducers.

Most fittings are also available in
14" - 18" DIPS for C905 PVC Pipe or
Ductile Iron Pipe. Call for sizes not listed.

LEEMCO Ductile Iron Fittings can be used on
HDPE pipe with the use of internal stiffeners
in the pipe ends.

LEEMCO DUCTILE IRON FITTINGS

CAP



SIZE	PART NUMBER	WT (lbs)
2"	SB-1P	3
2½"	SB-2P	4
3"	SB-3P	8
4"	SB-4P	10
6"	SB-6P	13
8"	SB-8P	19
10"	SB-10P	33
12"	SB-12P	43

TAPPED CAP



SIZE	PART NUMBER	WT (lbs)
2"	SB-15P	2
2½"	SB-1P	3
3"	SB-2P	4
4"	SB-3P	8
6"	SB-4P	10
8"	SB-6P	13
10"	SB-8P	19
12"	SB-10P	33

MALE ADAPTER (Bell x MPT)



SIZE	PART NUMBER	WT (lbs)
2" x 2"	SB-14MA	3
2½" x 2"	SB-24MA	3
2½" x 2½"	SB-25MA	5
2½" x 3"	SB-26MA	6
3" x 2"	SB-34MA	5
3" x 3"	SB-36MA	7
4" x 3"	SB-46MA	10

HDPE PIPE STIFFENERS



SIZE	PART NUMBER	WT (lbs)
2"	SSS-26	1
3"	SSS-36	2
4"	SSS-46	2
6"	SSS-66	3
8"	SSS-86	5
10"	SSS-106	5
12"	SSS-1206	6

Specify the DR of the HDPE pipe when ordering. Always use Stiffeners when using Ductile Iron Fittings on HDPE pipe.

PLUG



SIZE	PART NUMBER	WT (lbs)
1½"	SB-15P	2
2"	SB-1P	3
2½"	SB-2P	4
3"	SB-3P	8
4"	SB-4P	10
6"	SB-6P	13
8"	SB-8P	19
10"	SB-10P	33
12"	SB-12P	43
Links are included with Plugs.		

TAPPED PLUG (Spigot x FPT)



SIZE	PART NUMBER	WT (lbs)
1½" x 1"	SB-1502TP	2
2" x 1"	SB-102TP	3
2" x 1½"	SB-103TP	3
2½" x 1"	SB-202TP	4
2½" x 1½"	SB-203TP	4
2½" x 2"	SB-204TP	4
3" x 1½"	SB-303TP	8
3" x 2"	SB-304TP	8
3" x 2½"	SB-305TP	8
4" x 2"	SB-404TP	10
4" x 3"	SB-406TP	10
6" x 2"	SB-604TP	13
6" x 3"	SB-606TP	13
8" x 2"	SB-804TP	19
8" x 3"	SB-806TP	19
10" x 2"	SB-1004TP	33
10" x 3"	SB-1006TP	33
12" x 2"	SB-1204TP	43
12" x 3"	SB-1206TP	43
Links are included with Tapped Plugs.		

ACME ADAPTER (MPT x F ACME)



SIZE	PART NUMBER	WT (lbs)
1½" x 1"	LMC-1510	1
1½" x 1¼"	LMC-1512	1
1½" x 1½"	LMC-1515	1
2" x 1½"	LMC-2015	1

LEEMCO DUCTILE IRON FITTINGS



REPLACEMENT LINKS

(Used with SBR, Caps & Plugs)

DESCRIPTION	PART NUMBER	WT (lbs)
2" - 2½" LINK	SB-LK1	0.4
2" - 2½" BOLT	SBLK-B1	0.1
3" - 8" LINK	SB-LK2	1.2
3" - 8" BOLT	SBLK-B2	0.1
10" - 12" LINK	SB-LK3	2.5
10" - 12" BOLT	SBLK-B3	0.1

REPLACEMENT GASKET

(For Repair Couplings Only)



SIZE	PART NUMBER	WT (lbs)
3"	RC-3G	0.2
4"	RC-4G	0.3
6"	RC-6G	0.4
8"	RC-8G	0.6
10"	RC-10G	1.2
12"	RC-12G	1.7

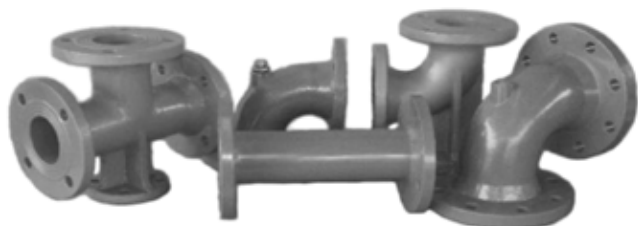
REPLACEMENT GASKET

(For Fittings & Valves)



SIZE	PART NUMBER	WT (lbs)
1½"	SB-15G	0.1
2"	SB-1G	0.1
2½"	SB-2G	0.1
3"	SB-3G	0.2
4"	SB-4G	0.3
6"	SB-6G	0.4
8"	SB-8G	0.6
10"	SB-10G	1.2
12"	SB-12G	1.7

LEEMCO Ductile Iron Fittings can be used on HDPE pipe with the use of internal stiffeners in the pipe ends.



FLANGED FITTINGS (Flange x Flange)

SIZE / DESCRIPTION	PART NUMBER	WT (lbs)
3" / 90° ELBOW	FF-390	20
4" / 90° ELBOW	FF-490	34
3" / TEE	FF-333T	28
4" / TEE	FF-444T	50
3" / 90° ELBOW w/BASE	FF-390B	27
4" / 90° ELBOW w/BASE	FF-490B	44
3" / TEE w/BASE	FF-333TB	37
4" / TEE w/BASE	FF-444TB	56
3" x 12" SPOOL	FF-312SPOOL	19
4" x 12" SPOOL	FF-412SPOOL	34
3" x 48" SPOOL	FF-348SPOOL	37
4" x 48" SPOOL	FF-448SPOOL	60

Flange bolt, nut and gasket kits are sold separately.

SIDE VIEW



ADJUSTABLE ELBOW (0-160° BEND)

SIZE	PART NUMBER	WT (lbs)
3"	RC-3G	48
4"	RC-4G	68

TOP VIEW



LEEMCO SELF-RESTRAINED DUCTILE IRON FITTINGS

SELF-RESTRAINED BENDS

(Bell x Bell)



SIZE	PART NUMBER	WT (lbs)
90° BEND		
1½" x 1½"	RF-1590B	5
2" x 2"	RF-190B	5
2½" x 2½"	RF-290B	7
3" x 2"	RF90-31B	15
3" x 2½"	RF90-32B	15
3" x 3"	RF-390B	11
4" x 2"	RF90-41B	22
4" x 2½"	RF90-42B	22
4" x 3"	RF90-43B	22
4" x 4"	RF-490B	16
6" x 2"	RF90-61B	34
6" x 2½"	RF90-62B	34
6" x 3"	RF90-63B	34
6" x 4"	RF90-64B	39
6" x 6"	RF-690B	37
8" x 2"	RF90-81B	47
8" x 2½"	RF90-82B	49
8" x 3"	RF90-83B	49
8" x 4"	RF90-84B	54
8" x 8"	RF-890B	72
45° BEND		
1½"	RF-1545B	5
2"	RF-145B	5
2½"	RF-245B	7
3"	RF-345B	11
4"	RF-445B	16
6"	RF-645B	35
8"	RF-845B	61
22° BEND		
4"	RF-422B	15
6"	RF-622B	33
8"	RF-822B	63
11° BEND		
6"	RF-611B	34
8"	RF-811B	60

FLANGE ADAPTER

(Flange x Spigot)



SIZE	PART NUMBER	WT (lbs)
3" x 3"	RF-3F3S	11
4" x 4"	RF-4F4S	15
6" x 6"	RF-6F6S	24
8" x 8"	RF-8F8S	43
10" x 10"	RF-10F10S	64
12" x 12"	RF-12F12S	86
<i>Flange bolt, nut and gasket kits are sold separately.</i>		

FLANGED ADAPTER

(Flange x Bell)



SIZE	PART NUMBER	WT (lbs)
3" x 3"	RF-3F3B	11
3" x 4"	RF-3F4B	20
3" x 6"	RF-3F6B	27
4" x 4"	EF-4F4B	19
4" x 6"	RF-4F6B	31
4" x 8"	RF-4F8B	48
6" x 6"	RF-6F6B	32
6" x 8"	RF-6F8B	53
6" x 10"	RF-6F10B	69
6" x 12"	RF-6F12B	84
8" x 8"	RF-8F8B	55
8" x 10"	RF-8F10B	73
8" x 12"	RF-8F12B	94
10" x 10"	RF-10F10B	116
10" x 12"	RF-10F12B	201
10" x 14"	RF-10F14B	398
12" x 12"	RF-12F12B	186
12" x 14"	RF-12F14B	427
<i>Flange bolt, nut and gasket kits are sold separately..</i>		

1½" - 12" Bells and spigots are IPS size.
14" - 16" Bells and spigots are for C905 PVC Pipe.

LEEMCO SELF-RESTRAINED DUCTILE IRON FITTINGS

REPAIR COUPLING

(Bell x Bell)



SIZE	PART NUMBER	WT (lbs)
2"	RF-200RC	6
2½"	RF-250RC	8
3"	RF-300RC	12
4"	RF-400RC	16

REDUCER

(Bell x Bell)



SIZE	PART NUMBER	WT (lbs)
2½" x 1½"	RF-215FR	13
3" x 2"	RF-31R	15
3" x 2½"	RF-32R	15
4" x 2"	RF-41R	22
4" x 2½"	RF-42R	22
4" x 3"	RF-43R	22
6" x 2½"	RF-62R	34
6" x 3"	RF-63R	34
6" x 4"	RF-64R	39
8" x 2½"	RF-82R	49
8" x 3"	RF-83R	49
8" x 4"	RF-84R	54
8" x 6"	RF-86R	58

RESTRAINED ADAPTERS

(Bell x MPT or FPT)



SIZE / DESCRIPTION	PART NUMBER	WT (lbs)
2" Bell x 1½" MPT	RF-105MA	2
2" Bell x 1½" FPT	RF-115FPT	5
2" Bell x 2" MPT	RF-11MA	5
2½" Bell x 1½" FPT	RF-215FPT	6
2½" Bell x 2" MPT	RF-21MA	6
2½" Bell x 2½" MPT	RF-22MA	6
3" Bell x 1½" FPT	RF-315FPT	8
3" Bell x 2" MPT	RF-31MA	6
4" Bell x 3" MPT	RF-43MA	10

RESTRAINED CAP



SIZE	PART NUMBER	WT (lbs)
2"	RF-20C	4
2½"	RF-25C	6
3"	RF-30C	14
4"	RF-40C	19
6"	RF-60C	31
8"	RF-80C	46

RESTRAINED TAPPED CAP

(Bell x FPT Tap)



SIZE	PART NUMBER	WT (lbs)
3" x 2"	RF-304TC	13
3" x 2½"	RF-305TC	13
4" x 2"	RF-404TC	18
4" x 2½"	RF-405TC	18
4" x 3"	RF-406TC	18
6" x 2"	RF-604TC	30
6" x 2½"	RF-605TC	30
6" x 3"	RF-606TC	30
8" x 2"	RF-804TC	45
8" x 2½"	RF-805TC	45
8" x 3"	RF-806TC	45

RESTRAINED TAPPED CAP

(Bell x ACME Tap)



SIZE	PART NUMBER	WT (lbs)
2" x 1"	RF-102AC	8
2" x 1½"	RF-103AC	8
2½" x 1"	RF-202AC	8
2½" x 1½"	RF-203AC	8
3" x 1"	RF-302AC	10
3" x 1½"	RF-304AC	10
4" x 1"	RF-402AC	19
4" x 1½"	RF-404AC	19
6" x 1"	RF-602AC	31
6" x 1½"	RF-604AC	31

LEEMCO JOINT RESTRAINTS

LH-SERIES RESTRAINTS (Pipe to Fitting)



SIZE	PART NUMBER	WT (lbs)
1½"	LH-150	3
2"	LH-200	3
2½"	LH-250	3
3"	LH-300	4
4"	LH-400	6
6"	LH-600	11
8"	LH-800	14
10"	LH-1000	25
12"	LH-1200	39

LPP-SERIES RESTRAINTS (Pipe to Pipe)



SIZE	PART NUMBER	WT (lbs)
2"	LPP-200	3
2½"	LPP-250	4
3"	LPP-300	6
4"	LPP-400	10
6"	LPP-600	20
8"	LPP-800	32
10"	LPP-1000	74
12"	LPP-1200	83

LB-SERIES RESTRAINTS (Pipe to Pipe)



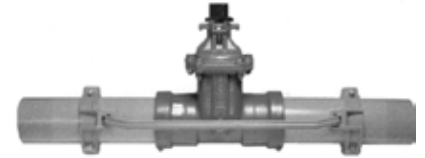
SIZE	PART NUMBER	WT (lbs)
2"	LB-200	9
2½"	LB-250	9
3"	LB-300	11
4"	LB-400	15
6"	LB-600	25
8"	LB-800	31
10"	LB-1000	54
12"	LB-1200	84

QUICK COUPLER STABILIZER



SIZE	PART NUMBER	WT (lbs)
¾" or 1"	LS-120	1
1½"	LS-150	1

LG-SERIES RESTRAINTS (Pipe to Pipe for Push-On Valves)



SIZE	PART NUMBER	WT (lbs)
3"	LG-300	15
4"	LG-400	19
6"	LG-600	33
8"	LG-800	39
10"	LG-1000	73
12"	LG-1200	103

LGK-SERIES RESTRAINTS (Pipe to Fitting for Push-On Valves)



SIZE	PART NUMBER	WT (lbs)
3"	LGK-300	13
4"	LGK-400	15
6"	LGK-600	27
8"	LGK-800	30
10"	LGK-1000	55
12"	LGK-1200	68

LMJ-SERIES RESTRAINTS (For MJ or Flanged Valves)



SIZE	PART NUMBER	WT (lbs)
3"	LMJ-300	7
4"	LMJ-400	9
6"	LMJ-600	14
8"	LMJ-800	17
10"	LMJ-1000	28
12"	LMJ-1200	42

Restraint is for one side of the valve only.

JOINT RESTRAINT TORQUE SETTINGS:

2 - 3" Sizes: 20 ft-lbs
4 - 8" Sizes: 50 ft-lbs
10 - 24" Sizes: 100 ft-lbs

LEEMCO DUCTILE IRON SADDLES



SADDLE - SINGLE STRAP

(Female NPT)

SIZE	PART NUMBER	WT (lbs)
3" x 1"	RSST-302	4
3" x 1½"	RSST-303	4
3" x 2"	RSST-304	4
4" x 1"	RSST-402	5
4" x 1½"	RSST-403	5
4" x 2"	RSST-404	5
6" x 1"	RSST-602	6
6" x 1½"	RSST-603	6
6" x 2"	RSST-604	6
8" x 1"	RSST-802	7
8" x 1½"	RSST-803	7
8" x 2"	RSST-804	7
10" x 1"	RSST-1002	8
10" x 1½"	RSST-1003	8
10" x 2"	RSST-1004	8
12" x 1"	RSST-1202	8
12" x 1½"	RSST-1203	8
12" x 2"	RSST-1204	8



SADDLE - DOUBLE STRAP

(Female NPT)

SIZE	PART NUMBER	WT (lbs)
3" x 1"	RSDT-302	6
3" x 1½"	RSDT-303	6
3" x 2"	RSDT-304	6
4" x 1"	RSDT-402	6
4" x 1½"	RSDT-403	6
4" x 2"	RSDT-404	6
6" x 1"	RSDT-602	8
6" x 1½"	RSDT-603	8
6" x 2"	RSDT-604	8
8" x 1"	RSDT-802	8
8" x 1½"	RSDT-803	8
8" x 2"	RSDT-804	8
10" x 1"	RSDT-1002	9
10" x 1½"	RSDT-1003	9
10" x 2"	RSDT-1004	9
12" x 1"	RSDT-1202	10
12" x 1½"	RSDT-1203	10
12" x 2"	RSDT-1204	10



SADDLE - SINGLE STRAP

(2" Bell Outlet for LV-Valves)

SIZE	PART NUMBER	WT (lbs)
3"	RSLS-300	4
4"	RSLS-400	4
6"	RSLS-600	5
8"	RSLS-800	7
10"	RSLS-1000	8
12"	RSLS-1200	9



SADDLE - DOUBLE STRAP

(2" Bell Outlet for LV-Valves)

SIZE	PART NUMBER	WT (lbs)
3"	RDLS-300	5
4"	RDLS-400	5
6"	RDLS-600	6
8"	RDLS-800	8
10"	RDLS-1000	9
12"	RDLS-1200	10

3" - 12" saddles are IPS size.
Some saddles are also available in
14" - 18" DIPS for C905 PVC Pipe or
Ductile Iron Pipe. Call for sizes not listed.

LEEMCO Double Strap Saddles can be used on
HDPE pipe, but it is recommended to use
Electrofusion HDPE Saddles when possible.

Torque Rating for all Saddle bolts = 20-25 ft-lbs.

LEEMCO LATERAL CONNECTIONS

LATERAL TEE (LT-Series) (2" Bell Outlet for LV-Valves)



SIZE	PART NUMBER	WT (lbs)
2"	LT-200T	7
2½"	LT-250T	8
3"	LT-300T	10
4"	LT-400T	18
6"	LT-600T	26
8"	LT-800T	39
10"	LT-1000T	61
12"	LT-1200T	103

LR90 SWIVEL (Spigot x Bell)



SIZE	PART NUMBER	WT (lbs)
2" x 2"	LR90-11SB	5
2½" x 2½"	LR90-22SB	8
3" x 3"	LR90-33SB	10

ADAPTERS



DESCRIPTION	PART NUMBER	WT (lbs)
2" x 2" MPT x Bell	LMA-200	2
2" x 2" FPT x Bell	FMA-200	3
2" x 2" Spigot x FPT	LFA-200	3
2" x 3" Spigot x FPT	LFA-300	4

LX RISER EXTENSIONS FOR LV-VALVES



SIZE	PART NUMBER	WT (lbs)
2" x 6"	LX-6	3
2" x 12"	LX-12	4

L90 & L180 ADAPTERS (Spigot x MPT)



DESCRIPTION	PART NUMBER	WT (lbs)
3" x 2½" Elbow	L90-325	10
3" x 3" Elbow	L90-330	10
3" x 2" Tee	L180-320	10
3" x 2½" Tee	L180-325	11
3" x 3" Tee	L180-330	12

L90 & L180 ADAPTERS (Spigot x Bell)



DESCRIPTION	PART NUMBER	WT (lbs)
3" x 2" Elbow	L90-31SB	9
3" x 2½" Elbow	L90-32SB	10
3" x 3" Elbow	L90-33SB	11
3" x 2" x 2" Tee	L180-311SB	10
3" x 2½" x 2½" Tee	L180-322SB	12
3" x 3" x 3" Tee	L180-333SB	14

L90 & L180 LAT ADAPTERS (Spigot x MPT)



DESCRIPTION	PART NUMBER	WT (lbs)
2" x 1½" Elbow	L90-215	4
2" x 2" Elbow	L90-220	5
2" x 3" Elbow	L90-230	7
2" x 1½" Tee	L180-215	5
2" x 2" Tee	L180-220	6

NOTE:

L90 & L180 Adapter spigot ends insert into 3" gasket fitting outlets.

L90 & L180 LAT Adapters insert into Lateral Saddles or Lateral Tees.

LEEMCO STAINLESS STEEL THREADED FITTINGS

TEE



SIZE	PART NUMBER
1"	010-TEE-304
1½"	015-TEE-304
2"	020-TEE-304

CAP



SIZE	PART NUMBER
1"	010-CAP-304
1½"	015-CAP-304
2"	020-CAP-304

COUPLING



SIZE	PART NUMBER
1"	010-COUP-304
1½"	015-COUP-304
2"	020-COUP-304

90° BEND



SIZE	PART NUMBER
1"	010-90-304
1½"	015-90-304
2"	020-90-304

45° BEND



SIZE	PART NUMBER
1"	010-45-304
1½"	015-45-304
2"	020-45-304

UNION



SIZE	PART NUMBER
1"	010-UNION-304
1½"	015-UNION-304
2"	020-UNION-304

NIPPLE



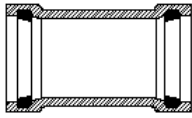
SIZE	PART NUMBER
1" x 2"	010-020-NIP
1" x 4"	010-040-NIP
1" x 6"	010-060-NIP
1" x 8"	010-080-NIP
1" x 10"	010-100-NIP
1" x 12"	010-120-NIP
1½" x 2"	015-020-NIP
1½" x 4"	015-040-NIP
1½" x 6"	015-060-NIP
1½" x 8"	015-080-NIP
1½" x 10"	015-100-NIP
1½" x 12"	015-120-NIP
2" x 2"	020-020-NIP
2" x 4"	020-040-NIP
2" x 6"	020-060-NIP
2" x 8"	020-080-NIP
2" x 10"	020-100-NIP
2" x 12"	020-120-NIP

*All stainless steel fittings and nipples are #304.
316 stainless steel is "Special Order" and requires 60-90
days lead time.*

PVC GASKETED FITTINGS - CLASS 200

REPAIR COUPLING

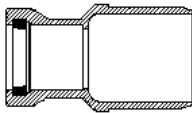
(Gasket x Gasket, No Stop)



SIZE	PART NUMBER	BOX QTY
1½"	RTF109-015	24
2"	RTF109-020	24
2½"	RTF109-025	24
3"	RTF109-030	24
4"	RTF109-040	12
6"	RTF109-060	6
8"	RTF109-080	6

REDUCER - SEB

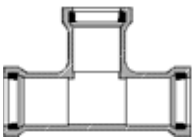
(Spigot x Gasket)



SIZE	PART NUMBER	BOX QTY
2" x 1½"	RTF116-215	12
2½" x 2"	RTF116-252	12
3" x 2"	RTF116-320	12
3" x 2½"	RTF116-325	12
4" x 2"	RTF116-420	12
4" x 2½"	RTF116-425	12
4" x 3"	RTF116-430	12
6" x 3"	RTF116-630	4
6" x 4"	RTF116-640	12
8" x 6"	RTF116-860	4

TEE

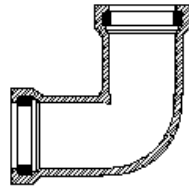
(G x G x G)



SIZE	PART NUMBER	BOX QTY
1½" x 1½" x 1½"	RTF112-150	12
2" x 2 x 1½"	RTF112-215	12
2" x 2" x 2"	RTF112-220	12
2½" x 2½" x 1½"	RTF112-251	1
2½" x 2½" x 2"	RTF112-252	12
2½" x 2½" x 2½"	RTF112-255	12
3" x 3" x 1½"	RTF112-315	1
3" x 3" x 2"	RTF112-320	12
3" x 3" x 2½"	RTF112-325	12
3" x 3" x 3"	RTF112-330	12
4" x 4" x 2"	RTF112-420	12
4" x 4" x 2½"	RTF112-425	12
4" x 4" x 3"	RTF112-430	12
4" x 4" x 4"	RTF112-440	12
6" x 6" x 2"	RTF112-620	1
6" x 6" x 3"	RTF112-630	4
6" x 6" x 4"	RTF112-640	4
6" x 6" x 6"	RTF112-660	4

90° ELBOW

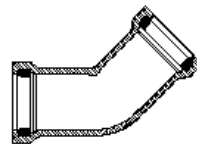
(Gasket x Gasket)



SIZE	PART NUMBER	BOX QTY
1½"	RTF118-015	12
2"	RTF118-020	12
2½"	RTF118-025	12
3"	RTF118-030	12
4"	RTF118-040	12
6"	RTF118-060	4
8"	RTF118-080	4

45° ELBOW

(Gasket x Gasket)



SIZE	PART NUMBER	BOX QTY
1½"	RTF122-015	12
2"	RTF122-020	12
2½"	RTF122-025	12
3"	RTF122-030	12
4"	RTF122-040	12
6"	RTF122-060	4
8"	RTF122-080	4

22° ELBOW

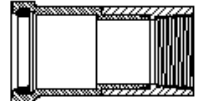
(Gasket x Gasket)



SIZE	PART NUMBER	BOX QTY
2"	RTF124-020	1
2½"	RTF124-025	1
3"	RTF124-030	1
4"	RTF124-040	1
6"	RTF124-060	1

FEMALE ADAPTER

(Gasket x FPT)



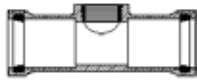
SIZE	PART NUMBER	BOX QTY
1½"	RTF132-015	1
2"	RTF132-020	1
2½"	RTF132-025	1
3"	RTF132-030	1
4"	RTF132-040	1

WARNING: Pressure surges and water hammer can reduce the life of PVC fittings. To avoid this issue, HARCO or LEEMCO DUCTILE IRON FITTINGS should be considered, especially on larger diameter pipe.

PVC GASKETED FITTINGS - CLASS 200

SERVICE TEE

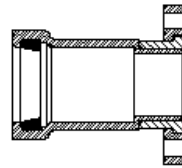
(G x G x FPT)



SIZE	PART NUMBER	BOX QTY
1½" x 1½" x ¾"	RTF151-153	1
1½" x 1½" x 1"	RTF151-154	1
1½" x 1½" x 1¼"	RTF151-155	1
2" x 2" x ¾"	RTF151-203	12
2" x 2" x 1"	RTF151-204	12
2" x 2" x 1¼"	RTF151-205	12
2" x 2" x 1½"	RTF151-206	12
2½" x 2½" x ¾"	RTF151-253	12
2½" x 2½" x 1"	RTF151-254	12
2½" x 2½" x 1¼"	RTF151-255	12
2½" x 2½" x 1½"	RTF151-256	12
2½" x 2½" x 2"	RTF151-258	12
3" x 3" x ¾"	RTF151-303	12
3" x 3" x 1"	RTF151-304	12
3" x 3" x 1¼"	RTF151-305	12
3" x 3" x 1½"	RTF151-306	12
3" x 3" x 2"	RTF151-308	12
4" x 4" x ¾"	RTF151-403	8
4" x 4" x 1"	RTF151-404	8
4" x 4" x 1¼"	RTF151-405	8
4" x 4" x 1½"	RTF151-406	8
4" x 4" x 2"	RTF151-408	8
6" x 6" x ¾"	RTF151-603	6
6" x 6" x 1"	RTF151-604	6
6" x 6" x 1¼"	RTF151-605	6
6" x 6" x 1½"	RTF151-606	6
6" x 6" x 2"	RTF151-608	6

FLANGE ADAPTER

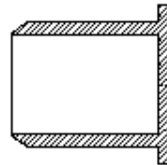
(Gasket x Flange)



SIZE	PART NUMBER	BOX QTY
1½"	RTF154-015	1
2"	RTF154-020	1
2½"	RTF154-025	1
3"	RTF154-030	1
4"	RTF154-040	1
6"	RTF154-060	1
8"	RTF154-080	1

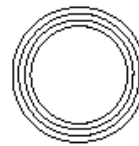
PLUG

(Spigot)



SIZE	PART NUMBER	BOX QTY
1½"	RTF144-015	1
2"	RTF144-020	12
2½"	RTF144-025	1
3"	RTF144-030	1
4"	RTF144-040	1
6"	RTF144-060	1
8"	RTF144-080	1

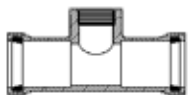
REPLACEMENT GASKETS



SIZE	PART NUMBER	BOX QTY
1½"	RTF195-015	1
2"	RTF195-020	1
2½"	RTF195-025	1
3"	RTF195-030	1
4"	RTF195-040	1
6"	RTF195-060	1
8"	RTF195-080	1

ACME SERVICE TEE

(G x G x ACME)



SIZE	PART NUMBER	BOX QTY
2" x 2" x 1"	RTF153-204	16
2" x 2" x 1¼"	RTF153-205	16
2" x 2" x 1½"	RTF153-206	16
2½" x 2½" x 1"	RTF153-254	16
2½" x 2½" x 1¼"	RTF153-255	16
2½" x 2½" x 1½"	RTF153-256	16
3" x 3" x 1"	RTF153-304	16
3" x 3" x 1¼"	RTF153-305	16
3" x 3" x 1½"	RTF153-306	16

Larger sizes and other combinations are also available.
Please contact us for specific needs.

PVC SCHEDULE 40 FITTINGS

SLIP TEE

(Slip x Slip x Slip)



SIZE	PART NUMBER	BOX QTY
1"	SF401-010	50
1¼"	SF401-012	25
1½"	SF401-015	25
2"	SF401-020	25
2½"	SF401-025	10
3"	SF401-030	10
4"	SF401-040	5

COMBINATION TEE

(Slip x Slip x FPT)



SIZE	PART NUMBER	BOX QTY
1"	SF402-010	50
1¼"	SF402-012	25
1½"	SF402-015	25
2"	SF402-020	25
2½"	SF402-025	10
3"	SF402-030	10
4"	SF402-040	5

REDUCING TEE

(Slip x Slip x Slip)



SIZE	PART NUMBER	BOX QTY
1¼" x 1¼" x 1"	SF401-168	25
1½" x 1½" x 1"	SF401-211	25
2" x 2" x 1"	SF401-249	10
2" x 2" x 1¼"	SF401-250	10
2" x 2" x 1½"	SF401-251	10
2½" x 2½" x 1"	SF401-289	10
2½" x 2½" x 1¼"	SF401-290	10
2½" x 2½" x 1½"	SF401-291	10
2½" x 2½" x 2"	SF401-292	10
3" x 3" x 1"	SF401-335	10
3" x 3" x 1¼"	SF401-336	10
3" x 3" x 1½"	SF401-337	10
3" x 3" x 2"	SF401-338	10
4" x 4" x 1"	SF401-417	4
4" x 4" x 1¼"	SF401-418	5
4" x 4" x 1½"	SF401-419	5
4" x 4" x 2"	SF401-420	5
4" x 4" x 3"	SF401-422	5

COMBINATION REDUCING TEE

(Slip x Slip x FPT)



SIZE	PART NUMBER	BOX QTY
1" x 1" x ½"	SF402-130	50
1" x 1" x ¾"	SF402-131	50
1¼" x 1¼" x ½"	SF402-166	25
1¼" x 1¼" x ¾"	SF402-167	25
1¼" x 1¼" x 1"	SF402-168	25
1½" x 1½" x ½"	SF402-208	25
1½" x 1½" x ¾"	SF402-209	25
1½" x 1½" x 1"	SF402-211	25
1½" x 1½" x 1¼"	SF402-212	25
2" x 2" x ½"	SF402-247	10
2" x 2" x ¾"	SF402-248	10
2" x 2" x 1"	SF402-249	10
2" x 2" x 1¼"	SF402-250	10
2" x 2" x 1½"	SF402-251	10
2½" x 2½" x ¾"	SF402-288	10
2½" x 2½" x 1"	SF402-289	10
2½" x 2½" x 1¼"	SF402-290	10
2½" x 2½" x 1½"	SF402-291	10
2½" x 2½" x 2"	SF402-292	10
3" x 3" x ¾"	SF402-334	10
3" x 3" x 1"	SF402-335	10
3" x 3" x 1¼"	SF402-336	10
3" x 3" x 1½"	SF402-337	10
3" x 3" x 2"	SF402-338	10
4" x 4" x ¾"	SF402-416	4
4" x 4" x 1"	SF402-417	5
4" x 4" x 1¼"	SF402-418	5
4" x 4" x 1½"	SF402-419	5
4" x 4" x 2"	SF402-420	5
4" x 4" x 3"	SF402-422	5

CROSS

(S x S x S x S)



SIZE	PART NUMBER	BOX QTY
1"	SF420-010	50
1¼"	SF420-012	25
1½"	SF420-015	25
2"	SF420-020	10
2½"	SF420-025	8
3"	SF420-030	10
4"	SF420-040	5

Larger sizes and other combinations are also available.
Please contact us for specific needs.

PVC SCHEDULE 40 FITTINGS

SLIP ELBOW (Slip x Slip)



SIZE	PART NUMBER	BOX QTY
1"	SF406-010	50
1¼"	SF406-012	25
1½"	SF406-015	25
2"	SF406-020	25
2½"	SF406-025	10
3"	SF406-030	10
4"	SF406-040	5

45° ELBOW (Slip x Slip)



SIZE	PART NUMBER	BOX QTY
1"	SF417-010	50
1¼"	SF417-012	25
1½"	SF417-015	25
2"	SF417-020	25
2½"	SF417-025	10
3"	SF417-030	10
4"	SF417-040	5

SLIP COUPLING (Slip x Slip)



SIZE	PART NUMBER	BOX QTY
1"	SF429-010	50
1¼"	SF429-012	25
1½"	SF429-015	25
2"	SF429-020	25
2½"	SF429-025	10
3"	SF429-030	10
4"	SF429-040	5

DEEP COUPLING (Slip x Slip)



SIZE	PART NUMBER	BOX QTY
1½"	SF482-015	25
2"	SF482-020	25
2½"	SF482-025	10
3"	SF482-030	10
4"	SF482-040	5

THREADED COUPLING (FPT x FPT)



SIZE	PART NUMBER	BOX QTY
½"	SF430-005	100
¾"	SF430-007	50
1"	SF430-010	50

COMBINATION ELBOW (Slip x FPT)



SIZE	PART NUMBER	BOX QTY
1"	SF407-010	50
1¼"	SF407-012	25
1½"	SF407-015	25
2"	SF407-020	10
2½"	SF407-025	10
3"	SF407-030	10
4"	SF407-040	5

COMBINATION REDUCING ELBOW (Slip x FPT)



SIZE	PART NUMBER	BOX QTY
1" x ½"	SF407-130	50
1" x ¾"	SF407-131	50
1¼" x 1"	SF407-168	25
1½" x 1"	SF407-211	25
1½" x 1¼"	SF407-212	25
2" x 1"	SF407-249	10
2" x 1¼"	SF407-250	10
2" x 1½"	SF407-251	10

FEMALE ADAPTER (Slip x FPT)



SIZE	PART NUMBER	BOX QTY
1"	SF435-010	50
1¼"	SF435-012	25
1½"	SF435-015	25
2"	SF435-020	25
2½"	SF435-025	10
3"	SF435-030	10
4"	SF435-040	5

MALE ADAPTER (Slip x MPT)



SIZE	PART NUMBER	BOX QTY
1"	SF436-010	50
1¼"	SF436-012	25
1½"	SF436-015	25
2"	SF436-020	25
2½"	SF436-025	10
3"	SF436-030	10
4"	SF436-040	5

Larger sizes and other combinations are also available.
Please contact us for specific needs.

PVC SCHEDULE 40 FITTINGS

REDUCER BUSHING (Spigot x Slip)



SIZE	PART NUMBER	BOX QTY
1¼" x 1"	SF437-168	25
1½" x 1"	SF437-211	25
1½" x 1¼"	SF437-212	25
2" x 1"	SF437-249	10
2" x 1¼"	SF437-250	10
2" x 1½"	SF437-251	25
2½" x 1"	SF437-289	10
2½" x 1¼"	SF437-290	10
2½" x 1½"	SF437-291	10
2½" x 2"	SF437-292	10
3" x 1"	SF437-335	10
3" x 1¼"	SF437-336	10
3" x 1½"	SF437-337	10
3" x 2"	SF437-338	10
3" x 2½"	SF437-339	10
4" x 2"	SF437-420	5
4" x 2½"	SF437-421	5
4" x 3"	SF437-422	5

REDUCER BUSHING (Spigot x FPT)



SIZE	PART NUMBER	BOX QTY
1" x ½"	SF438-130	100
1" x ¾"	SF438-131	100
1¼" x ½"	SF438-166	25
1¼" x ¾"	SF438-167	25
1¼" x 1"	SF438-168	25
1½" x ½"	SF438-209	25
1½" x ¾"	SF438-210	25
1½" x 1"	SF438-211	25
1½" x 1¼"	SF438-212	25
2" x ½"	SF438-247	10
2" x ¾"	SF438-248	10
2" x 1"	SF438-249	10
2" x 1¼"	SF438-250	10
2" x 1½"	SF438-251	10
2½" x 1"	SF438-289	10
2½" x 1¼"	SF438-290	10
2½" x 1½"	SF438-291	10
2½" x 2"	SF438-292	10

REDUCER BUSHING (cont.) (Spigot x FPT)



SIZE	PART NUMBER	BOX QTY
3" x 1"	SF438-335	10
3" x 1¼"	SF438-336	10
3" x 1½"	SF438-337	10
3" x 2"	SF438-338	10
3" x 2½"	SF438-339	10
4" x 2"	SF438-420	5
4" x 2½"	SF438-421	5
4" x 3"	SF438-422	5

REDUCER BUSHING (MPT x FPT)



SIZE	PART NUMBER	BOX QTY
¾" x ¼"	SF439-052	50
½" x ¼"	SF439-072	50
½" x ¾"	SF439-073	50
¾" x ¼"	SF439-098	50
¾" x ¾"	SF439-099	50
¾" x ½"	SF439-101	50
1" x ½"	SF439-130	50
1" x ¾"	SF439-131	50
1¼" x ½"	SF439-166	25
1¼" x ¾"	SF439-167	25
1¼" x 1"	SF439-168	25
1½" x ½"	SF439-209	25
1½" x ¾"	SF439-210	25
1½" x 1"	SF439-211	25
1½" x 1¼"	SF439-212	25
2" x 1"	SF439-249	10
2" x 1¼"	SF439-250	10
2" x 1½"	SF439-251	10
2½" x 2"	SF439-292	10
3" x 2"	SF439-338	5

FPT	=	Female Pipe Thread
MPT	=	Male Pipe Thread
Slip	=	Solvent Weld Socket
Spigot	=	OD of Pipe

PVC SCHEDULE 40 FITTINGS

SLIP CAP

(Slip)



SIZE	PART NUMBER	BOX QTY
½"	SF447-005	100
¾"	SF447-007	100
1"	SF447-010	50
1¼"	SF447-012	25
1½"	SF447-015	25
2"	SF447-020	25
2½"	SF447-025	10
3"	SF447-030	10
4"	SF447-040	5

THREADED CAP

(FPT)



SIZE	PART NUMBER	BOX QTY
½"	SF448-005	100
¾"	SF448-007	100
1"	SF448-010	50
1¼"	SF448-012	25
1½"	SF448-015	25
2"	SF448-020	25
2½"	SF448-025	10
3"	SF448-030	10
4"	SF448-040	5

SPIGOT PLUG

(Spigot)



SIZE	PART NUMBER	BOX QTY
½"	SF449-005	50
¾"	SF449-007	50
1"	SF449-010	50
1¼"	SF449-012	25
1½"	SF449-015	25
2"	SF449-020	10
2½"	SF449-025	10
3"	SF449-030	10
4"	SF449-040	5

THREADED PLUG

(MPT)



SIZE	PART NUMBER	BOX QTY
½"	SF450-005	50
¾"	SF450-007	50
1"	SF450-010	50
1¼"	SF450-012	25
1½"	SF450-015	25
2"	SF450-020	10
2½"	SF450-025	10
3"	SF450-030	10
4"	SF450-040	5

UNION

(Slip x Slip)



SIZE	PART NUMBER	BOX QTY
1"	SF457-010	10
1¼"	SF457-012	5
1½"	SF457-015	5
2"	SF457-020	5

UNION

(FPT x FPT)



SIZE	PART NUMBER	BOX QTY
1"	SF458-010	10
1¼"	SF458-012	5
1½"	SF458-015	5
2"	SF458-020	5

**** WARNING - USING PVC FITTINGS WITH COMPRESSED AIR ****

The Plastic Pipe Institute recommends against the use of PVC pipe to transport compressed air or other gases in exposed above ground locations. It is recommended that if PVC piping will be used to transport compressed air or other compressed gases, it should be buried underground or encased in shatter-resistant materials.

Although the use of PVC for compressed air transmission may appear easy, and inexpensive, the dangers are real and immense. Water, like most liquids, is not compressible, therefore it cannot store energy. When a hydrostatic failure occurs, water is projected, but the shrapnel is not projected very far. On the other hand, air and other gases are compressible. This can result in large amounts of stored energy. System failure could lead to a disastrous situation when this energy is released, sending shrapnel outward. Severe injury and damage can result.

PVC SCHEDULE 80 FITTINGS

THREADED TEE

(FPT x FPT x FPT)



SIZE	PART NUMBER	BOX QTY
1"	SF805-010	25
1¼"	SF805-012	10
1½"	SF805-015	10
2"	SF805-020	10
2½"	SF805-025	5
3"	SF805-030	5
4"	SF805-040	5

THREADED ELBOW

(FPT x FPT)



SIZE	PART NUMBER	BOX QTY
1"	SF808-010	25
1¼"	SF808-012	10
1½"	SF808-015	10
2"	SF808-020	10
2½"	SF808-025	5
3"	SF808-030	5
4"	SF808-040	5

THREADED COUPLING

(FPT x FPT)



SIZE	PART NUMBER	BOX QTY
½"	SF830-005	25
¾"	SF830-007	25
1"	SF830-010	25
1¼"	SF830-012	10
1½"	SF830-015	10
2"	SF830-020	10
2½"	SF830-025	5
3"	SF830-030	5
4"	SF830-040	5

FEMALE ADAPTER

(Slip x FPT)



SIZE	PART NUMBER	BOX QTY
1"	SF835-010	25
1¼"	SF835-012	10
1½"	SF835-015	10
2"	SF835-020	10
2½"	SF835-025	5
3"	SF835-030	5
4"	SF835-040	5

REDUCER BUSHING

(MPT x FPT)



SIZE	PART NUMBER	BOX QTY
⅜" x ¼"	SF839-052	25
½" x ¼"	SF839-072	25
½" x ⅜"	SF839-073	25
¾" x ¼"	SF839-098	25
¾" x ⅜"	SF839-099	25
¾" x ½"	SF839-101	25
1" x ½"	SF839-130	25
1" x ¾"	SF839-131	25
1¼" x ½"	SF839-166	10
1¼" x ¾"	SF839-167	10
1¼" x 1"	SF839-168	10
1½" x ½"	SF839-209	10
1½" x ¾"	SF839-210	10
1½" x 1"	SF839-211	10
1½" x 1¼"	SF839-212	10
2" x 1"	SF839-249	10
2" x 1¼"	SF839-250	10
2" x 1½"	SF839-251	10
2½" x 2"	SF839-292	5
3" x 2"	SF839-338	5

THREADED PLUG

(MPT)



SIZE	PART NUMBER	BOX QTY
½"	SF850-005	25
¾"	SF850-007	25
1"	SF850-010	25
1¼"	SF850-012	10
1½"	SF850-015	10
2"	SF850-020	10
2½"	SF850-025	5
3"	SF850-030	5
4"	SF850-040	5

FPT	=	Female Pipe Thread
MPT	=	Male Pipe Thread
Slip	=	Solvent Weld Socket
Spigot	=	OD of Pipe

PVC SCHEDULE 80 FITTINGS

FLANGE

Solid Style
(Slip)



SIZE	PART NUMBER	BOX QTY
1½"	SF851-015	10
2"	SF851-020	10
2½"	SF851-025	5
3"	SF851-030	5
4"	SF851-040	5
6"	SF851-060	5

FLANGE

Loose Ring
(Slip)



SIZE	PART NUMBER	BOX QTY
1½"	SF854-015	10
2"	SF854-020	10
2½"	SF854-025	5
3"	SF854-030FT	5
4"	SF854-040FT	5
6"	SF854-060FT	5

FLANGE

Solid Style
(FPT)



SIZE	PART NUMBER	BOX QTY
1½"	SF852-015	10
2"	SF852-020	10
2½"	SF852-025	5
3"	SF852-030	5
4"	SF852-040	5

UNION

(Slip x Slip)



SIZE	PART NUMBER	BOX QTY
1"	SF897-010	10
1¼"	SF897-012	5
1½"	SF897-015	5
2"	SF897-020	5
3"	SF897-030	5

BLIND FLANGE



SIZE	PART NUMBER	BOX QTY
1½"	SF853-015	10
2"	SF853-020	10
2½"	SF853-025	5
3"	SF853-030	5
4"	SF853-040	5
6"	SF853-060	5

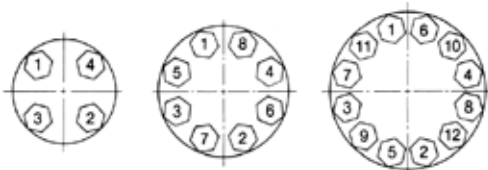
UNION

(FPT x FPT)



SIZE	PART NUMBER	BOX QTY
1"	SF898-010	10
1¼"	SF898-012	5
1½"	SF898-015	5
2"	SF898-020	5
3"	SF898-030	5
4"	SF898-040	5

FLANGE INSTALLATION INFORMATION



1. Recommend full-face gaskets, 1/8" thick.
2. Bolt threads should be well lubricated.
3. Nut and bolt threads should be free-running during assembly.
4. Follow illustrated bolt-tightening sequence.
5. Always use full-size flat washers with bolts and nuts.

NOTE: Working pressure of flanges should not exceed 150 PSI.

SIZE	BOLT CIRCLE DIA.	NO. OF BOLTS	BOLT SIZE	BOLT TORQUE (Ft/Lbs)
1½"	3.87"	4	½" - 13 x 2¾	15 - 20
2"	4.75"	4	⅝" - 11 x 3	20 - 30
2½"	5.50"	4	⅝" - 11 x 3¾	20 - 30
3"	6.00"	4	⅝" - 11 x 3⅝	20 - 30
4"	7.50"	8	⅝" - 11 x 3¾	20 - 30
6"	9.50"	8	¾" - 10 x 4⅝	33 - 50
8"	11.75"	8	¾" - 10 x 4⅝	33 - 50
10"	14.25"	12	⅞" - 9 x 4½	53 - 75
12"	17.00"	12	⅞" - 9 x 4⅝	53 - 75



Clamp-It™ PVC Saddle Tees

- ✓ Provides full and equal support around the entire circumference of the pipe.
- ✓ Easy to install hinge and clamping wedge eliminates need for metal screws.
- ✓ Made of high impact type II PVC.
- ✓ EPDM O-ring seal.
- ✓ Rated at 200 PSI at 72°F.
- ✓ For use on cold water lines only, 2" - 8" PVC - DO NOT USE ON HDPE PIPE

DESCRIPTION	PART NO.
2" PVC with 1" FPT Outlet	CAL-AM4220-10
2" PVC with 1½" FPT Outlet	CAL-AM4220-15
2½" PVC with 1½" FPT Outlet	CAL-AM4225-15
2½" PVC with 2" FPT Outlet	CAL-AM4225-15
3" PVC with 1" FPT Outlet	CAL-AM4430-10
3" PVC with 1½" FPT Outlet	CAL-AM4430-15
3" PVC with 2" FPT Outlet	CAL-AM4430-20

DESCRIPTION	PART NO.
4" PVC with 1" FPT Outlet	CAL-AM4440-10
4" PVC with 1½" FPT Outlet	CAL-AM4440-15
4" PVC with 2" FPT Outlet	CAL-AM4440-20
6" PVC with 1" FPT Outlet	CAL-AM4460-10
6" PVC with 1½" FPT Outlet	CAL-AM4460-15
6" PVC with 2" FPT Outlet	CAL-AM4460-20
8" PVC with 1" FPT Outlet	CAL-AM4480-10
8" PVC with 2" FPT Outlet	CAL-AM4480-20

LASCO®



Heavy Turf Tap't™ Saddles

- ✓ Molded Neoprene gasket seal to compensate for burrs and misaligned holes
- ✓ Use standard 1 ½" hole saw for installation
- ✓ Pressure Rated at 235 psi per ASTM F1970
- ✓ Neoprene O-ring seal.
- ✓ 304 Stainless Steel Hardware is captured...no loose pieces to drop
- ✓ Designed for use on HDPE pipe

SIZE	PART NUMBER	BOX QTY
2" HDPE x 1½" FACME	LAS364-251	5
3" HDPE x 1½" FACME	LAS364-337	5
4" HDPE x 1½" FACME	LAS364-419	5



SIZE	PART NUMBER	BOX QTY
1½" HDPE x ½" FPT Outlet	LAS362-209	2
1½" HDPE x ¾" FPT Outlet	LAS362-210	5
1½" HDPE x 1" FPT Outlet	LAS362-211	5
1½" HDPE x 1" Socket Outlet	LAS361-211	5

TAP'T SADDLE INSTALLATION TIPS:

- Tap't Saddles may be installed with the ACME threaded outlet port in either the vertical or horizontal position.
- Use a hole saw to drill the opening directly on the centerline of the pipe. The use of a hole saw, which retains the plug is recommended to reduce contamination of the piping waterway.
- Check to see that the sealing gasket is clean and properly seated.
- Place the outlet half of the Tap't Saddle onto the pipe, making certain that the four tabs are properly seated into the pipe wall hole.
- It is recommended to finish the assembly of the Tap't Saddle by using a two stage process if the pipe is out-of-round and/or in colder climates:
 1. Using a ½" wrench tighten down the bolts until the two flanges touch. Tighten the bolts to 12-15 ft-lbs of torque.
 2. Allow 2 hours for the piping material to yield or round out properly. Re-tighten the bolts, but do not exceed 15 ft-lbs of torque and make sure the two flanges are touching.

PVC ACME FITTINGS

SWING JOINT OUTLET ADAPTER

- Convert swing joints with MPT to ACME heads
- Both connections are o-ring sealed



FPT x ACME

SIZE	PART NUMBER	BOX QTY
1" FPT x 1" Male ACME	LAS-G102-010	50
1" FPT x 1¼" Male ACME	LAS-G002-132	25
1" FPT x 1½" Male ACME	LAS-G002-133	25
1¼" FPT x 1¼" Male ACME	LAS-G202-012	25
1¼" FPT x 1½" Male ACME	LAS-G002-169	25
1½" FPT x 1¼" Male ACME	LAS-G002-212	25
1½" FPT x 1½" Male ACME	LAS-G302-015	25

SWING JOINT OUTLET ADAPTER

- Change ACME outlet of swing joint
- Reduce 1½" ACME fitting outlets



ACME x ACME

SIZE	PART NUMBER	BOX QTY
1" Male ACME x 1¼" Female ACME	LAS539-132	25
1" Male ACME x 1½" Female ACME	LAS539-133	25
1¼" Male ACME x 1" Female ACME	LAS539-168	25
1¼" Male ACME x 1½" Female ACME	LAS539-169	25
1½" Male ACME x 1" Female ACME	LAS539-211	25
1½" Male ACME x 1¼" Female ACME	LAS539-212	25

SERVICE TEE

Socket x Socket x ACME



SIZE	PART NUMBER	BOX QTY
2" x 2" x 1½" ACME	LAS-302-251	10
2½" x 2½" x 1½" ACME	LAS-302-291	5
3" x 3" x 1½" ACME	LAS-302-337	5

SERVICE ELBOW

Socket x ACME



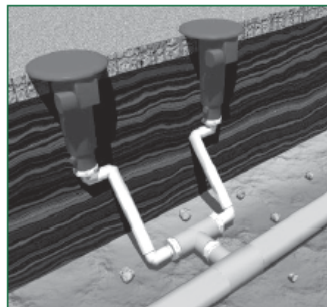
SIZE	PART NUMBER	BOX QTY
2" x 1½" ACME	LAS-307-251	10
2½" x 1½" ACME	LAS-307-291	5
3" x 1½" ACME	LAS-307-337	5

DOUBLE SWING TEE

- 1½" ACME thread on all connections
- Use two swing joints from one service fitting



ACME x ACME x ACME



SIZE	PART NUMBER	BOX QTY
1½" ACME x 1½" ACME x 1½" ACME	LAS-305-015	10

REDUCING BUSHING

- 1½" ACME female threads
- Use to adapt solvent weld fittings for use as a 1½" ACME swing joint attachment



Spigot x ACME

SIZE	PART NUMBER	BOX QTY
3" x 1½" ACME	LAS-338-337	10

PVC SCHEDULE 80 NIPPLES

Standards and Specifications

ASTM D-2464 - Threaded Poly (Vinyl Chloride) (PVC)

Plastic Pipe Fittings, Schedule 80.

Material—Schedule 80 Nipples produced from PVC

Type 1, Cell Classification 12454-B.

NOT FOR USE WITH COMPRESSED AIR OR GAS.



1/2" DIAMETER		
LENGTH	PART NO. NUMBER	BOX QTY
THREADED BOTH ENDS (TBE)		
1½" (Close)	PN882-005	50
2"	PN882-020	50
3"	PN882-030	50
4"	PN882-040	50
6"	PN882-060	50
8"	PN882-080	50
12"	PN882-120	50
THREADED ONE END (TOE)		
3"	PN1882-030	50
4"	PN1882-040	50
6"	PN1882-060	50
8"	PN1882-080	50
12"	PN1882-120	50

3/4" DIAMETER		
LENGTH	PART NO. NUMBER	BOX QTY
THREADED BOTH ENDS (TBE)		
1½" (Close)	PN883-005	50
2"	PN883-020	50
3"	PN883-030	50
4"	PN883-040	50
6"	PN883-060	50
8"	PN883-080	50
12"	PN883-120	50
THREADED ONE END (TOE)		
3"	PN1883-030	50
4"	PN1883-040	50
6"	PN1883-060	50
8"	PN1883-080	50
12"	PN1883-120	50

1" DIAMETER		
LENGTH	PART NO. NUMBER	BOX QTY
THREADED BOTH ENDS (TBE)		
1½" (Close)	PN884-005	50
2"	PN884-020	50
3"	PN884-030	50
4"	PN884-040	50
6"	PN884-060	50
8"	PN884-080	50
12"	PN884-120	50
THREADED ONE END (TOE)		
3"	PN1884-030	50
4"	PN1884-040	50
6"	PN1884-060	50
8"	PN1884-080	50
12"	PN1884-120	50

1-1/4" DIAMETER		
LENGTH	PART NO. NUMBER	BOX QTY
THREADED BOTH ENDS (TBE)		
1½" (Close)	PN885-005	25
2"	PN885-020	25
3"	PN885-030	25
4"	PN885-040	25
6"	PN885-060	25
8"	PN885-080	25
12"	PN885-120	25
THREADED ONE END (TOE)		
3"	PN1885-030	25
4"	PN1885-040	25
6"	PN1885-060	25
8"	PN1885-080	25
12"	PN1885-120	25

1-1/2" DIAMETER		
LENGTH	PART NO. NUMBER	BOX QTY
THREADED BOTH ENDS (TBE)		
1½" (Close)	PN886-005	25
3"	PN886-030	25
4"	PN886-040	25
6"	PN886-060	25
8"	PN886-080	25
12"	PN886-120	25
18"	PN886-180	25
THREADED ONE END (TOE)		
4"	PN1886-040	25
6"	PN1886-060	25
8"	PN1886-080	25
12"	PN1886-120	25
18"	PN1886-180	25

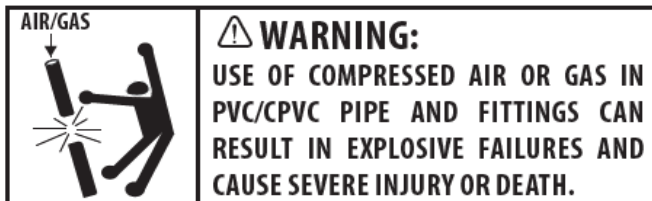
2" DIAMETER		
LENGTH	PART NO. NUMBER	BOX QTY
THREADED BOTH ENDS (TBE)		
2" (Close)	PN887-005	10
3"	PN887-030	10
4"	PN887-040	10
6"	PN887-060	10
8"	PN887-080	10
12"	PN887-120	10
18"	PN887-180	10
THREADED ONE END (TOE)		
4"	PN1887-040	10
6"	PN1887-060	10
8"	PN1887-080	10
12"	PN1887-120	10
18"	PN1887-180	10

PVC SCHEDULE 80 NIPPLES

2-1/2" DIAMETER		
LENGTH	PART NO. NUMBER	BOX QTY
THREADED BOTH ENDS (TBE)		
2½" (Close)	PN888-005	5
4"	PN888-040	5
6"	PN888-060	5
8"	PN888-08	5
10"	PN888-100	5
12"	PN888-120	10
THREADED ONE END (TOE)		
4"	PN1888-040	5
6"	PN1888-060	5
8"	PN1888-080	5
10"	PN1888-100	5
12"	PN1888-120	10

3" DIAMETER		
LENGTH	PART NO. NUMBER	BOX QTY
THREADED BOTH ENDS (TBE)		
2½" (Close)	PN889-005	5
4"	PN889-040	5
6"	PN889-060	5
8"	PN889-080	5
12"	PN889-120	5
18"	PN889-180	5
THREADED ONE END (TOE)		
4"	PN1889-040	5
6"	PN1889-060	5
8"	PN1889-080	5
12"	PN1889-120	5
18"	PN1889-180	5

4" DIAMETER		
LENGTH	PART NO. NUMBER	BOX QTY
THREADED BOTH ENDS (TBE)		
2½" (Close)	PN890-005	5
4"	PN890-040	5
6"	PN890-060	5
8"	PN890-080	5
10"	PN890-100	5
12"	PN890-120	5
THREADED ONE END (TOE)		
4"	PN1890-040	5
6"	PN1890-060	5
8"	PN1890-080	5
10"	PN1890-100	5
12"	PN1890-120	5



PVC THREADED JOINT ASSEMBLY:

- Do not over tighten threaded connections. Finger tight plus an additional 1-2 turns should be enough.
- Do not mix Sch40 PVC threaded fittings with Sch80 PVC threaded fittings - they have slightly different threads that can cause splitting.
- Cementing Sch40 to Sch80 PVC is OK.

PVC COMPRESSION & REPAIR FITTINGS

COMPRESSION COUPLING (Comp. x Comp.)



SIZE	PART NUMBER	BOX QTY
1"	FLC110-10	18
1¼"	FLC110-12	12
1½"	FLC110-15	15
2"	FLC110-20	12
2½"	FLC110-25	5
3"	FLC110-30	4
4"	FLC110-40	3
6"	FLC110-60	1

COMPRESSION TEE (Comp. x Comp. x FPT)



SIZE	PART NUMBER	BOX QTY
1"	FLC120-10	18
1¼"	FLC120-12	10
1½"	FLC120-15	8
2"	FLC120-20	5

QUICK-FIX TELESCOPIC COUPLING (Socket x Socket)



SIZE	PART NUMBER	BOX QTY
1"	QF2-1000	18
1¼"	QF2-1250	12
1½"	QF2-1500	12
2"	QF2-2000	8
2½"	QF2-2500	4
3"	QF2-3000	3
4"	QF2-4000	2
6"	QF2-6000	1

SPANNER WRENCH (For Compression Fittings)



DESCRIPTION	PART NUMBER
1215 Steel Spanner Wrench	TPC-1-1215
2025 Steel Spanner Wrench	TPC-1-2025
3040 Steel Spanner Wrench	TPC-1-3040
6000 Steel Spanner Wrench	TPC-1-6000

WRENCH SIZING CHART

		TOOL NUMBER			
		1215	2025	3040	6000
1¼"	Nut	X			
	Body				
1½"	Nut	X			
	Body				
2"	Nut		X		
	Body	X			
2½"	Nut		X		
	Body		X		
3"	Nut			X	
	Body		X		
4"	Nut			X	
	Body			X	
6"	Nut				X
	Body				X

See Philmac Compression Fittings for HDPE pipe as well as JCM Ductile Iron Compression Fittings for larger diameter pipe.

JCM REPAIR CLAMPS

#101 UNIVERSAL CLAMP COUPLING (12" Wide)



*Provides a full circumference seal
for permanent repair.*

Clamps available 6" - 30" wide upon request.

NOMINAL SIZE	OD RANGE	PART NUMBER
2" - 2½"	2.35" - 2.63"	JCM101-0238-12
2" - 2½"	2.70" - 3.13"	JCM101-0275-12
3"	3.46" - 3.70"	JCM101-0350-12
3"	3.73" - 4.13"	JCM101-0040-12
4"	4.45" - 4.75"	JCM101-0450-12
4"	4.74" - 5.14"	JCM101-0480-12
4"	4.95" - 5.35"	JCM101-0500-12
4"	5.22" - 5.62"	JCM101-0525-12
6"	5.95" - 6.35"	JCM101-0600-12
6"	6.56" - 6.96"	JCM101-0663-12
6"	6.85" - 7.25"	JCM101-0690-12
6"	7.05" - 7.45"	JCM101-0710-12
6"	7.45" - 7.85"	JCM101-0745-12
8"	7.95" - 8.35"	JCM101-0800-12
8"	8.54" - 8.94"	JCM101-0863-12
8"	8.99" - 9.39"	JCM101-0905-12
8"	9.27" - 9.67"	JCM101-0940-12
8"	9.90" - 10.30"	JCM101-1000-12
10"	10.60" - 11.00"	JCM101-1075-12
10"	11.04" - 11.44"	JCM101-1110-12
10"	11.34" - 11.74"	JCM101-1140-12
10"	11.75" - 12.15"	JCM101-1175-12
10"	12.00" - 12.40"	JCM101-1200-12
12"	12.60" - 13.02"	JCM101-1275-12
12"	13.10" - 13.50"	JCM101-1320-12
12"	13.40" - 13.80"	JCM101-1340-12
12"	13.70" - 14.10"	JCM101-1370-12
12"	14.00" - 14.40"	JCM101-1400-12

Items in bold are for Class 160/200 PVC Pipe

#105 COLLAR LEAK CLAMP (6" Wide)



*Provides a quick solution to leaks
at PVC solvent weld joints.*

NOMINAL SIZE	PIPE OD	PART NUMBER
2"	2.38"	JCM105-0238-6
2½"	2.88"	JCM105-0288-6
3"	3.50"	JCM105-0350-6
4"	4.50"	JCM105-0450-6
6"	6.63"	JCM105-0663-6
8"	8.63"	JCM105-0863-6

#106 BELL JOINT LEAK CLAMP



*For quick repair of leaking
PVC gasketed joints.*

NOMINAL SIZE	PIPE OD	PART NUMBER
4"	4.50"	JCM106-0450
6"	6.63"	JCM106-0663
8"	8.63"	JCM106-0863

#110 PATCH CLAMP (6" Wide)



For quick repair of small cracks or holes.

NOMINAL SIZE	PIPE OD	PART NUMBER
1½"	1.90"	JCM110-0190-6
2"	2.38"	JCM110-0238-6
2½"	2.88"	JCM110-0288-6
3"	3.50"	JCM110-0350-6
4"	4.50"	JCM110-0450-6
6"	6.63"	JCM110-0663-6

*Clamps available in Stainless Steel, 3" width
and other OD ranges upon request.*

JCM DUCTILE IRON REPAIR COUPLINGS

#210/211 DUCTILE IRON COUPLING (5"-6" Sleeve)



For joining plain end pipes of the same OD.

NOMINAL SIZE	OD RANGE	PART NUMBER
2"	2.33" - 2.63"	JCM210-0250
2½"	2.62" - 2.92"	JCM210-0288
3"	3.50"	JCM211-0350
3"	3.80" - 4.17"	JCM210-0380
4"	4.50"	JCM211-0450
4"	4.80" - 5.10"	JCM210-0488
4"	5.10" - 5.40"	JCM210-0535
6"	6.63"	JCM211-0663
6"	6.90" - 7.20"	JCM210-0690
6"	7.20" - 7.55"	JCM210-0740
8"	8.63"	JCM211-0863
8"	9.05" - 9.40"	JCM210-0905
8"	9.40" - 9.75"	JCM210-0960
10"	10.75"	JCM211-1075
10"	11.10" - 11.40"	JCM210-1110
10"	11.60" - 12.05"	JCM210-1200
12"	12.75"	JCM211-1275
12"	13.20" - 13.50"	JCM210-1320
12"	13.92" - 14.40"	JCM210-1420

Items in bold are for Class 160/200 PVC Pipe

Fittings listed are the most popular units: ductile iron body with shop-coat alloy bolts.

Longer sleeve length, epoxy coating, and stainless steel hardware is available as required.

Additional sizes on some fittings for larger pipe are available up to 24".

#212 DUCTILE IRON TRANSITION COUPLING (5"-6" Sleeve)



For joining plain end pipes of the same nominal size, but having different OD. EX: 6" PVC to 6" Transite

NOMINAL SIZE	FROM: OD RANGE	TO: OD RANGE	PART NUMBER
2" - 2½"	2.62" - 2.92"	2.38" - 2.50"	JCM212-0288-0238
3"	3.80" - 4.17"	2.62" - 2.92"	JCM212-0396-0350
4"	4.80" - 5.10"	4.50"	JCM212-0480-0450
4"	5.10" - 5.40"	4.50"	JCM212-0535-0450
4"	5.10" - 5.40"	4.80"	JCM212-0535-0480
6"	6.90" - 7.20"	6.63"	JCM212-0690-0663
6"	7.20" - 7.55"	6.63"	JCM212-0740-0663
6"	7.20" - 7.55"	6.90"	JCM212-0740-0690
8"	9.05" - 9.40"	8.63"	JCM212-0905-0863
8"	9.40" - 9.75"	8.63"	JCM212-0960-0863
8"	9.40" - 9.75"	9.05"	JCM212-0960-0905
10"	11.10" - 11.40"	10.75"	JCM212-1110-1075
10"	11.60" - 12.05"	10.75"	JCM212-1200-1075
10"	11.60" - 12.05"	11.10"	JCM212-1200-1110
12"	13.20" - 13.50"	12.75"	JCM212-1320-1275
12"	13.92" - 14.40"	12.75"	JCM212-1420-1275
12"	13.92" - 14.40"	13.20"	JCM212-1420-1320

#360 DUCTILE IRON OPTIFIT COUPLING



For joining plain end pipes of the same or different OD via Dual fit gaskets.

NOMINAL SIZE	OD RANGE	PART NUMBER
4"	4.25"-5.63"	JCM211-0450
6"	6.42" - 7.68"	JCM211-0663
8"	8.54" - 9.84 "	JCM211-0863
10"	10.70" - 12.00"	JCM211-1075
10"	10.96" - 12.26"	JCM210-1110
12"	12.40" - 13.66"	JCM210-1200
12"	13.15" - 14.41"	JCM211-1275

JCM DUCTILE IRON SADDLES

#402

DUCTILE IRON SADDLE

(FPT Outlet)



Saddles have shop coat primer body with electro-galvanized double straps. Designed for use on PVC, steel and ductile iron pipe.

NOMINAL SIZE	OD RANGE	TAP SIZE	PART NUMBER
2"	2.35" - 2.63"	1"	JCM402-0238X08IP
2½"	2.70" - 3.13"	1"	JCM402-0288X08IP
3"	3.25" - 3.50"	1"	JCM402-0350X08IP
3"	3.25" - 3.50"	1¼"	JCM402-0350X10IP
3"	3.25" - 3.50"	1½"	JCM402-0350X12IP
3"	3.25" - 3.50"	2"	JCM402-0350X14IP
4"	4.25" - 4.50"	1"	JCM402-0450X08IP
4"	4.25" - 4.50"	1¼"	JCM402-0450X10IP
4"	4.25" - 4.50"	1½"	JCM402-0450X12IP
4"	4.25" - 4.50"	2"	JCM402-0450X14IP
4"	4.25" - 4.50"	2½"	JCM402-0450X16IP
6"	6.50" - 6.63"	1"	JCM402-0663X08IP
6"	6.50" - 6.63"	1¼"	JCM402-0663X10IP
6"	6.50" - 6.63"	1½"	JCM402-0663X12IP
6"	6.50" - 6.63"	2"	JCM402-0663X14IP
6"	6.50" - 6.63"	2½"	JCM402-0663X16IP
8"	8.50" - 8.63"	1"	JCM402-0863X08IP
8"	8.50" - 8.63"	1¼"	JCM402-0863X10IP
8"	8.50" - 8.63"	1½"	JCM402-0863X12IP
8"	8.50" - 8.63"	2"	JCM402-0863X14IP
8"	8.50" - 8.63"	2½"	JCM402-0863X16IP
10"	10.60" - 10.75"	1"	JCM402-1075X08IP
10"	10.60" - 10.75"	1¼"	JCM402-1075X10IP
10"	10.60" - 10.75"	1½"	JCM402-1075X12IP
10"	10.60" - 10.75"	2"	JCM402-1075X14IP
10"	10.60" - 10.75"	2½"	JCM402-1075X16IP
12"	12.75" - 13.20"	1"	JCM402-1320X08IP
12"	12.75" - 13.20"	1¼"	JCM402-1320X10IP
12"	12.75" - 13.20"	1½"	JCM402-1320X12IP
12"	12.75" - 13.20"	2"	JCM402-1320X14IP
12"	12.75" - 13.20"	2½"	JCM402-1320X16IP

½" and ¾" tap sizes and other OD ranges available.

#406

DUCTILE IRON SADDLE

(FPT Outlet)



Saddles have heavy plastic-coated body with stainless steel double straps. Designed for use on PVC and HDPE pipe.

NOMINAL SIZE	OD RANGE	TAP SIZE	PART NUMBER
2"	2.35" - 2.63"	1"	JCM406-0238X08IP
2½"	2.70" - 3.13"	1"	JCM406-0288X08IP
3"	3.25" - 3.50"	1"	JCM406-0350X08IP
3"	3.25" - 3.50"	1¼"	JCM406-0350X10IP
3"	3.25" - 3.50"	1½"	JCM406-0350X12IP
3"	3.25" - 3.50"	2"	JCM406-0350X14IP
4"	4.25" - 4.50"	1"	JCM406-0450X08IP
4"	4.25" - 4.50"	1¼"	JCM406-0450X10IP
4"	4.25" - 4.50"	1½"	JCM406-0450X12IP
4"	4.25" - 4.50"	2"	JCM406-0450X14IP
4"	4.25" - 4.50"	2½"	JCM406-0450X16IP
6"	6.50" - 6.63"	1"	JCM406-0663X08IP
6"	6.50" - 6.63"	1¼"	JCM406-0663X10IP
6"	6.50" - 6.63"	1½"	JCM406-0663X12IP
6"	6.50" - 6.63"	2"	JCM406-0663X14IP
6"	6.50" - 6.63"	2½"	JCM406-0663X16IP
8"	8.50" - 8.63"	1"	JCM406-0863X08IP
8"	8.50" - 8.63"	1¼"	JCM406-0863X10IP
8"	8.50" - 8.63"	1½"	JCM406-0863X12IP
8"	8.50" - 8.63"	2"	JCM406-0863X14IP
8"	8.50" - 8.63"	2½"	JCM406-0863X16IP
10"	10.60" - 10.75"	1"	JCM406-1075X08IP
10"	10.60" - 10.75"	1¼"	JCM406-1075X10IP
10"	10.60" - 10.75"	1½"	JCM406-1075X12IP
10"	10.60" - 10.75"	2"	JCM406-1075X14IP
10"	10.60" - 10.75"	2½"	JCM406-1075X16IP
12"	12.75" - 13.20"	1"	JCM406-1320X08IP
12"	12.75" - 13.20"	1¼"	JCM406-1320X10IP
12"	12.75" - 13.20"	1½"	JCM406-1320X12IP
12"	12.75" - 13.20"	2"	JCM406-1320X14IP
12"	12.75" - 13.20"	2½"	JCM406-1320X16IP

½" and ¾" tap sizes and other OD ranges available.

JCM DUCTILE IRON ADAPTERS & STIFFENERS

#301 FLANGED COUPLING ADAPTER

A simple way to join flanged fittings to plain end pipe.
Available with set screws for steel or ductile iron pipe.



NOMINAL SIZE	OD RANGE	PART NUMBER
WITHOUT SET SCREWS		
3"	3.50"	JCM301-0350
3"	3.80" - 4.17"	JCM301-0396
4"	4.50"	JCM301-0450
4"	4.80" - 5.10"	JCM301-0480
6"	6.63"	JCM301-0663
6"	6.90" - 7.20"	JCM301-0690
8"	8.63"	JCM301-0863
8"	9.05" - 9.40"	JCM301-0905
10"	10.75"	JCM301-1075
10"	11.10" - 11.40"	JCM301-1110
12"	12.75"	JCM301-1275
12"	13.20" - 13.60"	JCM301-1320
<i>Items in bold are for Class 160/200 PVC Pipe & HDPE</i>		

NOMINAL SIZE	OD RANGE	PART NUMBER
WITH SET SCREWS		
3"	3.50"	JCM301-0350R
3"	3.80" - 4.17"	JCM301-0396R
4"	4.50"	JCM301-0450R
4"	4.80" - 5.10"	JCM301-0480R
6"	6.63"	JCM301-0663R
6"	6.90" - 7.20"	JCM301-0690R
8"	8.63"	JCM301-0863R
8"	9.05" - 9.40"	JCM301-0905R
10"	10.75"	JCM301-1075R
10"	11.10" - 11.40"	JCM301-1110R
12"	12.75"	JCM301-1275R
12"	13.20" - 13.60"	JCM301-1320R

#230 HDPE PIPE STIFFENER (6" Length)



HDPE internal stiffeners are formed of stainless steel to the actual inside diameter of the pipe. They are recommended for all HDPE pipe end connections utilizing bolt on fittings (excluding saddles) to prevent pipe contraction during temperature changes.

NOMINAL SIZE	ID / PIPE DR	PART NUMBER
4"	3.44" / DR9	JCM230-04-0344
4"	3.633" / DR11	JCM230-04-0363
4"	3.79" / DR13.5	JCM230-04-0379
6"	5.06" / DR9	JCM230-06-0506
6"	5.34" / DR19	JCM230-06-0534
6"	5.58" / DR13.5	JCM230-06-0558
8"	6.59" / DR9	JCM230-08-0659
8"	6.96" / DR9	JCM230-08-0696
8"	7.27" / DR13.5	JCM230-08-0727
10"	8.21" / DR9	JCM230-10-0821
10"	8.67" / DR19	JCM230-10-0867
10"	9.06" / DR13.5	JCM230-10-0906
12"	9.74" / DR9	JCM230-12-0974
12"	10.29" / DR11	JCM230-12-1029
12"	10.74" / DR13.5	JCM230-12-1074
12" long stiffeners and sizes up to 36" are also available upon request.		

JCM FITTING INFORMATION

HOW TO DETERMINE OUTSIDE DIAMETER (OD) OF PIPE:

1. Find the circumference by wrapping a string or flexible tape measure around the outside of the pipe.
2. Divide that length (Circumference) by (3.1415) to get the OD.

EXAMPLE: 11" Circumference / 3.1415 = 3.50" OD - 3" PVC

TYPE OF PIPE	NOMINAL PIPE SIZE & OUTSIDE DIAMETERS (INCHES)													
	1½"	2"	2½"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
AC TRANSITE (CLASS 100)				3.95	4.92	7.19	9.39	11.47	13.74	15.51	17.65	20.44	22.68	27.12
AC TRANSITE (CLASS 150)				4.13	5.07	7.17	9.37	11.92	14.18	16.48	18.72	21.30	23.54	28.32
AC TRANSITE (CLASS 200)				4.17	5.33	7.32	9.50	11.92	14.18	16.59	18.90	22.54	29.98	25.02
COPPER	1.63	2.13	2.63	3.13	4.13	6.13								
DUCTILE IRON				3.96	4.80	6.90	9.05	11.10	13.20	15.30	17.40	19.50	21.60	25.80
HDPE (IPS)	1.90	2.38		3.50	4.50	6.63	8.63	10.75	12.75	14.00	16.00	18.00	20.00	24.00
PVC (SDR21/26, SCH40/80)	1.90	2.38	2.88	3.50	4.50	6.63	8.63	10.75	12.75	14.00	16.00	18.00	20.00	24.00
PVC (C-900, C-905)					4.80	6.90	9.05	11.10	13.20	15.30	17.40	19.50	21.60	25.80
PLASTIC SEWER (SDR35)					4.22	6.28	8.40	10.50	12.50			18.70		24.80
STEEL (BLACK, GALVANIZED)	1.90	2.38	2.88	3.50	4.50	6.63	8.63	10.75	12.75	14.00	16.00	18.00	20.00	24.00

ALSO AVAILABLE FROM JCM:



Bell/Coupling Repair Sleeves



Tapping Sleeves



Dismantling Joints



Joint Restraints



Flanged Coupling Adapters



Bell Restraints

BRONZE THREADED FITTINGS

TEE



SIZE	PART NUMBER
1"	BF234-010
1¼"	BF234-012
1½"	BF234-015
2"	BF234-020
2½"	BF234-025
3"	BF234-030

COUPLING



SIZE	PART NUMBER
1"	BF135-010
1¼"	BF135-012
1½"	BF135-015
2"	BF135-020
2½"	BF135-025
3"	BF135-030

UNION



SIZE	PART NUMBER
1"	BF135-010
1¼"	BF135-012
1½"	BF135-015
2"	BF135-020
2½"	BF135-025
3"	BF135-030

90° ELBOW



SIZE	PART NUMBER
1"	BF121-010
1¼"	BF121-012
1½"	BF121-015
2"	BF121-020
2½"	BF121-025
3"	BF121-030

90° STREET ELBOW



SIZE	PART NUMBER
1"	BF123-010
1¼"	BF123-012
1½"	BF123-015
2"	BF123-020

REDUCER BUSHING



SIZE	PART NUMBER
1" x ½"	BF120-130
1" x ¾"	BF120-131
1¼" x 1"	BF120-168
1½" x 1"	BF120-211
1½" x 1¼"	BF120-212
2" x 1"	BF120-249
2" x 1¼"	BF120-250
2" x 1½"	BF120-251
2½" x 1½"	BF120-291
2½" x 2"	BF120-292
3" x 1"	BF120-335
3" x 1½"	BF120-337
3" x 2"	BF120-338
3" x 2½"	BF120-339

CAP



SIZE	PART NUMBER
1"	BF448-010
1¼"	BF448-012
1½"	BF448-015
2"	BF448-020
2½"	BF448-025
3"	BF448-030

PLUG



SIZE	PART NUMBER
1"	BF450-010
1¼"	BF450-012
1½"	BF450-015
2"	BF450-020

Other sizes and other reducing combinations are also available.

Please contact us for specific needs.

BRASS THREADED NIPPLES

CLASS 125 RED BRASS NIPPLES

ASTM B687-88

Threaded with American Standard taper threads (NPT)



1" DIAMETER	
LENGTH	PART NO. NUMBER
Close	BN884-005
2"	BN884-020
3"	BN884-030
4"	BN884-040
6"	BN884-060
8"	BN884-080
12"	BN884-120
18"	BN884-180

1¼" DIAMETER	
LENGTH	PART NO. NUMBER
Close	BN885-005
2"	BN885-020
3"	BN885-030
4"	BN885-040
6"	BN885-060
8"	BN885-080
12"	BN885-120
18"	BN885-180

1½" DIAMETER	
LENGTH	PART NO. NUMBER
Close	BN886-005
2"	BN886-020
3"	BN886-030
4"	BN886-040
6"	BN886-060
8"	BN886-080
12"	BN886-120
18"	BN886-180

2" DIAMETER	
LENGTH	PART NO. NUMBER
Close	BN887-005
3"	BN887-030
4"	BN887-040
6"	BN887-060
8"	BN887-080
12"	BN887-120
18"	BN887-180

2½" DIAMETER	
LENGTH	PART NO. NUMBER
Close	BN888-005
3"	BN888-030
4"	BN888-040
6"	BN888-060
8"	BN888-080
12"	BN888-120
18"	BN888-180

3" DIAMETER	
LENGTH	PART NO. NUMBER
Close	BN889-005
3"	BN889-030
4"	BN889-040
6"	BN889-060
8"	BN889-080
12"	BN889-120
18"	BN889-180

Other diameters of brass nipples are available from ⅛" to 6" and other lengths are available upon request.

HDPE MOLDED BUTT FUSION FITTINGS

FITTINGS: All fittings are DR11 IPS Sized. **MATERIAL:** Dual Rated 4710/3608 HDPE Resin, Black

TEE



SIZE	PART NUMBER
1"	HAR66-3110CC
1¼"	HAR66-3110DD
1½"	HAR66-3110EE
2"	HAR66-31100303
3"	HAR66-31100303
3" x 3" x 2"	HAR66-31100302
3" x 2" x 2"	HAR66-3110030202
4"	HAR66-31100404
4" x 4" x 2"	HAR66-31100402
6"	HAR66-31100606
6" x 6" x 2"	HAR66-31100602
6" x 6" x 3"	HAR66-31100603
6" x 6" x 4"	HAR66-31100604
8"	HAR66-31100808
8" x 8" x 4"	HAR66-31100804
8" x 8" x 6"	HAR66-31100806
10"	HAR66-31101010
12"	HAR66-31101212

REDUCER



SIZE	PART NUMBER
1¼" x 1"	HAR66-3115DC
1½" x 1"	HAR66-3115EC
1½" x 1¼"	HAR66-3115ED
2" x 1"	HAR66-311502C
2" x 1¼"	HAR66-311502D
2" x 1½"	HAR66-311502E
3" x 2"	HAR66-31150302
4" x 2"	HAR66-31150402
4" x 3"	HAR66-31150403
6" x 3"	HAR66-31150603
6" x 4"	HAR66-31150604
8" x 4"	HAR66-31150804
8" x 6"	HAR66-31150806
10" x 8"	HAR66-31151008
12" x 6"	HAR66-31151206
12" x 8"	HAR66-31151208
1"2 x 10"	HAR66-31151210

90° BEND



SIZE	PART NUMBER
1"	HAR66-3119C
1¼"	HAR66-3119D
1½"	HAR66-3119E
2"	HAR66-311902
3"	HAR66-311903
4"	HAR66-311904
6"	HAR66-311906
8"	HAR66-311908
10"	HAR66-311910
12"	HAR66-311912

45° BEND



SIZE	PART NUMBER
1"	HAR66-3122C
1¼"	HAR66-3122D
1½"	HAR66-3122E
2"	HAR66-312202
3"	HAR66-312203
4"	HAR66-312204
6"	HAR66-312206
8"	HAR66-312208
10"	HAR66-31210
12"	HAR66-312212

CAP



SIZE	PART NUMBER
1"	HAR66-3149C
1¼"	HAR66-3149D
1½"	HAR66-3149E
2"	HAR66-314902
3"	HAR66-314903
4"	HAR66-314904
6"	HAR66-314906
8"	HAR66-314908
10"	HAR66-314910
12"	HAR66-314912

*Fittings are available with DR13.5 Ends
Upon Request.*

HDPE FITTINGS & TRANSITIONS

FITTINGS: All fittings are DR11 IPS Sized. **MATERIAL:** Dual Rated 4710/3608 HDPE Resin, Black

STAINLESS STEEL TRANSITION

(MPT x Butt Fusion)



SIZE	PART NUMBER
1"	HAR65-3132C
1¼"	HAR65-3132D
1½"	HAR65-3132E
2"	HAR65-313202
3"	HAR65-313203
4"	HAR65-313204

BRASS TRANSITION

(MPT x Butt Fusion)



SIZE	PART NUMBER
1"	HAR65-3135C
1¼"	HAR65-3135D
1½"	HAR65-3135E
2"	HAR65-313502
3"	HAR65-313503
4"	HAR65-313504

BUTT FUSION x 1½" FEMALE ACME ELBOW



For Attaching Swing Joints to End of Lines.

SIZE	PART NUMBER
2"	HAR65-31340214
3"	HAR65-3134020314

SPIGOT with STIFFENER x BUTT FUSION



For Use with HARCO Ductile Iron Fittings & Swivel Valve Outlets.

SIZE	PART NUMBER
2" x 2"	HAR65-31340214
2" (Spigot) x 3" (Butt Fusion)	HAR65-3134020314
3" x 3"	HAR65-31340314

INTERNAL PIPE STIFFENER (304 Stainless Steel)



For use with HARCO Ductile Iron Fittings & Valves

NOMINAL SIZE	DR	PART NUMBER
2"	9	HAR65-90480902
	11	HAR65-90481102
	13.5	HAR65-90481302
3"	9	HAR65-90480903
	11	HAR65-90481103
	13.5	HAR65-90481303
4"	9	HAR65-90480904
	11	HAR65-90481104
	13.5	HAR65-90481304

*Fittings are available with DR13.5 Ends
Upon Request.*

HDPE FLANGE ADAPTERS & ACCESSORIES

FITTINGS: All fittings are DR11 IPS Sized. **MATERIAL:** Dual Rated 4710/3608 HDPE Resin, Black

FLANGE ADAPTER



SIZE	PART NUMBER
2"	HAR65-316002
3"	HAR65-316003
4"	HAR65-316004
6"	HAR65-316006
8"	HAR65-316008
10"	HAR65-316010
12"	HAR65-316012

DUCTILE IRON BACKUP RING (Shop Coated)



SIZE	BOLT HOLES	PART NUMBER
2"	4	HAR65-077702
3"	4	HAR65-077703
4"	8	HAR65-077704
6"	8	HAR65-077706
8"	8	HAR65-077708
10"	12	HAR65-077710
12"	12	HAR65-077712

STAINLESS STEEL BACKUP RING (316 SS)



SIZE	BOLT HOLES	PART NUMBER
2"	4	HAR65-077902
3"	4	HAR65-077903
4"	8	HAR65-077904
6"	8	HAR65-077906
8"	8	HAR65-077908
10"	12	HAR65-077910
12"	12	HAR65-077912

*Fittings are available with DR13.5 Ends
Upon Request.*

FLANGE ACCESSORY KIT



(Grade 5, Zinc Coated Bolts & Nuts, 1/8" Gasket)

SIZE	BOLTS	PART NUMBER
FOR HDPE FLANGE x HDPE FLANGE		
2"	4	HAR65-0777002
3"	4	HAR65-0777003
4"	8	HAR65-0777004
6"	8	HAR65-0777006
8"	8	HAR65-0777008
10"	12	HAR65-0777010
12"	12	HAR65-0777012

SIZE	BOLTS	PART NUMBER
FOR HDPE FLANGE x HARCO DI FLANGE		
2"	4	HAR65-0777102
3"	4	HAR65-0777103
4"	8	HAR65-0777104
6"	8	HAR65-0777106
8"	8	HAR65-0777108
10"	12	HAR65-0777110
12"	12	HAR65-0777112

SIZE	BOLTS	PART NUMBER
FOR HDPE FLANGE x IRON/STEEL FLANGE		
2"	4	HAR65-0777202
3"	4	HAR65-0777203
4"	8	HAR65-0777204
6"	8	HAR65-0777206
8"	8	HAR65-0777208
10"	12	HAR65-0777210
12"	12	HAR65-0777212

FLANGE HARDWARE IS AVAILABLE UP TO 24"
AND ALSO AVAILABLE IN
316 STAINLESS STEEL UPON REQUEST.

HDPE ELECTROFUSION FITTINGS, BRANCH SADDLES & EQUIPMENT

EF COUPLING



SIZE	PART NUMBER
2"	HAR70-0902
3"	HAR70-0903
4"	HAR70-0904
6"	HAR70-0906
8"	HAR70-0908
10"	HAR70-0910
12"	HAR70-0912

EF TEE



SIZE	PART NUMBER
2"	HAR70-100202

EF 90° BEND



SIZE	PART NUMBER
2"	HAR70-1902
3"	HAR70-1903
4"	HAR70-1904

EF 45° BEND



SIZE	PART NUMBER
2"	HAR70-2202

EF REDUCER



SIZE	PART NUMBER
3" x 2"	HAR70-150302

EF CAP



SIZE	PART NUMBER
2"	HAR70-4902
3"	HAR70-4903

*Fusion equipment available
from NUPI and McElroy*

McELROY



EF BRANCH SADDLE

*Butt Fusion
Outlet*



SIZE	PART NUMBER
2" x 2"	HAR70-560202
3" x 2"	HAR70-560302
4" x 2"	HAR70-560402
4" x 3"	HAR70-560403
6" x 2"	HAR70-560602
6" x 3"	HAR70-560603
6" x 4"	HAR70-560604
8" x 2"	HAR70-560802
8" x 3"	HAR70-560803
8" x 4"	HAR70-560804
8" x 6"	HAR70-560806
10" x 2"	HAR70-561002
10" x 3"	HAR70-561003
10" x 4"	HAR70-561004
10" x 6"	HAR70-561006
12" x 2"	HAR70-561202
12" x 3"	HAR70-561203
12" x 4"	HAR70-561204
12" x 6"	HAR70-561206

MISCELLANEOUS FUSION EQUIPMENT

DESCRIPTION	PART NUMBER
Electrofusion Connector Tips (Central Welder to Nupi Fitting)	HAR70-9101
Electrofusion Connector Tips (Nupi Welder to Central Fitting)	HAR70-9102
Nupi Electrofusion Welder	NUPI-EFWM
Nupi Top Loading Tool	NUPI-TOPLOAD
Socket Fusion Kit	RITMO-R63
1" - 4" Butt Fusion Machine	RITMO-RAM14
2" - 8" Butt Fusion Machine	RITMO-RAM28
4" - 14" Butt Fusion Machine	RITMO-RAM414



ELECTROFUSION & BOLT-ON SADDLES

EF SERVICE SADDLE SS FPT Outlet



SIZE	PART NUMBER
2" x 1"	HAR70-540204S
2" x 1½"	HAR70-540206S
2" x 2"	HAR70-540208S
3" x 1"	HAR70-540304S
3" x 1½"	HAR70-540306S
3" x 2"	HAR70-540308S
4" x 1"	HAR70-540404S
4" x 1½"	HAR70-540406S
4" x 2"	HAR70-540408S
6" x 1"	HAR70-540604S
6" x 1½"	HAR70-540606S
6" x 2"	HAR70-540608S
8" x 1"	HAR70-540804S
8" x 1½"	HAR70-540806S
8" x 2"	HAR70-540808S
10" x 1"	HAR70-541004S
10" x 1½"	HAR70-541006S
10" x 2"	HAR70-541008S
12" x 1"	HAR70-541204S
12" x 1½"	HAR70-541206S
12" x 2"	HAR70-541208S

ELECTROFUSION 1½" FEMALE ACME SADDLE (SS Outlet)



SIZE	PART NUMBER
2"	HAR70-610206
3"	HAR70-610306
4"	HAR70-610406
6"	HAR70-610606

EF SWIVEL SADDLE - SS For HARCO Swivel Valves



SIZE	PART NUMBER
3"	HAR70-5303S
4"	HAR70-5304S
6"	HAR70-5306S
8"	HAR70-5308S
10"	HAR70-5310S
12"	HAR70-5312S

LASCO® Tap't™ SADDLES

- ✓ Use standard 1 ½" hole saw for installation
- ✓ Pressure Rated at 235 psi per ASTM F1970
- ✓ Neoprene O-ring seal
- ✓ 304 Stainless Steel Hardware
- ✓ Designed for use on HDPE pipe



SIZE	PART NUMBER	BOX QTY
2"x 1½" FACME	LAS364-251	5
3"x 1½" FACME	LAS364-337	5
4"x 1½" FACME	LAS364-419	5



SIZE	PART NUMBER	BOX QTY
1½" x ½" FPT	LAS362-209	2
1½" x ¾" FPT	LAS362-210	5
1½" x 1" FPT	LAS362-211	5
1½" x 1" Socket	LAS361-211	5

Leemco, INC. Piping Solutions



STAINLESS STEEL SADDLES

- ✓ 100% 316-Series Stainless Steel construction
- ✓ 2-bolt design with no torque wrench needed
- ✓ Built-in anti-rotation device & joint restraint
- ✓ Large EPDM rubber gasket area
- ✓ Designed for use on HDPE & PVC pipe

SIZE	PART NUMBER
2" x 1½" FPT	RSST-215
2" x 1½" ACME	RSST-215A
2½" x 1½" FPT	RSST-2515
2½" x 1½" ACME	RSST-2515A
3" x 1½" FPT	RSST-315
3" x 1½" ACME	RSST-315A

HDPE COMPRESSION FITTINGS - PHILMAC



FITTINGS: All fittings are IPS-OD Sized.

COUPLING

*No Stop
(Comp x Comp)*



SIZE	PART NUMBER
1"	HAR75-30944
1¼"	HAR75-30955
1½"	HAR75-30966
2"	HAR77-30988
3"	HAR75-3091212

90° ELBOW

(Comp x Comp)



SIZE	PART NUMBER
1"	HAR75-31844
1¼"	HAR75-31855
1½"	HAR75-31866
2"	HAR77-31888
3"	HAR75-3181212

REDUCER COUPLING

(Comp x Comp)



SIZE	PART NUMBER
1¼" x 1"	HAR75-31754
1½" x 1"	HAR75-31764
1½" x 1¼"	HAR75-31765
2" x 1"	HAR77-31784
2" x 1¼"	HAR77-31785
2" x 1½"	HAR77-31786

SERVICE ELBOW

(Comp x FPT)



SIZE	PART NUMBER
1" x ½"	HAR75-32042
1" x ¾"	HAR75-32043
1" x 1"	HAR75-32044
1¼" x ½"	HAR75-32052
1¼" x ¾"	HAR75-32053
1¼" x 1"	HAR75-32054
1¼" x 1¼"	HAR75-32055
1½" x ½"	HAR75-32062
1½" x ¾"	HAR75-32063
1½" x 1"	HAR75-32064
1½" x 1¼"	HAR75-32065
1½" x 1½"	HAR75-32066
2" x ½"	HAR77-32082
2" x ¾"	HAR77-32083
2" x 1"	HAR77-32084
2" x 1¼"	HAR77-32085
2" x 1½"	HAR77-32086
2" x 2"	HAR77-32088

FEMALE ADAPTER

(Comp x FPT)



SIZE	PART NUMBER
1"	HAR75-33244
1¼"	HAR75-33254
1¼" x 1"	HAR75-33254
1½"	HAR75-33266
1½" x 1"	HAR75-33264
1½" x 1¼"	HAR75-33265
2"	HAR77-33288
2" x 1"	HAR77-33284
2" x 1¼"	HAR77-33285
2" x 1½"	HAR77-33286

MALE ADAPTER

(Comp x MPT)



SIZE	PART NUMBER
1"	HAR75-33044
1¼"	HAR75-33055
1¼" x 1"	HAR75-33054
1½"	HAR75-33066
2"	HAR77-33088

ACME SERVICE ELBOW *(Comp x ACME)*



SIZE	PART NUMBER
2" x 1½"	HAR77-32386

HDPE COMPRESSION FITTINGS - PHILMAC

FITTINGS: All fittings are IPS-OD Sized.

TEE

(Comp x Comp x Comp)



SIZE	PART NUMBER
1"	HAR75-312444
1¼"	HAR75-312555
1½"	HAR75-312666
1½" x 1½" x 1"	HAR75-313664
2"	HAR77-312888
2" x 2" x 1"	HAR77-313884
2" x 2" x 1½"	HAR77-313886
3"	HAR75-312121212

SERVICE

TEE

(Comp x Comp x FPT)



SIZE	PART NUMBER
1" x 1" x ½"	HAR75-351442
1" x 1" x ¾"	HAR75-351443
1" x 1" x 1"	HAR75-351444
1¼" x 1¼" x ½"	HAR75-351552
1¼" x 1¼" x ¾"	HAR75-351553
1¼" x 1¼" x 1"	HAR75-351554
1¼" x 1¼" x 1¼"	HAR75-351555
1½" x 1½" x ½"	HAR75-351662
1½" x 1½" x ¾"	HAR75-351663
1½" x 1½" x 1"	HAR75-351664
1½" x 1½" x 1¼"	HAR75-351665
1½" x 1½" x 1½"	HAR75-351666
2" x 2" x ½"	HAR77-351882
2" x 2" x ¾"	HAR77-351883
2" x 2" x 1"	HAR77-351884
2" x 2" x 1¼"	HAR77-351885
2" x 2" x 1½"	HAR77-351886
2" x 2" x 2"	HAR77-351888

ACME SERVICE TEE (Comp x Comp x ACME)



SIZE	PART NUMBER
2" x 2" x 1½"	HAR77-353886

END CAP

(Compression)



SIZE	PART NUMBER
1"	HAR75-3493
1¼"	HAR75-3495
1½"	HAR75-3496
2"	HAR77-3498
3"	HAR75-34912

PVC GRIP RING



SIZE	PART NUMBER
1"	HAR75-6894
1¼"	HAR75-6895
1½"	HAR75-6896
2"	HAR77-6898

To Use Philmac Fittings on PVC Pipe

COLLAR WRENCH



SIZE	PART NUMBER
1"	HAR75-3024
1½"	HAR75-3026
2"	HAR75-3028

CAUTION:

Philmac does not recommend or warrant the use of Compression Fittings inside a building or for hot water applications.

INSERT FITTINGS FOR POLY PIPE

TEE (Ins x Ins x Ins)



SIZE	PART NUMBER	BOX QTY
½"	IF1401-005	50
¾"	IF1401-007	50
1"	IF1401-010	25
1¼"	IF1401-012	10
1½"	IF1401-015	10
2"	IF1401-020	10

COMBINATION TEE (Ins x Ins x FPT)



SIZE	PART NUMBER	BOX QTY
½"	IF1402-005	50
¾"	IF1402-007	50
1"	IF1402-010	25
1¼"	IF1402-012	10
1½"	IF1402-015	10
2"	IF1402-020	10

REDUCING TEE (Ins x Ins x Ins)



SIZE	PART NUMBER	BOX QTY
¾" x ¾" x ½"	IF1401-101	25
1" x 1" x ½"	IF1401-130	25
1" x 1" x ¾"	IF1401-131	25
1¼" x 1¼" x ½"	IF1401-166	25
1¼" x 1¼" x ¾"	IF1401-167	25
1¼" x 1¼" x 1"	IF1401-168	25
1½" x 1½" x ½"	IF1401-209	10
1½" x 1½" x ¾"	IF1401-210	10
1½" x 1½" x 1"	IF1401-211	10
1½" x 1½" x 1¼"	IF1401-212	10
2" x 2" x ½"	IF1401-247	10
2" x 2" x ¾"	IF1401-248	10
2" x 2" x 1"	IF1401-249	10
2" x 2" x 1¼"	IF1401-250	10
2" x 2" x 1½"	IF1401-251	10

COMBINATION REDUCING TEE (Ins x Ins x FPT)



SIZE	PART NUMBER	BOX QTY
¾" x ¾" x ½"	IF1402-101	25
1" x 1" x ½"	IF1402-130	25
1" x 1" x ¾"	IF1402-131	25
1¼" x 1¼" x ½"	IF1402-166	25
1¼" x 1¼" x ¾"	IF1402-167	25
1¼" x 1¼" x 1"	IF1402-168	25
1½" x 1½" x ½"	IF1402-209	10
1½" x 1½" x ¾"	IF1402-210	10
1½" x 1½" x 1"	IF1402-211	10
1½" x 1½" x 1¼"	IF1402-212	10
2" x 2" x ½"	IF1402-247	10
2" x 2" x ¾"	IF1402-248	10
2" x 2" x 1"	IF1402-249	10
2" x 2" x 1¼"	IF1402-250	10
2" x 2" x 1½"	IF1402-251	10

BULLHEAD TEE (Ins x Ins x Ins)



SIZE	PART NUMBER	BOX QTY
½" x ½" x ¾"	IF1401-074	25
¾" x ¾" x 1"	IF1401-102	25
1" x 1" x 1¼"	IF1401-132	25

COMBINATION TEE (Ins x Ins x MPT)



SIZE	PART NUMBER	BOX QTY
½"	IF1403-005	50
¾"	IF1403-007	50
1"	IF1403-010	25
1¼"	IF1403-012	10
1½"	IF1403-015	10

CROSS (I x I x I x I)



SIZE	PART NUMBER	BOX QTY
¾"	IF1420-007	25
1"	IF1420-010	25

SIDE OUTLET TEE (I x I x I x FPT)



SIZE	PART NUMBER	BOX QTY
¾"	IF1416-007	50
¾" x ½"	IF1416-101	50
1" x ½"	IF1416-130	50
1" x ¾"	IF1416-131	50

INSERT FITTINGS FOR POLY PIPE

90° ELBOW (Insert x Insert)



SIZE	PART NUMBER	BOX QTY
½"	IF1406-005	50
¾"	IF1406-007	50
1"	IF1406-010	25
1¼"	IF1406-012	10
1½"	IF1406-015	10
2"	IF1406-020	10

COMBINATION ELBOW (Insert x FPT)



SIZE	PART NUMBER	BOX QTY
½"	IF1407-005	50
¾"	IF1407-007	50
1"	IF1407-010	25
1¼"	IF1407-012	10
1½"	IF1407-015	10
2"	IF1407-020	10

COMBINATION REDUCING ELBOW (Insert x FPT)



SIZE	PART NUMBER	BOX QTY
¾" x ½"	IF1407-101	50
1" x ½"	IF1407-130	25
1" x ¾"	IF1407-131	25
1¼" x ½"	IF1407-166	25
1¼" x ¾"	IF1407-167	25
1¼" x 1"	IF1407-168	25
1½" x 1"	IF1407-211	10
1½" x 1¼"	IF1407-212	10
2" x 1½"	IF1407-251	10

COMBINATION ELBOW (Insert x MPT)



SIZE	PART NUMBER	BOX QTY
½"	IF1413-005	50
¾"	IF1413-007	50
1"	IF1413-010	25
1¼"	IF1413-012	10
1½"	IF1413-015	10
2"	IF1413-020	10

SIDE OUTLET EL (Ins x Ins x FPT)



SIZE	PART NUMBER	BOX QTY
¾" x ½"	IF1414-101	50
1" x ½"	IF1413-130	25
1" x ¾"	IF1414-131	25

COUPLING (Insert x Insert)



SIZE	PART NUMBER	BOX QTY
½"	IF1429-005	50
¾"	IF1429-007	50
1"	IF1429-010	50
1¼"	IF1429-012	25
1½"	IF1429-015	25
2"	IF1429-020	10

REDUCING COUPLING (Insert x Insert)



SIZE	PART NUMBER	BOX QTY
¾" x ½"	IF1429-101	50
1" x ½"	IF1429-130	50
1" x ¾"	IF1429-131	50
1¼" x ¾"	IF1429-167	25
1¼" x 1"	IF1429-168	25
1½" x ¾"	IF1429-210	25
1½" x 1"	IF1429-211	25
1½" x 1¼"	IF1429-212	25
2" x 1"	IF1429-249	10
2" x 1¼"	IF1429-250	10
2" x 1½"	IF1429-251	10

INSERT PLUG



SIZE	PART NUMBER	BOX QTY
½"	IF1449-005	100
¾"	IF1449-007	100
1"	IF1449-010	50
1¼"	IF1449-012	25
1½"	IF1449-015	25
2"	IF1449-020	10

INSERT FITTINGS & SADDLES FOR POLY PIPE

FEMALE ADAPTER (Insert x FPT)



SIZE	PART NUMBER	BOX QTY
½"	IF1435-005	50
¾"	IF1435-007	50
1"	IF1435-010	50
1¼"	IF1435-012	25
1½"	IF1435-015	25
2"	IF1435-020	10

MALE ADAPTER (Insert x MPT)



SIZE	PART NUMBER	BOX QTY
½"	IF1436-005	50
¾"	IF1436-007	50
1"	IF1436-010	50
1¼"	IF1436-012	25
1½"	IF1436-015	25
2"	IF1436-020	10

REDUCING MALE ADAPTER (MPT x Insert)



SIZE	PART NUMBER	BOX QTY
½" x ¾"	IF1436-074	50
½" x 1"	IF1436-075	50
¾" x 1"	IF1436-102	50
1" x 1¼"	IF1436-132	25
1" x 1½"	IF1436-133	25
1¼" x 1½"	IF1436-169	10
1½" x 2"	IF1436-213	10

REDUCING MALE ADAPTER (MPT x Insert)

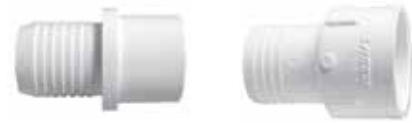


SIZE	PART NUMBER	BOX QTY
¾" x ½"	IF1436-101	50
1" x ¾"	IF1436-131	50
1¼" x ¾"	IF1436-167	25
1¼" x 1"	IF1436-168	25
1½" x 1"	IF1436-211	25
1½" x 1¼"	IF1436-212	25
2" x 1½"	IF1436-251	10

RECOMMENDED INSTALLATION FOR INSERT (BARBED) CONNECTIONS:

Sizes ½", ¾" & 1" - one clamp directly over barbs
 Sizes 1¼" to 2" - two clamps directly over barbs

INSERT ADAPTER



DESCRIPTION	PART NUMBER	BOX QTY
¾" Insert x Spigot Adapter	IF460-007	50
1" Insert x Spigot Adapter	IF460-010	50
1½" Insert x Spigot Adapter	IF460-015	25
¾" Insert x Slip Adapter	IF474-007	50
1" Insert x Slip Adapter	IF474-010	50
1½" Insert x Slip Adapter	IF474-015	25

POLY-STRETCH COUPLING

(Insert x Insert)
 Extends approx. 1½"



DESCRIPTION	PART NUMBER
¾" x 4" Long Poly Stretch Coupling	PSC-07
1" x 4" Long Poly-Stretch Coupling	PSC-10
1¼" x 5" Long Poly-Stretch Coupling	PSC-12
1½" x 5" Long Poly-Stretch Coupling	PSC-15
2" x 5" Long Poly-Stretch Coupling	PSC-20

POLY PIPE SADDLES & TOOLS



DESCRIPTION	PART NUMBER
¾" x ½" Plastic Saddle for Poly Pipe	SAD-75C
¾" x ¾" Plastic Saddle for Poly Pipe	SAD-75D
1" x ½" Plastic Saddle for Poly Pipe	SAD-100C
1" x ¾" Plastic Saddle for Poly Pipe	SAD-100D
1¼" x ½" Plastic Saddle for Poly Pipe	SAD-125C
1¼" x ¾" Plastic Saddle for Poly Pipe	SAD-125D
½" Saddle Coring Tool	SAD-HC45
¾" Saddle Coring Tool	SAD-HC55
Plastic Saddle Nut Driver	SAD-ND375

PINCER CLAMPS (Stainless Steel)



SIZE	PART NUMBER	BAG QTY
½"	OE-226SS	500
¾"	OE-271SS	100
1"	OE-331SS	100
1¼"	OE-425SS	100
1½"	OE-485SS	100
2"	OE-61-2	100

PINCER TOOLS



DESCRIPTION	PART NO.
Standard Jaw Pincers	OE-1098
Side Jaw Pincers	OE-1099

WORM DRIVE CLAMPS (Stainless Steel)



SIZE	PART NUMBER	BOX QTY
¾"	B12HS	10
1"	B16HS	10
1¼"	B20HS	10
1½"	B28HS	10
2"	B32HS	10

KWIKCUT PIPE CUTTERS

- Up to 2" Rubber Hose
- Up to 1½" Poly Pipe
- Up to 1¼" PVC Pipe



DESCRIPTION	PART NO.
Kwikcut Pipe Cutter	TPC-1-718D
Replacement Blade	TPC-1-718E



PIPE TOOLS & VISES
SINCE 1896



DESCRIPTION	PART NO.
⅝" To 1¼" Pipe Cutter	RE-TC1QPPC
¼" To 2½" Pipe Cutter	RE-TC2QPPC
⅜" To 3½" Pipe Cutter	RE-TC3QPPC
1½" To 4½" Pipe Cutter	RE-TC4QPPC
4" To 6½" Pipe Cutter	RE-TC6QPPC
Replacement Blade (TC1-TC2)	RE-1-2PVC
Replacement Blade (TC3-TC6)	RE-3-6PVC
1½" To 8" Pipe Beveler	RE-BT1
1½" To 12" Pipe Beveler	RE-BT2
3" Pipe Saw (12" Blade)	RE-PPS12
4" Pipe Saw (18" Blade)	RE-PPS18
6" Pipe Saw (20" Blade)	RE-PPS20
8" Pipe Saw (24" Blade)	RE-PPS24
Wire Saw, 24" Length	CABLESAW

MARKING FLAGS

(Bundle of 100)



DESCRIPTION	PART NO.
Blue Marking Flags (100)	FLAGS-BLUE
Red Marking Flags (100)	FLAGS-RED
White Marking Flags (100)	FLAGS-WHITE
Yellow Marking Flags (100)	FLAGS-YELLOW
Pink Marking Flags (100)	FLAGS-FLPINK
Orange Marking Flags (100)	FLAGS-FLORANGE
Green Marking Flags (100)	FLAGS-FLIME

PIPE CEMENT, PRIMER, LUBE, ETC.

PVC CEMENT

#721 BLUE

Medium body, fast setting, blue cement for all Classes and Schedules through 6".



SIZE	PART NUMBER	CASE QTY
Gallon	TPC-1-CEMGAL	6
Quart	TPC-1-CEMQT	12
Pint	TPC-1-CEMPT	12

PVC CEMENT

#725 WET 'R DRY

Medium body, extremely fast setting, blue cement for wet conditions for all Classes and Schedules.



SIZE	PART NUMBER	CASE QTY
Quart	TPC-1-601A	12
Pint	TPC-1-601	12

PVC CEMENT

#727 HOT 'R COLD

Medium body, very fast setting, clear cement for all Classes and Schedules. Performance to -15°F.



SIZE	PART NUMBER	CASE QTY
Quart	TPC-1-727A	12
Pint	TPC-1-727	12

PVC LUBRICANT

SEAL-LUBE

Primes and lubricates push-on gasketed (ring-tite) joints on fittings and pipe.



SIZE	PART NUMBER	CASE QTY
Gallon	TPC-1-603B	6
Quart	TPC-1-603A	12
Pint	TPC-1-603	12

PVC PRIMER

#P-68 CLEAR

For surface preparation of PVC pipe and fittings prior to cement application.



SIZE	PART NUMBER	CASE QTY
Gallon	TPC-1-PRIMGAL	6
Quart	TPC-1-PRIMQT	12
Pint	TPC-1-PRIMPT	12

PVC PRIMER

#P-68 PURPLE

For surface preparation of PVC pipe and fittings prior to cement application. Purple in color.



SIZE	PART NUMBER	CASE QTY
Quart	TPC-1-605A	12
Pint	TPC-1-605	12

THREAD JOINT COMPOUND

WHITE-SEAL

White, grit-free, extreme duty joint compound with Teflon for sealing and lubricating metal and plastic threads



SIZE	PART NUMBER	CASE QTY
Quart	TPC-1-607A	12
Pint	TPC-1-607	12

TEFLON TAPE



SIZE	PART NUMBER
3/4" x 520' Roll	TPC-1-202B
1/2" x 520' Roll	TPC-1-202

When Teflon Tape is wrapped around threads it adds to the strain and tensile stress. Avoid excessive wrapping that adds thickness and increases stress at the connection.

STRUCTRON ROUND POINT SHOVEL

Premium Fiberglass Handle
14-Ga Spring Steel / 9½" x 11½"
Rear Rolled Step



STRUCTRON SQUARE POINT SHOVEL

Premium Fiberglass Handle
14-Ga Spring Steel / 9½" x 11½"
Rear Rolled Step



STRUCTRON GRAIN SCOOP SHOVEL

Premium Fiberglass Handle
#12 Poly 14¼" x 19" Scoop



STRUCTRON SOIL PROBE TOOL

Premium Fiberglass Probe
Cast Metal Pointed Tip



STRUCTRON LEAF RAKE

51" Premium Fiberglass Handle
24" Poly Leaf Rake



STRUCTRON SQUEEGEE

66" Premium Fiberglass Handle
Wrap-Around Bracing



STRUCTRON TAMPER

45" Premium Fiberglass Handle
Cast Iron Head



STRUCTRON TRENCH CLEAN OUT SHOVEL

48" Premium Fiberglass Handle
14-Ga Spring Steel



SEYMOUR SOD LIFTER EDGER

31" American Ash Handle
8¾" Steel Half Moon Blade



STRUCTRON LANDSCAPE RAKE

66" Premium Fiberglass Handle
Heavy-Duty Aluminum Blade



STRUCTRON INDUSTRIAL BROOM

60" Premium Fiberglass Handle
Maximum Duty 2 Bristle Rows



DESCRIPTION	PART NO.
Round Point Shovel, 48" Handle	STRU-S700
Round Point Shovel, 29" D-Handle	STRU-S700D
Square Point Shovel, 48" Handle	STRU-S701
Square Point Shovel, 29" D-Handle	STRU-S701D
4" Trenching Shovel, 48" Handle	STRU-S703
5" Trenching Shovel, 48" Handle	STRU-S702
Grain Scoop Shovel, 51" Handle	STRU-GS18
Grain Scoop Shovel, 29" d-Handle	STRU-GS18D
Landscape Rake, 24" Blade	STRU-LR24
Landscape Rake, 36" Blade	STRU-LR36
Soil Probe Tool, 48"	STRU-SP48
Soil Probe Tool, 60"	STRU-SP60
Industrial Broom, 24" Wide	STRU-PB24
Floor Squeegee, 24" Wide	STRU-IC24
Floor Squeegee, 36" Wide	STRU-IS36
Poly Leaf Rake	STRU-PR24
Sod Lifter Edger	STRU-49079
8" x 8" Cast Iron Tamper	STRU-TP8
10" x 10" Cast Iron Tamper	STRU-TP32

**MANY OTHER TOOLS AVAILABLE
UPON REQUEST**



DRAINAGE PIPE



Advanced Drainage Systems, Inc.
The Most Advanced Name in Drainage Systems

SINGLE WALL CORRUGATED PIPE

Lightweight HDPE Solid or Perforated



3" through 24" diameter perforated or solid pipe serves well for localized collection and drainage. Coils available in 3" through 6" and 20' lengths in larger sizes.

SIZE	LENGTH	TYPE	PART NUMBER
3"	100'	Solid	ADS351-100
3"	300'	Solid	ADS351
3"	100'	Perforated	ADS301-100
3"	300'	Perforated	ADS301-300
4"	100'	Solid	ADS451-100
4"	250'	Solid	ADS451
4"	100'	Perforated	ADS401-100
4"	250'	Perforated	ADS401
6"	20'	Solid	ADS651-20
6"	100'	Solid	ADS651
6"	20'	Perforated	ADS601
6"	100'	Perforated	ADS601
8"	20'	Solid	ADS851-20
8"	20'	Perforated	ADS801-20

Pipe sizes available up to 24"

N-12® SMOOTH INTERIOR PIPE

Dual Wall HDPE Solid or Perforated

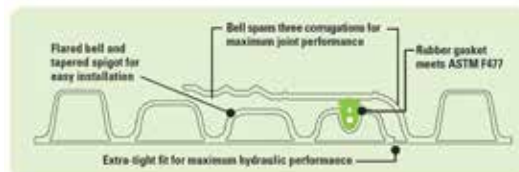


Provides excellent flow and durability for rapid outlet and transfer of collected water. Available with standard plain end or soil-tight built-in gasketed bell and spigot joints for quick installation. Delivered in 20' lengths, 4" through 60" diameters, perforated or non-perforated.

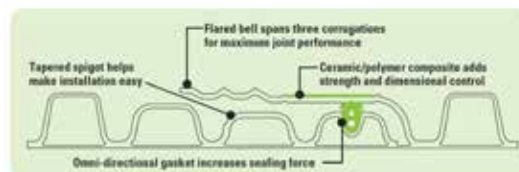
SIZE	LENGTH	TYPE	PART NUMBER
4"	20'	Solid, Plain End	ADS415-20
4"	20'	Perforated, Plain End	ADS0411-20
4"	20'	Solid, Soil-Tight End	ADS0415-20IB
4"	20'	Perf., Soil-Tight End	ADS0411-20IB
6"	20'	Solid, Plain End	ADS615-20
6"	20'	Perforated, Plain End	ADS611-20
6"	20'	Solid, Soil-Tight End	ADS0615-0020IB
6"	20'	Perf., Soil-Tight End	ADS0611-0020IB
8"	20'	Solid, Plain End	ADS815
8"	20'	Perforated, Plain End	ADS0811-20
8"	20'	Solid, Soil-Tight End	ADS0815-0020IB
8"	20'	Perf., Soil-Tight End	ADS0811-0020IB

Pipe sizes available up to 60".
Water-Tight ends also available.

N-12 IB ST Soil-tight joint



N-12 IB WT Watertight joint



INTERNAL COUPLER



SIZE	PART NUMBER
3"	ADS0315AA
4"	ADS415
6"	ADS615
8"	ADS815

EXTERNAL SNAP COUPLER



SIZE	PART NUMBER
3"	ADS312
4"	ADS412
6"	ADS612
8"	ADS812

SPLIT COUPLER



SIZE	PART NUMBER
3"	ADS0311AA
4"	ADS411
6"	ADS611
8"	ADS811

SNAP REDUCING COUPLING



SIZE	PART NUMBER
4" x 3"	ADS314
6" x 4"	ADS614
8" x 6"	ADS816AA

SPLIT END CAP



SIZE	PART NUMBER
3"	ADS0331AA
4"	ADS0431AA
6"	ADS631

SNAP END CAP



SIZE	PART NUMBER
3"	ADS332
4"	ADS432
6"	ADS831
8"	ADS832

INTERNAL END PLUG



SIZE	PART NUMBER
3"	ADS0333AA
4"	ADS433
4" (Perf)	ADS434AA
8"	ADS633AA

SNAP WYE



SIZE	PART NUMBER
3"	ADS322
4"	ADS422
6"	ADS622
8"	ADS822

SNAP 45-DEG. ELBOW



SIZE	PART NUMBER
4"	ADS445

SNAP 90-DEG. ELBOW



SIZE	PART NUMBER
3"	ADS390
4"	ADS490

SNAP BLIND TEE



SIZE	PART NUMBER
3"	ADS0341AA
4"	ADS0441AA
6"	ADS641
8"	ADS0841AA

SNAP TEE



SIZE	PART NUMBER
3"	ADS0321AA
4"	ADS421
6"	ADS0621AA
6" x 4"	ADS624
8"	ADS0821AA

Additional single-wall, N-12 Soil-tight and N-12 Water-tight fittings in other sizes available upon request.

MISCELLANEOUS DRAINAGE PRODUCTS

NYLOPLAST® DRAINAGE STRUCTURES



Nyloplast specializes in engineered drainage structures. Nyloplast is the latest in storm water technology and its innovative combination of performance proven ductile iron grates with a rugged, heavy-duty PVC structure makes them unique in the surface drainage field. Nyloplast manufactures drain basins, inline drains and a wide variety of grate options. They are easy to handle, there is no field fabrication needed and are watertight.

FLEXSTORM® INLET FILTERS



FlexStorm Inlet Filters offer superior protection for the widest range of drainage structures. Flexstorm is the perfect solution by filtering a wide range of particles and debris below grade. The filters also have an overflow bypass that allows water to flow freely in heavy storms. FlexStorm inlet filters are custom made and the adjustable frames are configurable to fit any storm drainage structure. Filters install in seconds and are easily maintained with the Universal Removal Tool. FlexStorm filters may also be reused and the geotextile filter bags are easily replaced after several years of use..

INSERTA TEE® LATERAL CONNECTIONS



INSERTA TEE is a high performance, easy-to-install lateral service connection consisting of a PVC hub, rubber sleeve and stainless steel band. INSERTA TEE's watertight, air testable seal provides superior performance. INSERTA TEE connects to all known solid wall, profile, closed profile, and corrugated pipe and connections are available from 2"-30". INSERTA TEE allows services to be connected where needed and reduces labor hours and pipe materials. INSERTA TEE eliminates the need for glues, epoxies and grout, the retightening of bands around mainlines and awkward gaskets. In addition, there are a wide variety of hole saws available for all pipe types and sizes.

GEOSYNTHETICS



ADS offers a wide variety of geosynthetic materials that offer soil stabilization and reinforcement, erosion control, filtration, separation and other construction needs. Erosion control products improve water quality by promoting vegetation and providing erosion protection in channels and on slopes. Geogrids reinforce weak soils under embankments and silt fences control runoff and sedimentation. Woven and nonwoven fabrics prevent ruts in unpaved roads, stabilize ground under waste ponds and pits and keep silt and fine soil out of collector pipe.

Contact us for more information and availability of all products from



DRAINAGE BASINS & GRATES

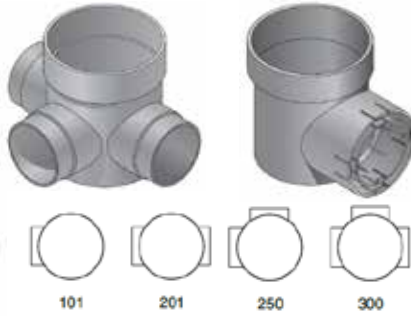


DRAIN BASINS

Use with 3" or 4" single-wall, N-12 or PVC pipe.



Low Profile Basin



Spee-D Round Basins



Basin Riser



Square Basin

DRAIN BASIN PIPE ADAPTERS & PLUGS



ATRIUM GRATES



DESCRIPTION	PART NUMBER
4" Round	NDS-75
6" Round	NDS-80
9" Square	NDS-991
12" Square	NDS-1280
18" Square	NDS-1891

SQUARE GREEN GRATES



SIZE	FIT	PART NUMBER
4"	3" Pipe	NDS-01
6"	3-4" Pipe	NDS-05
8"	6" Pipe & Spee-D	NDS-882
9"	6" Pipe & Spee-D	NDS-950

DESCRIPTION	PART NUMBER
6" Spee-D Round Basin, 1 Outlet	NDS-101
6" Spee-D Round Basin, 2 Outlets	NDS-201
6" Spee-D Round Basin, 2 Outlets	NDS-250
6" Spee-D Round Basin, 3 Outlets	NDS-300
9" Square Basin, 2 Outlets	NDS-900
9" Square Basin, 4 Outlets	NDS-900-4
9" Square Basin 6" Extension	NDS-916
9" Square Low Profile Basin	NDS-930
12" Square Basin, 2 Outlets	NDS-1200
12" Square Basin, 4 Outlets	NDS-1204
12" Square Basin 6" Extension	NDS-1216
12" Square Low Profile Basin	NDS-1230
18" Square Basin, 2 Outlets	NDS-1882
18" Square Basin, 4 Outlets	NDS-1884
18" Square Basin 6" Extension	NDS-1816
18" Square Low Profile Basin	NDS-1830

DESCRIPTION	PART NUMBER
Universal Basin Plug	NDS-1206
3" & 4" Locking Basin Adapter	NDS-1243
3" & 4" Offset Locking Basin Adapter	NDS-1245
6" Locking Basin Adapter	NDS-1266
8" Locking Basin Adapter	NDS-1888
8" Offset Basin Pipe Adapter	NDS-1889

SQUARE GRATES FOR BASINS



SIZE	COLOR	PART NUMBER
9"	Green	NDS-990
12"	Black	NDS-1212
18"	Green	NDS-1812

ROUND GRATES



SIZE	COLOR	PART NUMBER
3"	Green	NDS-16
4"	Black	NDS-11
4"	Green	NDS-13
6"	Green	NDS-50
8"	Green	NDS-20
12"	Green	NDS-1250

Many other sizes, colors and materials (Ex: Brass, Chrome) are available upon request.

WIRE - LOW VOLTAGE



DIRECT BURIAL, SINGLE CONDUCTOR SPRINKLER/VALVE WIRE

Polyethylene (PE) Insulation

SIZE (AWG)	COLOR & CONDUCTOR	PART NUMBER	ROLL SIZE	SOLD BY
14	Red, Solid	WIRE601401	2,500'	Roll
14	White, Solid	WIRE601402	2,500'	Roll
14	Black, Solid	WIRE601403	2,500'	Roll
14	Purple, Solid	WIRE601404	2,500'	Roll
14	Blue, Solid	WIRE601405	2,500'	Roll
14	Yellow, Solid	WIRE601406	2,500'	Roll
14	Orange, Solid	WIRE601407	2,500'	Roll
14	Pink, Solid	WIRE601411	2,500'	Roll
14	Green, Solid	WIRE601412	2,500'	Roll
14	Brown, Solid	WIRE601413	2,500'	Roll
14	Tan, Solid	WIRE601416	2,500'	Roll
12	Red, Solid	WIRE601201	2,500'	Roll
12	White, Solid	WIRE601202	2,500'	Roll
12	Black, Solid	WIRE601203	2,500'	Roll
12	Purple, Solid	WIRE601204	2,500'	Roll
12	Blue, Solid	WIRE601205	2,500'	Roll
12	Yellow, Solid	WIRE601206	2,500'	Roll
12	Orange, Solid	WIRE601207	2,500'	Roll
12	Green, Solid	WIRE601212	2,500'	Roll
12	Brown, Solid	WIRE601213	2,500'	Roll
10	Red, Solid	WIRE601001	2,500'	Roll
10	White, Solid	WIRE601002	2,500'	Roll
10	Black, Solid	WIRE601003	2,500'	Roll
10	Blue, Solid	WIRE601005	2,500'	Roll
10	Yellow, Solid	WIRE601006	2,500'	Roll
10	Orange, Solid	WIRE601007	2,500'	Roll
10	Green, Solid	WIRE601012	2,500'	Roll
Other colors and striping available as special order. 500' rolls may be available for 14 AWG upon request.				

AWG	O.D.
14	0.154"
12	0.171"
10	0.192"



DIRECT BURIAL MULTI-CONDUCTOR 24-VOLT SPRINKLER/VALVE CABLE

Polyvinyl chloride (PVC) Insulation
and PE Overall Jacket

SIZE (AWG)	NUMBER OF CONDUCTORS	PART NUMBER	ROLL SIZE	SOLD BY
18	6	WIRE1901806	250'	Roll
18	6	WIRE1901806A	500'	Roll
18	8	WIRE1901808	250'	Roll
18	8	WIRE1901808A	500'	Roll
18	9	WIRE1901809	250'	Roll
18	9	WIRE1901809A	500'	Roll
18	12	WIRE1901812	250'	Roll
18	12	WIRE1901812A	500'	Roll
18	13	WIRE1901813	250'	Roll
18	13	WIRE1901813A	500'	Roll

Other conductor quantities and roll sizes
are available upon request. Do not use for over 30 volts.

AWG	O.D.
18/6	0.265"
18/8	0.290"
18/9	0.310"

AWG	O.D.
18/12	0.340"
18/13	0.355"

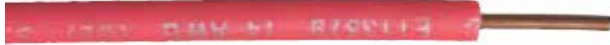


DECODER-TO-SOLENOID (DTS) 14/2 ZIP CABLE

Polyethylene (PE) Insulation with Raised Edges
on One Leg for Polarity

SIZE (AWG)	NUMBER OF CONDUCTORS	PART NUMBER	ROLL SIZE	SOLD BY
14	2	WIRE142DTS	2,500'	Foot

Available in multiple colors upon request.



DIRECT BURIAL, SINGLE CONDUCTOR UF POWER WIRE

Polyvinyl Chloride (PVC) Insulation

SIZE (AWG)	COLOR & CONDUCTOR	PART NUMBER	ROLL SIZE	SOLD BY
10	Red, Solid	WIRE601001	2,500'	Roll
10	White, Solid	WIRE601002	2,500'	Roll
10	Black, Solid	WIRE601003	2,500'	Roll
10	Green, Solid	WIRE601012	2,500'	Roll
8	Red, Solid	WIRE600801	2,500'	Roll
8	White, Solid	WIRE600802	2,500'	Roll
8	Black, Solid	WIRE600803	2,500'	Roll
8	Green, Solid	WIRE600812	2,500'	Roll
6	Red, Stranded	WIRE600601	1,000'	Roll
6	White, Stranded	WIRE600602	1,000'	Roll
6	Black, Stranded	WIRE600603	1,000'	Roll
6	Green, Stranded	WIRE600612	1,000'	Roll
4	Red, Stranded	WIRE600401	1,000'	Roll
4	White, Stranded	WIRE600402	1,000'	Roll
4	Black, Stranded	WIRE600403	1,000'	Roll
4	Green, Stranded	WIRE600412	1,000'	Roll
2	Red, Stranded	WIRE600201	1,000'	Roll
2	White, Stranded	WIRE600202	1,000'	Roll
2	Black, Stranded	WIRE600203	1,000'	Roll
2	Green, Stranded	WIRE600212	1,000'	Roll
1/0	Red, Stranded	WIRE600001	1,000'	Roll
1/0	White, Stranded	WIRE600002	1,000'	Roll
1/0	Black, Stranded	WIRE600003	1,000'	Roll
1/0	Green, Stranded	WIRE600012	1,000'	Roll
Other colors and striping available as special order.				

AWG	O.D.
10	0.225"
8	0.285"
6	0.340"

AWG	O.D.
4	0.390"
2	0.450"
1/0	0.560"



2-CONDUCTOR PLUS GROUND UF POWER CABLE - FLAT

Polyvinyl chloride (PVC) Insulation
(except Ground) and PVC Overall Jacket

SIZE (AWG)	GROUND SIZE & CONDUCTOR	PART NUMBER	ROLL SIZE	SOLD BY
14	#14, Solid	WIRE62142G	1,000'	Roll
12	#12, Solid	WIRE62122G	1,000'	Roll
10	#10, Solid	WIRE62102G	1,000'	Roll
8	#10, Stranded	WIRE62082G	1,000'	Roll
6	#10, Stranded	WIRE62062G	1,000'	Roll

AWG	O.D.
14	.210" x .445"
12	.235" x .495"
10	.240" x .570"

AWG	O.D.
8	.340" x .700"
6	.410" x .900"



3-CONDUCTOR TRAY POWER CABLE (TC) - ROUND

THHN/THWN Conductors with
Overall Polyvinyl chloride (PVC) Jacket

SIZE (AWG)	CONDUCTOR COLORS	PART NUMBER	ROLL SIZE	SOLD BY
12/3	Blk/Red/Blu	WIRE182148	Custom	Foot
10/3	Blk/Red/Blu	WIRE180608	Custom	Foot
8/3	Blk/Red/Blu	WIRE180607	Custom	Foot
6/3	Blk/Red/Blu	WIRE180600	Custom	Foot
4/3	Blk/Red/Blu	WIRE180700	Custom	Foot
2/3	Blk/Red/Blu	WIRE180605	Custom	Foot
1-0/3	Blk/Red/Blu	WIRE180610	Custom	Foot

AWG	O.D.
12	0.39"
10	0.47"
8	0.62"
6	0.70"

AWG	O.D.
4	0.90"
2	1.03"
1/0	1.25"

WIRE - COMMUNICATION



TORO COMMUNICATION CABLE - P7162D 2-COND., NON-ARMORED with DRAIN

Polyethylene (PE) Insulation

SIZE (AWG)	COLORS	PART NUMBER	ROLL SIZE	SOLD BY
16/2	Gray & Yellow	TPC-1-220NA	Custom	Foot



COMMUNICATION CABLE - P7171D 2 PAIRS of CONDUCTORS with DRAIN

Polyethylene (PE) Insulation

SIZE (AWG)	COLORS	PART NUMBER	ROLL SIZE	SOLD BY
18	Pair 1: Red/Blk Pair 2: Blu/Oran	WIRE-7171D	Custom	Foot



COMMUNICATION CABLE - P7195D 3 PAIRS of CONDUCTORS with 3 DRAINS

Polyethylene (PE) Insulation

SIZE (AWG)	COLORS	PART NUMBER	ROLL SIZE	SOLD BY
20	Pair 1: Blk/Red Pair 2: Blk/Whi Pair 3: Blk/Grn	WIRE-7195D	Custom	Foot



COMMUNICATION CABLE - P7315D 6 PAIRS of CONDUCTORS, SHIELDED

Polyethylene (PE) Insulation

SIZE (AWG)	COLORS	PART NUMBER	ROLL SIZE	SOLD BY
19	Standard Telephone	WIRE-PUMP	Custom	Foot

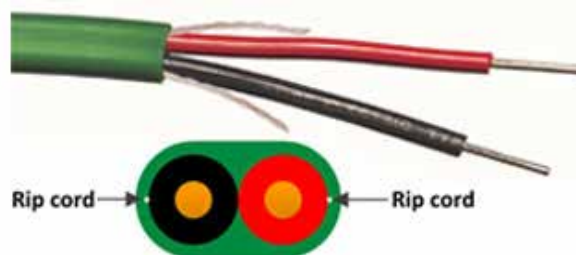


2-CONDUCTOR JACKETED "DECODER" CABLE TWISTED - P7350D

Polyethylene (PE) Insulation

SIZE (AWG)	Jacket Color	PART NUMBER	ROLL SIZE	SOLD BY
14	Red	WIRE170800	2,500'	Foot
14	Blue	WIRE170800BLU	2,500'	Foot
14	Black	WIRE170800BLK	2,500'	Foot
14	Green	WIRE170800GRN	2,500'	Foot
14	Yellow	WIRE170800YEL	2,500'	Foot
12	Red	WIRE170804	2,500'	Foot
12	Blue	WIRE170804BLU	2,500'	Foot
12	Black	WIRE170804BLK	2,500'	Foot
12	Green	WIRE170804GRN	2,500'	Foot
12	Yellow	WIRE170804YEL	2,500'	Foot

Other jacket colors are available.



2-CONDUCTOR JACKETED "DECODER" CABLE - P7072D

Polyvinyl Chloride (PVC) Insulation

SIZE (AWG)	Jacket Color	PART NUMBER	ROLL SIZE	SOLD BY
14	Red	WIRE180115	2,500'	Foot
14	Blue	WIRE180116	2,500'	Foot
14	Black	WIRE180127	2,500'	Foot
14	Green	WIRE180117	2,500'	Foot
14	Yellow	WIRE180118	2,500'	Foot
14	Orange	WIRE180114	2,500'	Foot
14	Purple	WIRE1801181	2,500'	Foot
14	Brown	WIRE1801182	2,500'	Foot
14	Gray	WIRE1801183	2,500'	Foot
14	White	WIRE180126	2,500'	Foot

#12 AWG and other jacket colors are available.

DIRECT BURY WIRE SPLICE KITS

For Single Conductors

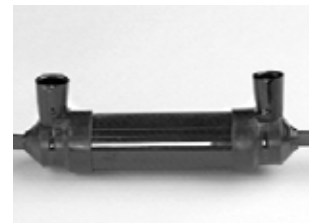
DESCRIPTION	PART NUMBER
3M SCOTCHLOK 3570G-N SEAL PACK*	TPC-1-206
8" BLACK CABLE TIES, 100 PACK	PAIGE-270216
RED/YELLOW WIRE NUT, EACH	TPC-1-205
RED/YELLOW WIRE NUT, 500 BULK PACK	TPC-1-203RY
TAN/RED WIRE NUT, 750 BULK PACK	TPC-1-203TR
DBR/Y-6 SPLICE KIT, PACK OF 2	PAIGE-270673
DBR/Y-6 SPLICE KIT, 100 BULK PACK	PAIGE-270672
DBO/B-6 SPLICE KIT, PACK OF 2	PAIGE-270674
DBO/B-6 SPLICE KIT, 100 BULK PACK	PAIGE-270675
* Sold individually, but 10 packs are in a box	



3M DIRECT BURY CABLE SPLICE KITS

For Multiple Conductors

PRODUCT	WIRE SIZE	PART NUMBER
82-A	10 - 2 AWG, 0.75" Max OD	TPC-1-207A
82-A1	12 - 2 AWG, 0.625" Max OD	TPC-1-207B
82-A2	2 - 3/0 AWG, 1" Max OD	TPC-1-207C
82-B1	10 - 2AWG, 0.625" Max OD	PAIGE-270375



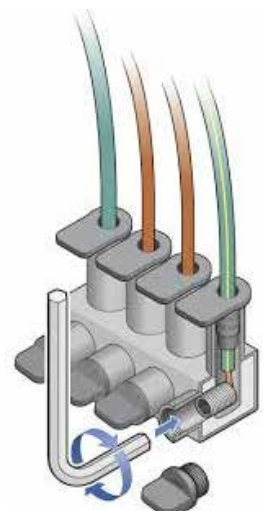
82-A Series Splice



82-B Wye Splice

ADDITIONAL WIRE CONNECTORS & SPLICE KITS

DESCRIPTION	PART NUMBER
Re-enterable Connector, 2-Position, 3-Pk	PAIGE-270RC2
Re-enterable Connector, 3-Position, 3-Pk	PAIGE-270RC3
Re-enterable Connector, 4-Position, 3-Pk	PAIGE-270RC4
3M SLic Comm. Cable Splice Kit, 2-Pack	PAIGE-273211
3M #4N Resin Seal Pack, 3.2 oz 4 x 7 Bag	TPC-1-4A
Inline (1 in-1 out) Decoder Cable Device	PAIGE-270DCFD1
2-way (1 in-2 out) Decoder Cable Device	PAIGE-270DCFD
3-way (1 in-3 out) Decoder Cable Device	PAIGE-270DCFD3
Brass Split Bolt for #6 Ground Wire	PAIGE-181999



Re-enterable Connector



Decoder Cable Device



3M SLic



Brass Split Bolt



3M #4N Resin

GROUNDING

GROUND WIRE

Uninsulated

DESCRIPTION	PART NUMBER
10 AWG Solid Conductor - 1,000' Roll	WIRE160465
6 AWG Solid Conductor - 1,000' Roll	WIRE160635
6 AWG Solid Conductor - 250' Roll	TPC-1-224S
6 AWG Solid Conductor - Per Foot	TPC-1-224SA



COPPER GROUND PLATES & GROUND ENHANCEMENT MATERIAL (GEM)

Made to Comply with National Electrical Code

DESCRIPTION	PART NUMBER
4" x 96" Plate with 25' of #6 Welded Insulated Wire	PAIGE-182199L
4" x 36" Plate with 10' of #10 Welded Insulated Wire	PAIGE-182201
50 lb Bag of Powerset Ground Enhancement Material	PAIGE-1820058
<i>Recommended GEM - (2) bags per 4" x 96" plate & (1) bag per 4" x 36"</i>	



COPPER-CLAD GROUND RODS

5/8" Diameter

DESCRIPTION	PART NUMBER
5/8" x 8' Rod Only	TPC-1-219
5/8" x 10' Rod Only	TPC-1-219B
Ground Rod Clamp for 5/8" Rod, Cast Bronze	TPC-1-213
5/8" x 10' Rod with 25' of #6 Welded Insulated Wire	TPC-1-219A



CADWELD PLUS "ONE-SHOT" CONNECTORS

Permanently welds bare wires together or to 5/8" rods

DESCRIPTION	PART NUMBER
Connect Single #6 Wire to Ground Rod	CAD-GR1-161G
Connect (2) #6 Wires to Ground Rod	CAD-GT1-161G
Connect (3) #6 Wires to Ground Rod	CAD-NT1-161G
Connect (4) #6 Wires to Ground Rod	CAD-NX1-161G
Connect (4) #6 Wire Together	CAD-PG11LP
Battery Control Unit	CAD-182PLUSCU2L



GR1



GT1



NT1



NX1



Control Unit

MISCELLANEOUS ELECTRICAL SUPPLIES

SOLA POWER CONDITIONERS

DESCRIPTION	PART NUMBER
120VA Voltage Regulating Conditioner	SOLA250000
250VA Voltage Regulating Conditioner	SOLA250010
500VA Voltage Regulating Conditioner	SOLA250020
750VA Voltage Regulating Conditioner	SOLA250030
1000VA Voltage Regulating Conditioner	SOLA250040
1500VA Voltage Regulating Conditioner	SOLA250050
2000VA Voltage Regulating Conditioner	SOLA250060
3000VA Voltage Regulating Conditioner	SOLA250070
120VA and 250VA allow for 120-Volt output only. 500VA and larger allow for 120, 208 or 240-Volt input and output.	



SIZING:

Example:

1. 15 controllers supplied by a single 120 VAC source.
2. Specs show the maximum current draw of each controller when operating at max load is 0.8 amps

Calculate:

$$15 \text{ controllers} \times 0.8 \text{ amps} \times 120 \text{ volts} = 1440 \text{ VA}$$

Choose a 1500 VA Power Conditioner

MISC. ELECTRICAL

DESCRIPTION	PART NUMBER
1" PVC Sweep Elbow	TPC-1-228C
1½" PVC Sweep Elbow	TPC-1-228
2" PVC Sweep Elbow	TPC-1-228A
3" PVC Sweep Elbow	TPC-1-228B
1" SCH40 PVC Electrical Conduit, Per FT	SW40-010E
1½" SCH40 PVC Electrical Conduit, Per FT	SW40-015E
2" SCH40 PVC Electrical Conduit, Per FT	SW40-020E
3" SCH40 PVC Electrical Conduit, Per FT	SW40-030E
3M Skotchkote Sealant, Pint Can	TPC-1-216
3M Rubber Tape, 3/4" x 30' Roll	PAIGE-270001
Electrical Tape, 3/4" 60' Roll	TPC-1-201
Duct Tape, 2" x 60 Yard Roll	TPC-1-200
Warning Tape, 3" x 1000', Detectable	TPC-1-612
Wire Marking Tags, Bag of 25	PAIGE-270WMT
Wire Marking Tag Permanent Ink Pen	PAIGE-270WMP
8" Black Cable Ties, Weath. Resist., 100Pk	PAIGE-270216
Wire Marking Dispenser, Filled with 0-9	PAIGE-270391





Leading the industry in digital testing products

PRO900 ADVANCED UNDERGROUND LOCATOR

The Pro900 is truly our most advanced and most versatile locator. Connecting via the inductive clamp is simple and safe, and the user doesn't have to deactivate a system in order to trace the wire.

- 3 Modes of connection: direct connect, inductive clamp, and inductive antenna
- Adjustable power levels
- Highest powered transmitter available
- Advanced AC noise rejection for accurate tracking
- 2 Listening options: external speaker or headset
- Includes Transmitter, Receiver, Inductive Clamp, Stereo Headset, Ground Stake
- Depth range: 8 feet
- Distance: 5,000 feet with direct connection. Unlimited with broadcast mode and leapfrogging



DESCRIPTION	PART NUMBER
Pro900 Advanced Locator	PRO900

PRO800D HI-POWER WIRE & VALVE LOCATOR

The Pro800D Underground Wire and Valve Locator for sprinkler and irrigation professionals sets a new standard for features and functionality with a combination of high performance and affordability.

- Direct wire connection or broadcast non-contact mode
- High power output
- Low battery LED indicator
- 2 Listening options: external speaker or headset
- Backlit digital display
- Includes Transmitter, Receiver, Headset, Ground Stake



DESCRIPTION	PART NUMBER
Pro800D Locator	PRO800D

GFL3000 GROUND FAULT LOCATOR

The GFL3000 Ground Fault Locator is a low cost fault finder incorporating dual power output, designed to pinpoint nicks or cuts in underground cables or wires where voltage is leaking to ground. By going in the direction of the analog needle kicks on the receiver, the exact spot of the fault can be found.

- Locates buried ground faults
- Dual power capability (Hi/Lo)
- Audible 'On' beeper
- Rechargeable battery
- Includes Ground Stake, AC Battery Charger



DESCRIPTION	PART NUMBER
GFL3000 Fault Locator	GFL9000

PRO2TK 2-WIRE TOOL KIT

The Pro2TK 2-Wire Tool Kit consists of everything necessary to test 2-wire systems, all in a professional looking carrying case that is easy to bring with you on the job and holds all the essentials.

Includes:

- Pro50 Digital Tester
- Pro95i Milliamp Clamp Multimeter
- Pro55 Stainless Steel Wire Strippers
- Pro210F Tone Probe
- Scrubbuz Wipes to Remove Splice Gel
- ProCase Hard Shell Case



DESCRIPTION	PART NUMBER
Pro2TK 2-Wire Tool Kit	PRO2TK

PRO400 TDR/TONER CABLE FAULT LOCATOR

The Pro400 is a professional Time Domain Reflectometer and Toner designed to detect and locate faults on copper cables. Advanced signal processing techniques enable the Pro400 to find opens, short circuits, splices, taps, water ingress and other more elusive impedance mismatches.

- Low cost full specification professional graphical TDR
- 5 Measurement Ranges up to 6500ft
- Built in Tone Generator for wire tracing and identification
- Backlit display screen
- Water and dust proof
- Complete with carrying case and test leads



DESCRIPTION	PART NUMBER
Pro400 TDR/Toner Locator	PRO400

PRO95I ADVANCED MILLIAMP CLAMP MULTIMETER

The Pro95i Multimeter is a must-have tool for troubleshooting 2-wire or decoder irrigation systems. It has a ten-fold increase in current clamp sensitivity and increased resistance measurement up to 600,000 ohms.

- True RMS
- Auto-Ranging
- Also measures VAC and VDC
- Max Voltage: 600 VAC or VDC
- Backlit display screen
- Batteries and carrying case included



DESCRIPTION	PART NUMBER
Pro95i Clamp Multimeter	PRO95I

PRO50K MULTI-FUNCTION TESTER KIT

The Pro50 can check solenoids by using either the activation or chatter modes. The chatter mode is also effective in finding lost or buried valves. 24v transmission is checked with a simple LED power check. The kit includes the Pro50, the Pro210F Advanced Tone Probe, which can verify wiring with the built-in tone generator.

- Chatters solenoids
- Activates and holds solenoids open
- Generates 1 kHz tracing tone
- Checks 24v power output
- Tests for open or shorted wiring
- Amplifies tone signal to identify wire



DESCRIPTION	PART NUMBER
Pro50 Test Kit	PRO50K

TORO LYNX® CENTRAL CONTROL SYSTEM



Better Information for Better Control.

True peace of mind is built on having ultimate control of your irrigation system whether you are at your PC or on the go, whether your course uses two-wire or satellite control or is a combined system. Lynx Central Control offers a single source for ultimate irrigation management precision, reliability, upgradability and ease of use.

Centralized Irrigation Management

- **NEW** compatibility with satellite and two-wire systems in one — take advantage of the most advanced irrigation management control system on the market regardless of hardware preference.
- **NEW** map tools including map rotation and views by Precip Management Group (PMG) and the projected amount of irrigation
- Seamless compatibility with Lynx Smart Modules; automatically identify individual smart modules after the initial installation process

Unmatched Precision - Unmatched Ease

- Irrigation runtime to the second and measures inputs to 1/100th of an inch
- Water by time or by amount to precisely apply the same amount of water to the green eliminating uneven over- or under-watering areas

Critical Information When You Need It

- Local data back up to access data should cloud servers or internet outages occur
- Proactive diagnostics identify and highlight address issues before irrigation interruptions occur

Quick Start

- With Quick Start, you don't have to be a programmer to quickly setup your irrigation system
- A basic hydraulic tree is auto-generated for you during Quick Start

NEW On Demand Cloud Connection

- Mobile access and control from anywhere, at any time
- Upgraded features and technology without hardware replacement or field installation
- Added security with automatic data backup scheduler; data is safe and accessible during a power loss or PC outage
- Start, Stop, Hold, percent adjust entire areas or individual stations
- Synchronize and run diagnostics from anywhere on your course without being in front of your PC



More Time in Your Day for Other Things

Toro understands that water management must be precise, efficient and adaptable to the unique challenges and shifting priorities you face each day. Lynx gives you quick access and control of essential irrigation information on one intuitive interface from a mobile device or PC. Which means more control over water costs, labor and your busy day.



Lynx Map



Lynx Handheld



Lynx Barcode



Lynx Dash



NSN Connect

Lynx® Mobile Apps Provide Remote Control

Lynx Mobile Apps enable you to control your irrigation system from your smart phone or tablet. Available for both iPhone®* and Android™* devices, Lynx Mobile Apps offer map and numeric based interfaces for manual irrigation, as well as an easy way to enter or edit LSM addresses.

* iPhone and the Apple are registered trademarks of Apple, Inc.

* Android is a trademark or registered trademarks of Google Inc.

TORO LYNX® CENTRAL CONTROL SYSTEM

SPECIFICATIONS - LYNX® LEVELS COMPARISON

SYSTEM CAPACITY	Lynx CE	Lynx PE	Lynx SE
Number of Satellite Stations:	32,000	1,344	512
Number of Lynx Smart Module Stations:	6,400	1,000	500
Number of Pump Stations:	10	3	2
Number of Separate Courses:	3	2	1
Number of Hydraulic Branches:	1,024	300	100
HARDWARE SUPPORTED			
OSMAC G3, E-OSMAC	Yes	Yes	Yes
Lynx Smart Hub, Lynx Smart Module, GDC, GAC (2-wire)	Yes	Yes	Yes
Lynx Smart Satellite, Network VP	Yes	Yes	Yes
PROGRAMMING			
Current Sensing	Yes	No	No
Station Adjust Upload	Yes	No	No
Site Code Categories:	7	3	No
Precipitation Management Groups (PMG)	Yes	Yes	No
Max. Stations/Hole Control	Yes	Yes	No
Instant Program Creation	Yes	Yes	Yes
Program Priority	Yes	Yes	No
Pump Profiling	Yes	Yes	No
Station Group Multi-Manual	Yes	No	No
Master Group Multi-Manual	Yes	No	No
Pump Integration	Yes	Yes	Optional
Weather Station Alarms	Yes	Yes	Optional
ET Auto Calculate Run Time Method	Yes	Yes	Optional

Ordering Information - LYNX Central

LX-0X-X-XX				
Model	Computer Hardware	NSN Service	Level	Field Hardware
LX	0X	X	X	X
LX - LYNX Central	01 - Standard Computer 04 - Premium Computer	1 - 1 year of NSN 5 - 5 years of NSN	0 - CE 1 - SE 2 - PE	1 - For OSMAC 7 - For Lynx Smart Sat/VP 8 - For 2-wire
Example: LYNX CE Central standard computer with 1-year of NSN for OSMAC = LX-01-1-01				

LYNX CE CENTRAL UPGRADES FROM SITEPRO®

DESCRIPTION	PART NO.
Lynx Upgrade with Standard Computer - For Customers with Current NSN Subscription	LYNX-NSN-STAN
Lynx Upgrade with Premium Computer - For Customers with Current NSN Subscription	LYNX-NSN-PREM
Lynx Upgrade with Standard Computer & 1-YR NSN - For Customers without NSN Subscription	LYNX-NONNSN-STAN
Lynx Upgrade with Premium Computer & 1-YR NSN - For Customers without Current NSN Subscription	LYNX-NONNSN-PREM
Lynx Software Upgrade - For Customers with Current NSN Subscription & Qualifying Computer	LX-SW

TORO COMMUNICATION INTERFACES



Network Radio-Link offers you the flexibility to design your irrigation system unconfined by the limitations of distance or terrain. Oversized acreage and natural barriers are not a problem for Network Radio-Link. Communicating where wires can't run, it's the bridge between non-contiguous wire line systems and much more.

Radio-Link Communication

- Wireless communication to Network satellites
- Network Radio-Link kits for upgrades
- True 2-way communication
- Multi-port field interface allows one radio to be shared among many satellites
- Easy satellite installation
- Compatible with Network LTC, LTC Plus, LTC Pro, Network 8000, Network VP, Lynx Smart Satellite and Lynx Smart Hub

FIELD INTERFACE UNIT (FIU)

DESCRIPTION	PART NO.
FIU with 1 Wire Line & 1 Radio Line - Radio Not Included	FIU-2011
FIU with 1 Wire Line & 1 Radio Line - Analog Radio Included	FIU-2011R
FIU with 1 Wire Line & 1 Radio Line - Digital Radio Included	FIU-2011DR
FIU with 2 Wire Lines & 1 Radio Line - Radio Not Included	FIU-2021
FIU with 2 Wire Lines & 1 Radio Line - Analog Radio Included	FIU-2021R
FIU with 2 Wire Lines & 1 Radio Line - Digital Radio Included	FIU-2021DR



The Toro Radio Interface Unit combines the functions of the OSMAC Base Station and Hand-held Remote Interface (HHRI) in a single unit. Available in a dual radio configuration that performs both Base Station and HHRI functions or a single radio configuration that's programmable for either function.

Radio Interface Unit (RIU)

- Provides control of your system while you're on-the-go
- Provides both hand-held control and central-to-satellite communication
- Designed to operate continuously, 24/7
- Interfaces with your Lynx® or SitePro® central without the burden of recurring network costs
- Tailored to fit your application with programmable selections for: OSMAC Base Station and hand-held remote interface modes, independent transmit/receive UHF frequencies, independent transmit/receive private line settings (CTCSS) and transmit power.

RADIO INTERFACE UNIT (RIU)

DESCRIPTION	PART NO.
RIU with Single Radio	RIU-01
RIU with Dual Radio	RIU-02



IMPORTANT:

An FCC license is required for operation of a radio-based system. Multiple frequencies can be licensed to accommodate controller communication, hand-held operation and voice communication. Turf Products can provide service for a frequency survey and licensing application. Use Part Number: **TPC-1-SURV**

TORO RADIO KITS - FOR SATELLITES & FIU

DESCRIPTION	PART NO.
Maxon (Analog) Radio Communication Add-on Kit - for Central FIU	102-5490
Digital Radio Communication Add-on Kit - for Central FIU	118-6460
Maxon (Analog) Radio Kit with Pyramid Antenna - for Network LTC & VP Satellite, Horizontal Mount	102-5025
Maxon (Analog) Radio Kit with Pyramid Antenna - for Network VP Satellite, Vertical Mount	118-2895
Digital Radio Kit with Pyramid Antenna - for Network LTC & VP Satellite, Horizontal Mount	RADIOKIT-L-G
Digital Radio Kit with Pyramid Antenna - for Network VP Satellite, Vertical Mount	RADIOKIT-V-G



AA107



DB404



AA104



ANTNEST



ICOM RADIOS

ANTENNA, RADIOS & ACCESSORIES

DESCRIPTION	PART NO.
Fiberglass Omnidirectional Base Antenna - 7 dBD Gain (Requires Antenna Cable AA001)	AA107
Dipole Quasi-Omni Base Antenna - 3.8 dBD Gain (Requires Antenna Cable AA001)	DB404
Tripod Mount for Base Antenna	TRIPOD
Yagi Directional Satellite Antenna - 9 dBD Gain (Requires Antenna Cable AA001)	AA104
Birdhouse Remote Antenna	ANTNEST
Antenna LM400 Coax Cable - Ordered By The Foot (Requires Cable 2 Connectors)	AA001
Antenna Cable End Connectors for AA001 Cable (2 Required)	AA401
Antenna Cable Adapter - Required to Connect Main Antenna Cable to Toro FIU or RIU	AA259BNC
Polyphaser Antenna Lightning Arrestor	AA611
ICOM Hand-held Radio with Keypad and Charger	F2000T-09
ICOM Hand-held Radio with Charger, No Keypad	F2000 01

TORO NATIONAL SUPPORT NETWORK (NSN®)

A team of A+ certified technicians and licensed irrigators dedicated to the daily operations and maintenance of computerized central control systems for customers worldwide.

What is the National Support Network?

- ✓ The NSN is based in Abilene, Texas, with a team of dedicated technical support specialists, including 20 licensed irrigators, with an average tenure of 10 years and combined over 340 years of Toro NSN experience.
- ✓ Toro NSN was founded over 25 years ago, the first dedicated customer support network in the irrigation industry.
- ✓ NSN is there to provide you with confidence and peace of mind, complete central control system operational assurance.
- ✓ Simply, NSN is there to support you and keep you irrigating 24 hours a day, 7 days a week.

What Services Does NSN Provide?

- ✓ 1-800-ASK-TORO – NSN is there to support you 24 hours a day, 7 days a week, 365 days of the year.
- ✓ Extended warranty, with next shipping day hardware replacement of central control system.
- ✓ Remote access to your central control system, allowing you to control your irrigation when you are outside of the office.
- ✓ NSN Portal – a web-based customer portal providing a knowledge-sharing database, on-line chat, and training.
- ✓ Training events – regular web-based training seminars are offered for all new Lynx customers. In addition, regional training events are hosted throughout the US.

NSN RENEWAL OPTIONS

Extended Central Control System Support for Existing NSN Subscribers

RENEWAL PLANS with:	Ultimate	Optimum	Premium Tower	Classic 36	Standard Tower	Essentials	Annual
Unlimited 24-Hr Support	✓	✓	✓	✓	✓	✓	✓
24/7/365 Emergency Paging Service	✓	✓	✓	✓	✓	✓	✓
Extended Warranty Fulfilled	✓	✓	✓	✓	✓	✓	✓
Free Controller Software Service Packs & Discounted Enhancements	✓	✓	✓	✓	✓	✓	✓
24 Hour Hardware Replacement	✓	✓	✓	✓	✓	✓	✓
NSN Regional 2-day Training Class Tuition, GCSAA-Accredited	✓	✓		✓			
TORO Standard Computer				✓			
TORO Standard Tower Only					✓		
TORO Premium Computer	✓	✓					
TORO Premium Tower Only			✓				
Uninterruptible Power Supply (UPS)	✓	✓		✓			
NSN Connect for Remote Connection & NSN Portal	✓	✓	✓	✓	✓	✓	✓
Microsoft® Office	✓						
Plan Term	60 months	36 months	36 months	36 months	36 months	60 months	12 months
Lump-Sum Pricing	\$15,180	\$11,126	\$8,820	\$9,756	\$8,245	\$9,540	\$2,679
Monthly Pricing	\$1,250 + \$274 60 months	\$750 + \$310 36 months	\$264 36 months	\$750 + \$274 36 months	\$242 36 months	\$175 60 months	N/A

Plan pricing is as of January 2023 and subject to change.

Contact NSN Sales at: (888) 676-8676.

TORO TURF GUARD® WIRELESS SOIL MONITORING SYSTEM



Get the essential soil information you need, when you need it. Stay up to date on your current soil conditions no matter where you are. Get the information you need to make important decisions in real time. Turf Guard sensors instantly track soil moisture, salinity, and temperature, saving you time.

Reduce Water Usage & Improve Playability

Monitor moisture levels and adjust irrigation without risking turf quality. Promote root growth by avoiding over watering. Detect dry areas before they impact the turf's health.

100% Wireless Network

No wires between the repeaters and the sensors, or the sensor and the probes means that sensors can be installed anywhere on the course without disrupting play. Install sensors without having to trench or pull wires.

No Guesswork When Managing Salinity

Track salt build-up and schedule flushing as needed. Get positive confirmation that you're flushing reduced soil salts. Know when and how much water to flush with.



- ✓ One or more sensors buried in each green at critical root zone levels - 4¼" hole diameter (cup cutter).
- ✓ Additional sensors buried in fairways, tees, etc.
- ✓ Above-ground radio repeaters installed inside or on the outside of any brand irrigation controller.
- ✓ Wireless MESH networking links all sensors to the base station.
- ✓ Moisture, Temperature and Salinity readings displayed on computer or mobile device.

TURF GUARD®

DESCRIPTION	PART NO.
Turf Guard Wireless Underground Sensor	TG-S2-R
Wireless Repeater - Internal Mount	TG-R-INT
Wireless Repeater - External Mount	TG-R-EXT
Turf Guard Base Station	TG-B
Wireless Sensor Replacement Battery	TG-S2-BAT



SPECIFICATIONS

Operational

- Two distinct depths in the soil profile – critical root zone level and a second 5" lower. Independent measurements from each depth.
- MESH routing technology offers complete coverage even in remote canyon courses.
- Repeater mounts in most Toro irrigation satellite pedestals. An external repeater is available for other models including non-Toro pedestals.
- Supports up to 500 sensors per course
- Battery life of 3 years, field replaceable.
- Sensor reading sent every 5 minutes.
- Plots trends and compares historical and current readings.
- Lynx® Control System integration

Electrical

- Input Power:
 - Repeater: < 0.02A @ 6 VDC
 - Base Station: < 0.1A @ 120 VAC

Sensing

- 0.1°F temperature resolution
- 0.1 % volumetric soil moisture content resolution
- 0.1 dS/m soil conductivity resolution (salinity)

Communication

- Repeater Range: 2,000' line-of-sight
- Buried Sensor Range: 500' line-of-sight
- 900 MHz ISM Band FHSS communication
- Additional licensing not required

TORO LYNX SMART MODULE 2-WIRE CONTROL SYSTEM



The Toro Lynx Smart Module 2-Wire System uses innovative technology to provide an irrigation solution that is reliable and efficient. Using a 2-wire path to communicate to control units, the system reduces the costs associated with traditional valve wire and provides a solution that is vandal resistant, easy to install, and easy to expand.

Speed

Provides information faster than other two-wire brand, reducing test times from minutes to seconds and providing greater visibility into the overall health of the irrigation system.

Precision

Apply water with one-second resolution. The exact amount of water is placed exactly where it's needed.

Upgradeable

Upgrade remotely with just a click. Innovative new features and benefits are just a click away

Durable

Best in class surge protection to help weather the storm. It works with the Lynx Smart Hub, which protects the flow managed irrigation schedule, even in the event of a central failure if the central is down. Best in class broadband lightning protection.



Built-in diagnostics automatically let you know if there are any problems. The wire path check quickly confirms that the whole system is operational.

SPECIFICATIONS

Installation

- Maximum number of wire paths: 4 per gateway
- Maximum number of Lynx Smart Hubs: 20 per system
- Maximum number of modules per wire path: 250
- Maximum stations per Lynx Smart Hub: 1000
- Maximum stations per system: 10,000
- Simultaneous stations per output board: 100
- Maximum distance from central to module (using 14 gauge wire): 2.8 miles
- Maximum distance from module to sprinkler (using 14 gauge wire): 400 ft.
- Solenoids per output: 2 DCLS-P
- Stations per module: 1

Electrical

- Input Power: 88-264 VAC
- Output Power:
 - Output voltage: 40 V max
 - Output power: 75VA max
 - Class 2, SELV
- ISP 2-wire modules are rated at 20KV surge protection



Integrated Sprinkler

Toro INFINITY® and FLEX800™ Series sprinkler models have an integrated 2-wire module option.

TORO LYNX SMART MODULE 2-WIRE CONTROL SYSTEM



Lynx Smart Module (LSM) - Part # LSM-1 or LSM-1GB

The LSM is compatible with all INFINITY and Flex800 golf sprinklers and P220 and 220G golf valves as well as 100% backwards compatible with GDC systems.

- Part #: LSM-1 for use with valves or INFINITY Sprinklers
- Part #: LSM-1GB includes mounting tabs for Flex800 golf sprinklers
- All sprinklers and/or valves must use DC Latching solenoids when used with LSM's

INTERFACE OPTIONS



Lynx Smart Hub

Lynx Smart Hub is a new type of field controller that adds security, programmability and sensing to the benefits and simplicity of a wo-wire system

Lynx Smart Hub requires a Field Interface Unit (FIU) to communicate with Lynx Central



- ✓ The system can be segmented into manageable areas for simplified maintenance
- ✓ Provides for in-field manual operation or troubleshooting
- ✓ Stores and runs a fully flow-managed irrigation schedule in the event the central computer is offline
- ✓ Creates a convenient point of connection for soil, flow and status sensors

Ordering Information - Lynx Smart Hub

DEC-XXX-1000-XX				
Description	Configuration	Cabinet	Station Count	Communication
DEC	XX	X	1000	XX
DEC - 2-wire Interface	RS - Lynx Smart Hub	Blank - Metal Wall Mount P -Green Plastic Pedestal	1000 - 1000 Stations	M - Wireline DR - Digital Radio
Examples: Lynx Smart Hub, Metal Wall Mount, Wireline Communication = DEC-RS-1000-M Lynx Smart Hub, Plastic Pedestal with Radio Communication = DEC-RSP-1000-DR				

TORO LYNX® SMART SATELLITE



The Lynx Smart Satellite has a familiar look but is designed to improve performance and reliability. Picking up where the accomplished Network VP left off, the LSS adds enhanced communications with the Lynx Central and integration with field sensors to further complement your decision making. Lynx Smart Satellite is also fully compatible with Network VP and Network 8000 systems.

Smart Design

Designed for Performance

Faster microprocessor and increased memory for high performance today and the capacity for future enhancements tomorrow.

Designed for Reliability

Fewer cables and connectors, corrosion-resistant metals, vented circuit board covers, and simplified power distribution contribute to greater reliability.

Smart Features

Updated User Interface

Familiar arrow buttons and selector knob navigate the menu options in a larger backlit six-line display. Manual and diagnostic operations are easy, productive, and intuitive.

Enhanced Wireless Communications

New digital radio with an integrated modem provides improved communication signal integrity, new diagnostic information, and control options.

Optional Sensor Input Kit

Designed to integrate with the new Sensor Input Kit, allowing either local or Lynx Central response to information from anywhere on the course.

Plus all the Great Features of the Network VP

Station-Based Flow Management, current sensing and alarm response, runtimes to the second, Group Multi-Manual operation, Grow-In programs.



SPECIFICATIONS

Electrical

- Input Power:
 - 108VAC-132VAC:
 - 0.20 A (no load) @115
 - 1.2 A (max. load) @115
 - 216VAC-264VAC:
 - 0.10 A (no load) @ 230
 - 1.2 A (max. load) @ 230
- Output Power:
 - 24VAC: 3.0 A (max.)

Dimensions

- Plastic Cabinet:
 - 17" W x 40" H x 16" D

Temperature/Humidity

- Operating Temp:
 - 15° F to 140°F
- Storage Temp:
 - 22°F to 149°F
- Humidity:
 - 0% to 95% RH

SPECIFICATIONS

Operational

- Functions as a stand-alone controller or under the management of a central computer operating Lynx or SitePro Central Control System
- 64 irrigation programs
- Basic, Advanced and Grow-In programs
- Station Autocycle
- Percent Adjustment from 1% to 900%
- Each output can be defined as an irrigation station or general application switch
- Nonvolatile memory retains program information and satellite settings during power-off conditions; battery backup retains the date and time
- 16-64 stations in 16 station increments; individual station control and the ability to run up to 32 stations simultaneously
- Backward compatible with Toro Network VP and Network 8000 satellite systems



Lynx Smart Satellite - Inside View

- ✓ Clear vented covers on circuit boards provide protection from pests and corrosion
- ✓ Stainless steel and plated metal parts offer additional corrosion resistance
- ✓ LED Indicators give you confirmation of normal function and diagnostic information to assist with troubleshooting
- ✓ Shielded connectors ensure secure and reliable connections between components



Option Sensor Input Kit

- ✓ Pressure, Flow Rate, Rain, Status, and Temperature
- ✓ Includes 8 station outputs and 7 sensor inputs
- ✓ Part # **SMRT-SEN-BRD-KIT**



Choice of Three Pedestal Colors

Custom pedestal color options help satellites blend into their natural surroundings. (Green, Tree Bark, and Desert Sand)



Updated User Interface

- ✓ High-Contrast Backlit Display
- ✓ Intuitive Navigation
- ✓ Processor and Memory for High Performance and Future Enhancements

Ordering Information - Lynx Smart Satellite

300-0XXX6XXA					
Description	Configuration	Cabinet	Output	Communication	Options
300	0XX	X	6	X	X
300 - Lynx Smart Satellite	16 - 16 Stations	P - Plastic, Green	6 - 24 VAC Electric	A - Stand Alone	3 - Large Terminal Block
	32 - 32 Stations	T - Plastic, Desert Sand		M - Wireline Modem	& Manual Switches
	48 - 48 Stations	B - Plastic, Tree Bark		R - UHF Radio	4 - Large Terminal Block
	64 - 64 Stations			H - Radio & Wire Modem	w/Switches Surge
Examples: LSS 48-Station in Green Pedestal with Wireline Modem and Additional Surge Protection = 300-048P6M4A LSS 64-Station with Full Surge in Green Pedestal, Radio Comm and an Adjacent LSS "Slaved" = 300-064P6H4A					

TORO CONTROL SYSTEM SENSORS



The Sensor Input Kits for Lynx Smart Satellite and Network VP deliver important field data. Relevant data is the foundation of informed decision making, whether the decision is made by a human or a computer. A controller equipped with either of the two Sensor Input Kits can receive data from up to seven sensors. The satellite collects, stores, and delivers the data to Lynx, where it can be accessed by the superintendent on the Sensor Dashboard. Lynx also can respond automatically to changes to the irrigation system and changes in weather conditions.



VP-SEN-BUNDLE



SMRT-SEN-BRD-KIT



VP-SEN-BRD-KIT



TI-TR-525I



TWRS & TWRFS



DAVIS-7714



DI-IR220B

Lynx Central Integration

Sensor alarms and responses can be easily configured in Lynx with numerous options for responses to alarm conditions. Alarm & Response Examples:

- **Pressure Sensor:** Set alarm conditions and responses for high and/or low pressure values. Notification can be sent if measured pressure falls below a specified value.
- **Rain Gauge:** Prevent, suspend or adjust irrigation in the event of a measurable rain event. Lynx will account for measured rain on an hourly or daily basis and automatically apply a Rain Hold or adjust scheduled activity to account for the rain fall.
- **Temperature Gauge:** Set alarm conditions and responses for high and/or low air temperature. Activate greens fans through a satellite switch output when air temperature exceeds the alarm value for a set duration. Suspend irrigation when air temperature is near freezing.
- **Switch Status:** Set alarm conditions and responses for changes in switch state. Control pond or tank water level using level switches to trigger a pump or valve to transfer water, maintaining water level within a set range.
- **Flow Meter:** Set alarm conditions and responses for high and/or low flow rate values. A satellite switch can be closed if a flow out of tolerance is observed, signaling the pump station to shut down.

SENSORS & KITS

DESCRIPTION	PART NO.
Sensor Input Kit for Lynx Smart Satellite	SMRT-SEN-BRD-KIT
Toro VP Timing Module - Sensor Compatible	VP-SEN-BUNDLE
Toro VP Sensor Board and Terminal Board	VP-SEN-BRD-KIT
Toro Pressure Sensor Kit: 0-200 psi, 1/4" -18 NPT Male Thread (Requires Saddle/Tee)	PRESS200-SEN-KIT
Toro Temperature Sensor Cable (Recommend Purchase of Davis #7714 Radiation Shield)	TEMP-SEN-KIT
Davis Radiation Shield for Temperature Sensor	DAVIS-7714
Texas Instruments Rain Gauge Tipping Bucket	TI-TR-525I
Data Industrial Flow Sensor Insert (Requires Saddle/Tee with 2" FPT)	DI-IR220B
Toro Wireless Rain Sensor	TWRS
Toro Wireless Rain / Freeze Sensor	TWRFS

Network LTC™ Plus to Network VP®

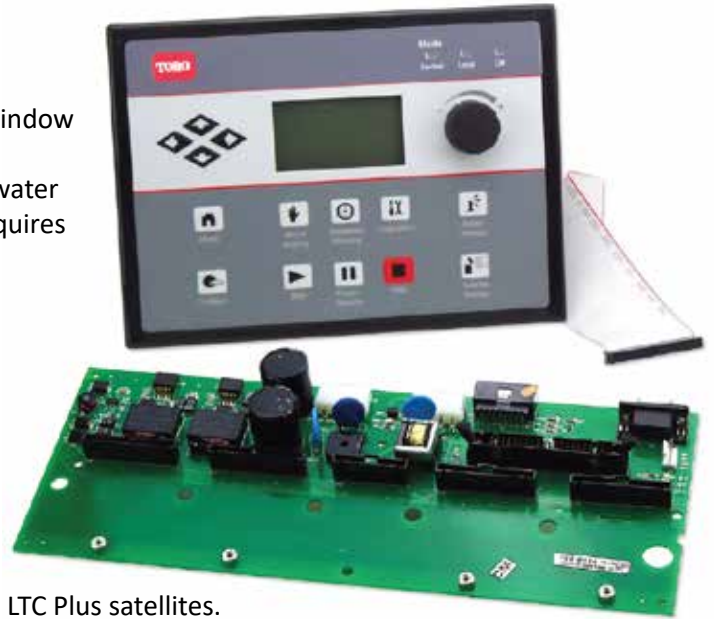
Available as an upgrade kit for existing LTC Plus satellites.

- ✓ Station based flow management shortens watering window
- ✓ Intuitive user interface simplifies manual irrigation
- ✓ Station runtimes executed to the second helps save water
- ✓ Upgrade to Lynx for enhanced central capabilities (requires all satellites to be upgraded)

NETWORK LTC PLUS TO VP UPGRADE KIT:

- PART # 118-0038

Includes: Network VP Faceplate, Network LTC Plus To Network VP Power Distribution Board, Cable and Hardware



Network LTC™ Plus to LTC Pro

Available as complete satellites or upgrade kit for existing LTC Plus satellites.

- ✓ Intuitive user interface simplifies faceplate functions
- ✓ Enhanced manual operations
 - Runtimes to the second
 - Stackable multi-manuals
 - Start/Pause/Stop
- ✓ Backwards compatible with SitePro®
- ✓ Can upgrade 1 satellite at a time (full system must be upgraded prior to a Lynx upgrade)

NETWORK LTC PLUS TO LTC PRO UPGRADE KIT:

- PART # 118-4838

Includes: LTC Pro Faceplate, Power Distribution Board, Cable and Hardware

** UPGRADE SPECIALS **

Contact us about **Special Promotions** that can provide a new Toro LYNX Central at deep discounts when combined with satellite controller upgrades.

Ordering Information - Complete LTC Pro Satellite

LTCRXXX6XX					
Description	Configuration	Cabinet	Output	Communication	Options
LTCR	XX	X	6	X	X
LTCR - Lynx Pro Satellite	16 - 16 Stations 40 - 40 Stations 64 - 64 Stations	P - Plastic, Green	6 - 24 VAC Electric	M - Wireline Modem R - UHF Radio	4 - Large Terminal Block w/Switches Surge
Example: LTC Pro Satellite, 64-Station in Green Pedestal with Wireline Modem = LTCP64P6M4					

TORO OSMAC® G4 SATELLITE



The OSMAC G4 satellite combines value and reliability in one controller. Wireless communications, easy installation and setup, and compatibility with existing OSMAC systems make the OSMAC G4 an ideal choice for a control system upgrade or retrofit. As part of a Lynx Central Control system, the OSMAC G4 will run flow-managed programs using station run times executed to the second for precise water application. An upgrade kit is available for your existing E-OSMAC satellites, adding new functionality, including program storage for stand-alone function and a user interface for performing manual irrigation or diagnostic activity.

Reliable Design

Designed for reliability, featuring a limited number of cables and connectors, corrosion-resistant metals, vented circuit board covers, and simple parallel power and signal distribution.

Enhanced Wireless Communication

Equipped with a high-performance receiver with integrated modem, providing industry-leading communication signal integrity, reliability, and signal strength indication. Wireless communication also allows easy system expansion.

OSMAC Compatible

Compatible with any narrowband OSMAC system equipped with an OSMAC Base Station or Radio Interface Unit (RIU). Able to retrofit with OSMAC RDR and E-OSMAC satellites.

Productive and Precise

Operates up to 32 stations simultaneously with run times executed to the second for productive and precise water application.



SPECIFICATIONS

Electrical

- Input Power:
 - 110VAC-120VAC:
0.20 A (no load)
0.96 A (max. load)
 - 220VAC-240VAC
0.10 A (no load)
0.47 A (max. load)
- Output Power:
 - 24VAC: 3.0 A (max.)

Dimensions

- Plastic Cabinet:
17" W x 40" H x 16" D

Temperature/Humidity

- Operating Temp:
15° F to 140° F
- Storage Temp:
-22° F to 149° F
- Humidity:
0% to 95% RH

SPECIFICATIONS

Operational

- Functions as a stand-alone controller or under the management of a central computer operating Lynx or SitePro Central Control System
- Up to 32 stations may operate simultaneously
- Station run times received from Lynx® Central are executed to the second, from 1 second to 8 hours and 59 minutes
- Station run times programmed in Local mode are executed to the minute, from 1 minute to 59 minutes
- Any station can be configured as a switch. Switch operation will ignore rain hold and does not activate the pump/master valve circuit
- 12 independent local programs
- Nonvolatile memory saves program data for up to 10 years without power
- Percent Adjustment from 10% to 250%

Information and Control

- ✓ Received messages are logged with signal strength indication - A useful reference of recent activity and valuable diagnostic detail
- ✓ Stand-alone capabilities enable running scheduled irrigation programs - A convenient backup option and useful during course construction
- ✓ Manual operation capabilities include program start, station multi-manual, and syringe cycles
- ✓ Diagnostic information is available in the display menus and through LED lights
- ✓ Capable of remote operation with hand-held radio and Lynx Apps

OSMAC G3 Upgrade Kit

Upgrade E-OSMAC satellites with the G3 Upgrade Kit

- Add a point of operation at the satellite controller for performing manual irrigation or referencing diagnostic information, including communications details through Page History.
- Add backup program storage for stand-alone operations when in Local mode.
- Upgrade receiver hardware to a high-performance receiver radio for improved reliability and for signal strength indication



Choice of Three Pedestal Colors

Custom pedestal color options help satellites blend into their natural surroundings. (Green, Tree Bark, and Desert Sand)



OSMAC G3 UPGRADE KIT - PART # 118-2987

Includes: OSMAC G3 Timing Module, Interface Cable & Hardware

Ordering Information - OSMAC G4 Satellite

G4-XXX6RX					
Description	Configuration	Cabinet	Output	Communication	Options
G4	XX	X	6	R	X
G4 - OSMAC G4 Satellite	16 - 16 Stations	P - Plastic, Green	6 - 24 VAC Electric	R - Narrowband Radio	3 - Large Terminal Block & Manual Switches
	32 - 32 Stations	T - Plastic, Desert Sand			4 - Large Terminal Block
	48 - 48 Stations	B - Plastic, Tree Bark			w/Switches Surge
	64 - 64 Stations				
Example: OSMAC G3 48-Station in Green Pedestal with Premium Surge Protection = G4-48P6R4					

TORO LYNX® GAC CONTROL SYSTEM UPGRADE



The Lynx upgrade system uses modern electronic technology to enable users of older decoder control systems to upgrade to a modern central with new field hardware. Features like remote control from your phone, moisture sensing and sophisticated diagnostics are available without replacing your entire system.

Upgrade your old control system

Works with your existing sprinklers and wiring – just replace your field decoders and the central control.

Modern Electronics

Higher surge protection, more precise run times and 2-way communication.

Works with Toro's Lynx Central Control

Easy to Install, easy to support, easy to use.

Benefits for Users of Older CDS, Rain Bird®* and Hunter®** Systems:

- ✓ Two-way communication
- ✓ More precise run times (+/- 1 second)
- ✓ Enhanced diagnostics – rapid communication check, voltage and amperage, cable length
- ✓ 20KV lightning protection
- ✓ Lynx Central Control (all the benefits, apps, NSN®)
- ✓ 1-station fits in Toro INFINITY® Series golf sprinklers with Smart Access®

* Rain Bird is a registered trademark of the Rain Bird Corporation.

** Hunter is a registered trademark of Hunter Industries



GAC MODULES

DESCRIPTION	PART NO.
1-Station GAC Module	DAC-ISP-1
2-Station GAC Module	DAC-ISP-2
4-Station GAC Module	DAC-ISP-4

Use Your Existing Sprinklers
Compatible with most sprinklers from Toro and other brands.

*Rain Bird is a registered trademark of the Rain Bird Corporation
Hunter is a registered trademark of Hunter Industries*

TORO LYNX® GAC CONTROL SYSTEM UPGRADE

GAC FEATURES FOR SYSTEM TYPES

Feature:	Toro GAC	Toro CDS	Rain Bird FD	Hunter Pilot
Stations Per Wire Path	500	112	250	250
Devices Per Wire Path	125	112	250	250
Outputs	1, 2, 4	1, 2, 3, 4	1, 2, 4, 6	1, 2, 4, 6
Maximum 14 AWG Wire Path Length	6,800 ft	5,400 ft	10,000 ft	8,000 ft
Simultaneous Stations (with 6,800' of #14 cable)	16	2	20	20
Distance from Decoder Module to Solenoid	575 ft	1,200 ft	220 ft	240 ft
Solenoids Per Output	2	2	2	2
Surge Protection	20,000 volts	6,000-8,000 v	6,000-8,000 v	15,000 volts
Wire Paths Per Interface	2	4	2	4
Holding Current	40mA	300mA	20mA	45mA
Two-Way Feedback from Decoder Module	Volts, Amps, Dist	No	No	Volts, Amps

SPECIFICATIONS

Operational

- Enhanced diagnostics
- Communication
- Electrical shorts/opens
- Voltage
- Amperage
- Module addresses are factory programmed
- Low holding current

Installation

- Maximum number of wire paths:
- 2 per Gateway
- Maximum number of Gateways:
- 4 standard, 4 expansion

SPECIFICATIONS

Electrical

- Input voltage: 100-240 VAC
- Input current: 1.6A/1.0A (115V/230V)
- Output voltage: 40VAC max
- Output power: .75VA max
- Class 2, SELV
- Decoders & Gateways have 20KV surge protect.

Temperature

- Operating temperature: 32°F to 140°F
- Storage temperature: -22°F to 140°F

Ordering Information - GAC Gateway

DAC-XXX-1000-XX				
Description	Configuration	Cabinet	Station Count	Communication
DAC	XXX	X	1000	XX
DAC - GAC Gateway	PCS - Wire to Central RS - Remote*	Blank - Metal Wall Mount P - Green Plastic Pedestal	1000 - 1000 Stations	M - Wireline (Remote) DR - Digital Radio (Remote)
Examples: GAC Wall-mount Gateway Installed at the Central = DAC-PCS-1000 GAC Smart Hub Plastic Pedestal with Radio Communication to the Central = DEC-RSP-1000-DR <i>* Remote Gateway requires FIU at the Central</i>				

TORO BOARD EXCHANGE PROGRAM (BEP)



The BEP is designed to meet your needs for fast and dependable supply of electronic circuit boards when a “downtime” situation demands action. BEP provides quick and easy replacement of damaged circuit boards with a Certified Toro Refurbished Board. A phone call to Turf Products will have the boards on their way to you in a minimal amount of time so you can get your site operating again as soon as possible.

Genuine Toro Parts

With the Board Exchange Program, you get the advantage of Toro’s expert technicians and state-of-the-art facilities. Your replacement parts will benefit from the same commitment to continuous improvement and engineering expertise that is put into the manufacturing processes. Genuine Toro Parts will outlast and outperform aftermarket products . . . **We guarantee it!**

BEP Provides:

- Immediate replacement of damaged boards
- Low, fixed prices
- No memberships or annual fees
- Engineer product improvements built into repairs
- 2-year warranty on replacement boards

BEP ORDERS:

Use of the Board Exchange Program requires you to return your damaged products to TPC. These cores are then sent in to be refurbished and used in the program. The availability of replacement parts depends on the prompt return of the cores. When purchasing a BEP part, your account will be billed a “Core Charge”, which will be immediately credited if the core is received at TPC within 30 days. Cables, covers, modem stand-offs, etc. are not included with BEP parts and should be removed from your damaged boards before returning them for Core Credit.

OSMAC® SATELLITES - Includes: RDR, E-OSMAC & G3

DESCRIPTION	PART NO.	IMAGE
OSMAC G3 Timing Mechanism	R118-2986	
E-OSMAC Narrow Band Decoder (Lead Free)	R102-0187	
OSMAC RDR Narrow Band Decoder (Lead Free)	R102-2012	
E-OSMAC/G3 Pump & Common PCB	R102-0320	
E-OSMAC/G3 8-Station Output Module PCB	R102-2549 or R102-8242 (LF)	





DESCRIPTION	PART NO.	IMAGE
OSMAC RDR 8-Station Triac Board	RNLN3491A	
E-OSMAC/G3 Distribution Board	R102-0318	
E-OSMAC/G3 Surge Board with Switches	R89-9804 or R102-8390 (LF)	
E-OSMAC/G3 Earth Group PCB	R89-9896 or R102-8393 (LF)	
E-OSMAC/G3 24 VAC Bar PCB	R89-9894 or R102-8392 (LF)	





Many boards are also available as Lead Free (LF) and may be substituted depending on availability, unless specifically requested.



TORO BOARD EXCHANGE PROGRAM (BEP)






2-WIRE CONTROL SYSTEMS - Includes: GDC & LYNX SMART HUB

DESCRIPTION	PART NO.	IMAGE
Lynx Smart Hub Timing Mechanism	R118-4728	
GDC/TDC 2-Wire Timing Mechanism	R102-5918	
GDC 2-Wire Mother Board with Big Capacitor	R102-7696	
GDC 2-Wire Daughter Board	R102-7693 or R118-0584 (LF)	

DESCRIPTION	PART NO.	IMAGE
LSH 2-Wire <i>Early</i> Mother Board (Lead Free)	R118-0582	
LSH 2-Wire <i>Early</i> Daughter Board (Lead Free)	R102-0584	
LSH 2-Wire <i>Later</i> Mother Board (Lead Free)	R118-7096	
LSH 2-Wire <i>Later</i> Daughter Board (Lead Free)	R118-7097	

LYNX SMART SATELLITES







DESCRIPTION	PART NO.	IMAGE
Lynx Smart Satellite Timing Mechanism	R118-6363	
LSS Distribution Board PCB (Lead Free)	R118-3045	
LSS Distribution Expansion Board (Lead Free)	R118-3128	
LSS Pump & Common Terminal Surge Board (Lead Free)	R118-6034	
LSS Pump & Common Relay PCB	R118-6369	






DESCRIPTION	PART NO.	IMAGE
LSS 16-Station Relay Output Board (Lead Free)	R118-6370	
Communication Surge PCB (Lead Free)	R118-1524	
LSS Radio Interface PCB Assembly (Lead Free)	R118-3339	
LSS Modem PCB Assembly (Lead Free)	R118-3705	
LSS Radio Module Assembly	R118-6133	

Many boards are also available as Lead Free (LF) and may be substituted depending on availability, unless specifically requested.





TORO BOARD EXCHANGE PROGRAM (BEP)





NETWORK VP SATELLITES

DESCRIPTION	PART NO.	IMAGE
Network VP Timing Mechanism	R102-9738	
Power Distribution Board - Horizontal Position	R102-2782 or R118-8576 (LF)	
Power Distribution Board - Vertical Position (Lead Free)	R118-2737	
Power Distribution Board - LTC/VP Conversion	R102-9124	
Pump & Common Output Module	R102-3015 or R102-8577 (LF)	
8-Station Output Module	R102-2549 or R102-8242 (LF)	

DESCRIPTION	PART NO.	IMAGE
Pump, Common & Communication Surge Board (Lead Free)	R118-1524	
Radio Adapter Board	R102-3125 or R102-8277 (LF)	
Maxon Radio Transceiver	R363-4638	
Wireline Communication Modem	R102-0104 or R118-6161 (LF)	
Universal/Radio Communication Modem	R102-0106 or R102-8570 (LF)	

NETWORK 8000 SATELLITES






DESCRIPTION	PART NO.	IMAGE
Network 8000 Timing Mechanism	R91-1280	
Valve Output PCB	R35-8502	
4-Station Output Triac Board	R89-8100	
Standard Wireline Communication Modem	R35-8646	

DESCRIPTION	PART NO.	IMAGE
Power Supply Board	R35-6166	
Pump Output PCB	R35-6326	
Distribution Board	R35-8652	
Central SPU Surge Board	R35-7899	

Many boards are also available as Lead Free (LF) and may be substituted depending on availability, unless specifically requested.

TORO BOARD EXCHANGE PROGRAM (BEP)






NETWORK LTC 1.0 SATELLITES






DESCRIPTION	PART NO.	IMAGE
LTC 1.0 Timing Mechanism with Terminal Strip	R91-0537	
LTC 1.0 Timing Mechanism without Terminal Strip	R91-1593	
Station Output Surge Board	R91-1303	
Pump/Common Surge Board	R91-1305	
Communication Surge Board	R91-1307	

NETWORK LTC 2.0 SATELLITES

DESCRIPTION	PART NO.	IMAGE
LTC 2.0 Timing Mechanism	R89-7169	
Back Plane PCB	R89-6977	
4-Station Output Module	R89-7170	
Pump/Common Output Module	R89-7171	
Wireline Communication Modem	R102-0104 or R118-6161 (LF)	

NETWORK LTC® PLUS SATELLITES

DESCRIPTION	PART NO.	IMAGE
LTC+ Timing Mechanism	R102-0238	
LTC+ Distribution Board PCB	R102-0612 or R102-8078 (LF)	
8-Station Output Module	R102-0681 or R102-8084 (LF)	
Pump/Common Module	R102-0682 or R102-8082 (LF)	
16-Station Output Surge Board	R89-8521 or R102-8080 (LF)	

DESCRIPTION	PART NO.	IMAGE
Pump, Common & Communication Surge Board	R89-8589 or R102-8086 (LF)	
Radio Adapter Board	R102-3125 or R102-8277 (LF)	
Maxon Radio Transceiver	R363-4638	
Wireline Communication Modem	R102-0104 or R118-6161(LF)	
Universal/Radio Communication Modem	R102-0106 or R102-8570	

Many boards are also available as Lead Free (LF) and may be substituted depending on availability, unless specifically requested.

TORO EVOLUTION® SERIES CONTROLLER



The EVOLUTION controller has changed the way we think about irrigation control. It combines a modern and intuitive design with wide-ranging functionality, making it perfect for everyday residential use, yet able to meet the needs of more complex landscapes.

Ease of Use

The EVOLUTION controller's user interface was designed with the customer in mind. Shortcut buttons provide quick access to basic functions while the advanced menu leverages the experience and knowledge of the irrigation professional, all shown on a graphics display that navigates similar to many modern consumer electronic devices.

Water-Saving Wireless Accessories

The unique Smart Connect receiver plugs into the back of the front panel, enabling it to wirelessly communicate directly with a number of add-on devices—including a weather sensor, handheld remote, multiple soil sensors, and up to two wireless relays.

Control from Anywhere

Manage your client's new or existing EVOLUTION through the internet using the Toro SMRT Logic® gateway and SMRTscape™ mobile app or website.

Powerful Features

The EVOLUTION controller comes standard with features ready to meet the wide-ranging needs of your clients, such as three independent watering schedules, and a stand-alone Auxiliary schedule, modular expansion from 4 to 16 zones, and the capability to power up to four standard solenoids.



ADDITIONAL FEATURES

- Up to six schedules:
 - 3 irrigation schedules, 4 start times per schedule
 - 1 wired auxiliary schedule, plus 2 optional wireless auxiliary schedules
- Monthly season adjust by schedule
- Schedule stacking, with automatic split cycle when watering adjustments are greater than 100%
- Station runtimes from 1 minute to 12 hours
- Allows 30, 60, or 90 second manual runtimes for things such as winterization/blowouts
- Programmable well-recovery/station-delay from 10 seconds to 30 minutes
- Pump start delay from 10 seconds to 30 minutes
- Automatic short detection for circuit protection and faster troubleshooting
- Diagnostic zone test measures and displays current draw of solenoid and identifies short, over current and open conditions
- Non-volatile memory doesn't require batteries and holds programming for up to five years
- 4-station base; expandable to 16-stations with 4- and 12-station hot-swappable modules
- Powerful transformer can run up to 4 standard solenoids at once

SPECIFICATIONS

Electrical

- Input Power: 120VAC @ 30 VA maximum
- Output Power:
 - 0.75 amps per station
 - 24VAC: 1.0 A (max.)

Dimensions

- 11¼" W x 7¾" H x 4¼" D

Warranty

- 5 Years

TORO EVOLUTION® SERIES CONTROLLER

Smart Connect® Add-On Devices

Simply plugging the Smart Connect® into the EVOLUTION® controller allows it to communicate wirelessly with a number of add-on devices, providing a great opportunity to upgrade with a number of different water-saving and time-saving options.



Toro Smart Connect® Plug-In Receiver

Installs easily on the backside of the EVOLUTION® controller's front panel.

No wires, no externally mounted receiver. One Smart Connect® Receiver is all that is required to communicate to all Add-On Devices.



Precision™ Soil Sensor

Up to three soil sensors can be used (one per schedule) to monitor the moisture level in the soil and prevent over- and underwatering. With up to a 500 feet wireless range, there's no digging required to install.

Wireless Weather Sensor

Combines real-time temperature and solar measurements with historical ET data for your location to automatically calculate and adjust the irrigation schedule.

SMRT Logic™ Internet Gateway

Monitor and manage the EVOLUTION controller from anywhere using your smartphone, tablet, or computer. SMRT Logic uses a secure 900 MHz radio frequency and has a communication range nearly three times that of competing Wi-Fi controllers.



Handheld Remote

Backlit display makes maintenance checks a snap, day or night, allowing you to run sprinklers or schedules from up to 1000 feet away.



Wireless Auxiliary Relay

Up to two wireless relay switches can be used to power and control a wide range of 120V ac devices, such as outdoor lighting, pumps, fountains, or outdoor entertainment systems.

EVOLUTION SERIES MODELS

DESCRIPTION	PART NO.
4-Station Indoor Controller with Plug-in Power Cord	EVO-4ID
4-Station Outdoor Controller (Hardwired)	EVO-4OD

EVOLUTION ADD-ONS & ACCESSORIES

DESCRIPTION	PART NO.
4-Station Expansion Module	EMOD-4
12-Station Expansion Module	EMOD-12
Smart Connect Plug-In Receiver	EVO-SC
Wireless Precision Soil Sensor	PSS-SEN
Wireless Weather Sensor	EVO-WS
Wireless Handheld Maintenance Remote	EVO-HH
Wireless Auxiliary Relay	EVO-AR
SMRT Logic Internet Gateway	SMRT-T

TORO DDC™ WP SERIES CONTROLLER



Looking for a rugged waterproof controller ideal for remote or isolated installations? Toro's DDCWP Series controller provides all that and more. The DDCWP is battery-operated using two 9V batteries, and controls up to 8 potted DC latching solenoids.

Fully Waterproof and Submersible

Submersible up to 6.5' per IP-68 standards, allowing contractors to mount up to an 8-station controller in a valve box.

Operates DC Latching Solenoids

Controller is compatible with most manufacturers' DC latching solenoids.

Exclusive "Digital Dial" Technology

Simple programming functions.

Unique Power Feature

Verifies sufficient voltage level for turning stations off before turning any stations on.

Monthly Watering Schedule

Monthly preset option – ideal for automatic runtime adjustments

Easy to Use Lock-out Feature

Press the "ON/OFF" button for three seconds to lock out the controller and protect it against vandalism. Press again to return to normal operation.



DDCWP SERIES MODELS

DESCRIPTION	PART NO.
2-Station Controller	DDCWP-2-9V
4-Station Controller	DDCWP-4-9V
6-Station Controller	DDCWP-6-9V
8-Station Controller	DDCWP-6-9V
DC Latching Valve Solenoid	DCLS-P

SPECIFICATIONS

Dimensions

- 5¼" W x 5" H x 2" D

Warranty

- 3 Years

SPECIFICATIONS

Operational

- Operating temperature: 0° - 60°F
- Operates using two x 9V alkaline batteries (not supplied)
- Operates one latching solenoid per station and one latching solenoid-equipped master valve
- Controller is compatible with all Toro valves accepting latching solenoids (model DCLS-P or equivalent) and competitive valve models/latching solenoids
- Accepts Toro TRS Wired RainSensor™, Wired Rain/Freeze and other normally-closed sensors
- Low-battery indicator visible on LCD screen
- Three independent programs and three start times per program
- Station run times from one minute to four hours in one-minute increments
- Seasonal adjust by month from 0-200% in 10% increments
- Manual operation by station or program
- Self-diagnostic circuit breaker skips shorted stations
- Up to five-year program retention with on-board coin battery saves time of day and all programming features
- Vandal proof lock out feature

TORO TEMPUS™ DC SERIES CONTROLLER

TORO.

With its advanced features, the new TEMPUS DC battery-operated controller is ideal for managing irrigation in areas without an electrical connection. Wireless connectivity is integrated to allow intuitive programming through the new Toro TEMPUS DC mobile app. TEMPUS DC is completely waterproof and available both with or without an LCD screen.

Saves Time

Easily access and program the TEMPUS DC battery-operated controller with your blue-tooth enabled smartphone or tablet through the free TEMPUS DC mobile app.

Rain Sensor Ready

Rain sensor compatibility ensures that irrigation does not occur during a rain event.

Water Savings

With water budget, seasonal irrigation can be easily set up for the whole year, and the run times can then be adjusted from 0% to 200% in increments of 10%.



ADDITIONAL FEATURES

- 1-, 2-, 4-, and 6-station models available
- Four independent watering programs with three start times per program
- Watering schedule by 7 day calendar, day interval or odd/even days
- Automatic program stacking in cases of start time and/or runtime overlap
- Run times up to 8 hours with 1 minute increment
- Permanent program retention in without battery
- Waterproof (IP68) and submersible up to 61/2'

SPECIFICATIONS

Electrical

- 1 x 9V or 4 x 1.5V AAA batteries
- Compatible with Toro®, Irritrol®, and Hunter® DC latch-type solenoids
- Maximum 1 station ON at a time
- Valve wire runs up to 325' (20 AWG wire)

Dimensions

- TEMPUS DC with LCD: 4.1"W x 6.1"H x 1.9"D
- TEMPUS DC without LCD: 4.5"W x 4.5"H x 1.9"D

Working Pressure

- Qualified on DCL samples up to 85 psi of water pressure

Working Temperature

- From 14°F to 122°F

Warranty

- 2 Years



TEMPUS DC SERIES MODELS

DESCRIPTION	PART NO.
1-Station Controller, with LCD	TEMP-1-DC-L
1-Station Controller, NON-LCD	TEMP-1-DC
2-Station Controller, with LCD	TEMP-2-DC-L
2-Station Controller, NON-LCD	TEMP-2-DC
4-Station Controller, with LCD	TEMP-4-DC-L
4-Station Controller, NON-LCD	TEMP-4-DC
6-Station Controller, with LCD	TEMP-6-DC-L
6-Station Controller, NON-LCD	TEMP-6-DC

IRRITROL TOTAL CONTROL® R-SERIES CONTROLLER



The Irritrol Total Control-R family of commercial controllers is proof that powerful controllers don't have to be complicated.

Climate Logic Compatible

Turns the Total Control into a weather-based controller using an on-site wireless weather sensor.

SMRT Logic Compatible

Provides remote control from any internet connected device.



SPECIFICATIONS

Electrical

- Input power: 120VAC @ 0.50 amps
- Station Output power: 24VAC
- 0.50 amps per station maximum
- 1.25 amps maximum load

Dimensions

- Indoor: 9½" W x 7½" H x 4¼" D
- Outdoor: 10½" W x 8½" H x 5" D
- Metal (36 & 48 sta.): 10¾" W x 15¾" H x 5¾" D

Optional Accessories

- CL-100 – Wireless Weather Sensing System
- RS1000/RFS1000 – Wireless RainSensor or Wireless Rain/Freeze Sensor
- R-100-KIT – Maintenance Remote
- SMRT Logic Wireless Gateway

Warranty

- 5 Years

ADDITIONAL FEATURES

- 365-day calendar with option for:
 - Odd/even days with day exclusion
- Rain delay from one to seven days
- Program stacking for simultaneous operation of one to four programs
- Station run times: 1 minute to 10 hours
- 10-200% watering adjustment in 10% increments
- Master valve/pump start operation selectable by program
- Non-volatile memory retains programmed information in event of power failure
- Self-diagnostic circuit breaker that identifies and overrides faulty stations

Ordering Information - Total Control

TC-XX XXX-R

Ordering Information - Total Control						
TC-XX XXX-R						
Description	Stations			Configuration		Included
CC	XX			XXX		R
TC - Total Control	6 - 6 Sta.	9 - 9 Sta.	12 - 12 Sta.	EX - Outdoor	IN - Indoor	R - Remote Ready
	15 - 15 Sta.	18 - 18 Sta.	24 - 24 Sta.	EXM - Outdoor Metal Cabinet		
	36 (EXM) - 36 Sta.	48 (EXM) - 48 Sta.		MOD - Expansion Module Only		
Example: A 12-station Total Control Outdoor mount = TC-12EX-R						

TORO TDC SERIES 2-WIRE CONTROLLER

TORO.

For an energy efficient, highly cost-effective way to irrigate large commercial installations, you'll want the TDC Series from Toro. Using a two-wire path to communicate to buried decoders, the TDC system eliminates high costs associated with traditional valve wiring, trenching and trouble-shooting.

Advanced Diagnostics

The TDC provides true two-way communication with each decoder in the field, thus providing communication verification to decoders in the field, as well as shorted or open solenoid conditions, making troubleshooting a breeze.

Low-Power Operating Costs

The TDC Decoders operate DC Latching Solenoids which utilize no power when valves are in operation.

Water Budget

Water budget by controller, by program and by station (Season Adjust) 0 to 250% in 1% increments.

Simple, Intuitive Programming

Installation and future servicing are quick and simple thanks to the large LCD display and the industry's most intuitive interface.



ADDITIONAL FEATURES

- 20 KV surge protection with proper grounding of 10 Ohms or less at the controller
- 10 independent irrigation programs
- Six start times per program
- Day of the week programming, odd/even, interval
- 0-255% adjust by controller, by program, by station
- Day Exclusion (remove a day from standard program)
- Programmable master valve and pump start, by station Manual start of each station or entire program
- Non-volatile memory retains programming
- Self-diagnostics circuit breaker skips shorted/open stations
- Two-way confirmation of decoder activation
- Activate up to 20 solenoids at up to 2.8 miles away
- Programmable rain delay up to 31 days
- Water window calculator
- 10-digit alpha-numeric zone identification
- Remote-Ready and RainSensor-compatible
- Utilizes DC latching solenoids for valve control

TDC SERIES MODEL LIST

DESCRIPTION	PART NO.
100-Station Wall Mount Controller	CDEC-SA-100
200-Station Wall Mount Controller	CDEC-SA-200
100-Station on Stainless Steel Pedestal	CDEC-PED-100
200-Station on Stainless Steel Pedestal	CDEC-PED-200
TMR Maintenance Remote Kit	TMR-1-KIT
1- Station 2-wire Module	DEC-ISP-1
2- Station 2-wire Module	DEC-ISP-2
4- Station 2-wire Module	DEC-ISP-4
Communication Cable Surge Protector	DEC-SG-LINE

SPECIFICATIONS

Electrical

- Input power: 120VAC or 220/240 VAC
- Station Output power: up to 38 VAC, 3 amp max.

Dimensions

- Cabinet: 14" W x 13" H x 6" D
- Pedestal: 17¼" W x 34½" H x 8⅝" D

Warranty

- 5 Years

RAIN MASTER EAGLE™ PLUS CONTROL SYSTEM



The Eagle Plus is perfect for upgrading existing systems or installing new, with the ability to operate either 2-wire or traditional 24V AC systems. The Rain Master control system with the internet-based iCentral and ZipET, is ideal for spread out areas, such as town-wide recreational fields, universities and large complexes.

Flow Managed Irrigation

An iCentral scheduling engine that optimizes irrigation system performance.

More Connectivity

Wireless cellular communications. Faster "real time" internet access to iCentral text message Alerts.

More Configurations

Up to 48 stations conventional configuration and 200 stations in 2-Wire configuration. Up to 16 programs (8 for conventional and 16 for 2-Wire).

Enhanced User Interface

Intuitive operation with multi-line LCD backlit display and simple multi-function input knob, plus more diagnostic tools.

Historical Data Retention

Previous 14 days of ET values, last 25 executed program cycles and 220 Smart Alerts and alarms.



ADDITIONAL FEATURES

- 8 programs with conventional and 16 programs with 2-wire
- 8 start times per program for both conventional and 2-wire program
- Non Volatile Memory – No batteries required
- ET-based scheduling with various options
- Self diagnostic and monitoring
- Flow sensing
- Rain sensor input
- Lightning/surge protection is standard
- No central software required

SPECIFICATIONS

Electrical

- Input power: 120VAC
- Total max load: 0.50 amps @ 24VAC per station

Dimensions

- Wall mount: 9¾" W x 10¾" H x 5¾" D
- Pedestal, 14 ga SS: 16" W x 35" H x 14" D
- Pedestal, 16 ga SS: 16" W x 38" H x 15½" D

Warranty

- 5 Years

EAGLE PLUS MODEL LIST - 24V Output

DESCRIPTION	PART NO.
Painted Wall Mount, 8-Station	EGP8
Stainless Steel Wall Mount, 8-Station	EGP8-S
Stainless Steel 14-gauge Pedestal, 8-Station	EGP8-SPED
Stainless Steel 16-gauge VIT Strong Box, 8-Sta	EGP8-PSB
8-station Expansion Module Kit	EGP8-OPB

EAGLE PLUS OPTIONS

DESCRIPTION	PART NO.
Cellular Communication Kit with 5 Years of iCentral Service	EGP-ICENTRAL
Ethernet Communication Kit with 5 Years of iCentral Service	EGP-ETHER
Additional 5 Years of iCentral Cellular	RM-ISVC-5Y
Additional 5 Years of iCentral Ethernet	RM-ISVCETHR-5Y
Wireless Rain Sensor	RS1000
Wired Rain Sensor	RS500
Wireless Rain & Freeze Sensor	RFS1000

RAIN MASTER EAGLE™ PLUS 2-WIRE

The Rain Master 2-wire protocol provides a two-way communication link between the controller, decoders and valves. This provides the means for testing and diagnostic capabilities within the 2-wire system. The simplicity of the 2-wire field installation, coupled with the enhanced capability of the Rain Master Twice™ controllers, sets a new precedent for 2-wire control within the irrigation industry.



Controllers

- Easy-to-read LED status indication for every command
- LED displays valve activation & diagnostic reporting
- Two-way communication verification

Decoders

- Each decoder has a unique programmable address
- Decoders will automatically shut off if communication is lost
- Wire fault detection automatically shuts down any valve
- Valves can be operated up to 100' from the decoder

EAGLE PLUS MODEL LIST - 2-Wire

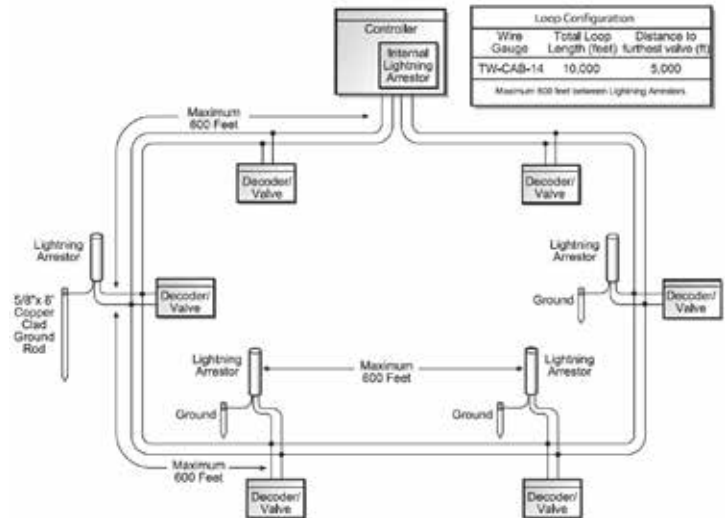
DESCRIPTION	PART NO.
Painted Wall Mount	EGP-TW
Stainless Steel Wall Mount	EGP-TW-S
Stainless Steel 14-gauge Pedestal	EGP-TW-SPED
Stainless Steel 16-gauge VIT Strong Box	EGP-TW-PSB

2-WIRE DECODERS & ACCESSORIES

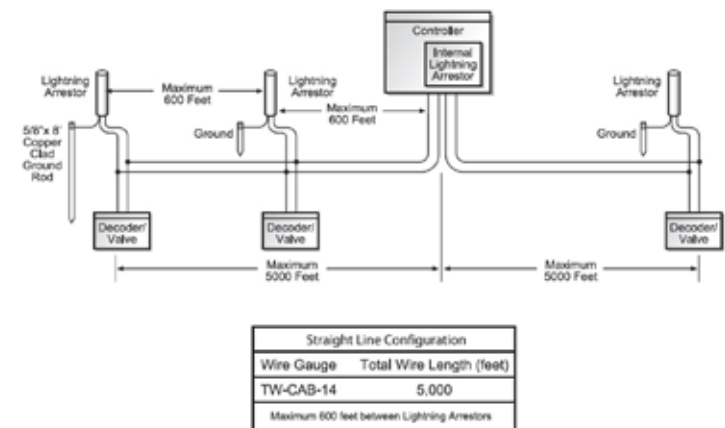
DESCRIPTION	PART NO.
Single Valve AC Decoder	TW-D-1
Dual Valve AC Decoder	TW-D-2
Quad Valve AC Decoder	TW-D-4
Lightning Arrestor (every 600')	TW-LA-1
14-gauge Water-Tight Connectors	TW-SPLICE-14
14-gauge Polycoated Wire	TW-CAB-14

SEE PREVIOUS PAGE FOR
iCENTRAL OPTIONS

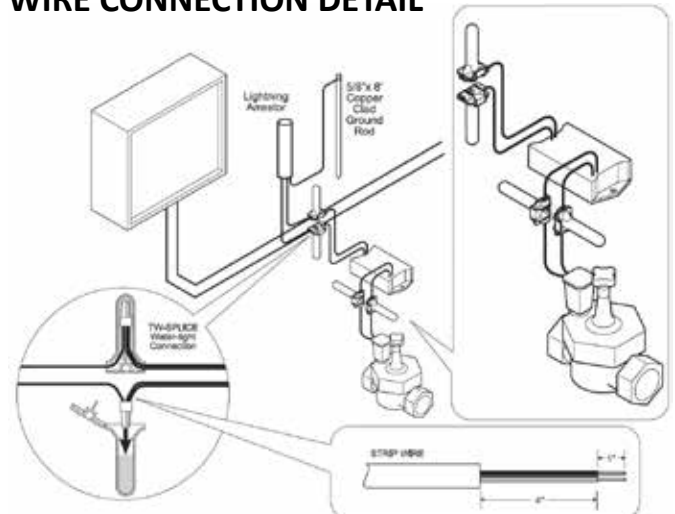
LOOP CONFIGURATION



STRAIGHT LINE CONFIGURATION



WIRE CONNECTION DETAIL



WEATHER STATIONS - CAMPBELL SCIENTIFIC



The ET107 is an automated system designed for research-grade performance and irrigation scheduling. The station calculates potential evapotranspiration (ET), which is the amount of water lost from the soil due to evaporation and plant transpiration. Calculating

the turf's evapotranspiration rate can aid in the development of an irrigation schedule that provides sufficient water for the turf without overwatering.

ET107 WEATHER STATION

DESCRIPTION	PART NUMBER
ET107 Weather Station, 120V (requires wired comm)	T107-AC-SH-MW
<i>Optional communication modes are available upon request including Wi-Fi, Ethernet, radio and cellular. A 10-watt solar panel is also available to eliminate the need for any wiring to the station.</i>	

ET107 Features:

- ✓ CR1000M Measurement and control module
- ✓ 7 Ah sealed rechargeable battery
- ✓ CS305-ET solar radiation sensor
- ✓ Air temperature and relative humidity probe in MetSpec radiation shield
- ✓ Tipping bucket rain gauge
- ✓ Wind speed and direction sensor
- ✓ Aluminum Pole
- ✓ Optional Radio Communication
- ✓ Optional Solar Power
- ✓ Integrates with Toro Central Software



WEATHER STATIONS - SPECTRUM TECHNOLOGIES

**Spectrum
Technologies, Inc.**

The fully integrated WatchDog 3250 Wireless ET Station measures temperature, humidity, rainfall, and wind speed & direction, recording and communicating the data to the cloud using its internal radio.



WATCHDOG 3250 WEATHER STATION

DESCRIPTION	PART NUMBER
WatchDog 3250 Wireless Weather Station, 900MHz	STI-3250DU
900MHz Retriever - at Central for Communication (Required)	STI-3910T
900MHz Repeater Pup - Required if not Line-of-Sight	STI-3902
10' Antenna Extension Cable with Bracket	STI-3925
Mounting Tripod with Stakes	STI-3396TPS
<i>Site Survey should be done to determine Repeater and Antenna Extension needs.</i>	

WatchDog 3250 Features:

- ✓ Full-featured weather station compatible with Toro Lynx Control System measures wind direction, wind speed, air temperature, relative humidity, dew point, rainfall, solar radiation, evapotranspiration
- ✓ Solar panel powers the station and remote radio
- ✓ Base radio features a weatherproof case and 50ft cable to allow high mounting for the greatest range
- ✓ Monitor, record, and analyze over a dozen important environmental inputs
- ✓ Log your data in fail-safe, non-volatile memory

SPECWARE 9 SOFTWARE

DESCRIPTION	PART NUMBER
SpecWare 9 Pro Software	STI-3654P9
SpecWare 9 Pro Extra User License	STI-3654P9X

SpecWare Features:

- ✓ Easily download, analyze and produce basic reports from the weather data collected on your WatchDog Weather Stations and data loggers
- ✓ Graph on-the-fly with an interactive window
- ✓ Build, customize and save your most important report formats or choose from 15 standard reports
- ✓ Set a frost alarm that will call your phone at frost temperatures or other sensor conditions
- ✓ All logger data is stored in one file per month, simplifying data sharing and exporting
- ✓ Download the software from specmeters.com
- ✓ Only one activation per purchase



SPECCONNECT SOFTWARE

DESCRIPTION	PART NUMBER
SpecConnect Pro 1-Yr Subscription - Cell*	STI-3010US
SpecConnect Pro 1-Yr Subscription - WiFi	STI-3030
SpecConnect Initial Set Up Fee	STI-3000
Additional WatchDog Device - Cellular	STI-3046
Additional WatchDog Device - WiFi	STI-3055
Additional Login (1-Yr) - 3 Users per Sub.	STI-3040
<i>* Cellular subscription includes cellular plan.</i>	

SpecConnect Features:

- ✓ Cloud-based software lets you see vital, real-time data anytime, anywhere, from any device
- ✓ Configure your network from your computer, smart phone, or tablet
- ✓ Supports multiple user logins
- ✓ Send customized alerts via text message or email
- ✓ Create custom reports and charts for full analyses of your data throughout the season and year to year
- ✓ Map view allows you to see all station locations and current conditions
- ✓ Web Portal connection requires a WatchDog Retriever & Pup network or 2900ET Weather Station to collect and log data, and DataScout Modem to send data to the internet

FIELD SENSORS - SPECTRUM TECHNOLOGIES



Our Retriever & Pups+ Network sends real time data to your laptop, tablet or smartphone anywhere you can access the internet. Trust the data and eliminate the guesswork! Each Retriever can support up to 12 Pups. Each Pup can support four different sensors and you can receive customized threshold alerts. Our sensors measure everything from soil moisture to light, wind, rain, humidity and more.

Expand your network by adding weather stations to bring data from every microclimate on your property directly to you.



STEP 1: CHOOSE YOUR PUPS

DESCRIPTION	PART NUMBER
WatchDog Sensor Pup	STI-3900
<ul style="list-style-type: none"> Connect up to 4 external sensor inputs per Pup Transmits data to Retriever (directly or via other Pups) Includes 6 lithium AA batteries (solar-power option) 	
WatchDog Station Pup	STI-3901
<ul style="list-style-type: none"> Connects to WatchDog Weather Stations and transmits all station sensor data to the network No external sensors Includes 6 lithium AA batteries (solar-power option) 	
WatchDog Repeater Pup	STI-3902
<ul style="list-style-type: none"> Serves as "signal booster" to help provide a path for the transmission signal around obstacles or to extend range No sensor inputs of its own Includes 6 lithium AA batteries (solar-power option) 	
Solar Power Package, 5W Panel w/Battery	STI-3999
OPTIONAL: Tripod Mount with Stakes	STI-3396TPS
Additional Pup Information: <ul style="list-style-type: none"> Single button operation: check battery status, signal strength, and join sensor network Tri-colored LEDs indicate battery level, signal strength, and data communication status Communication range of 2,500 ft, line-of-sight installation between devices Pups act as repeaters to get data to the Retriever 900 MHz radios 	

STEP 2: CHOOSE YOUR SENSORS

DESCRIPTION	PART NUMBER
WatchDog 3250 Weather Station	Previous Page
Temperature/RH Sensor w/Shield	STI-3613THS
Digital Rain Collector w/Bird Guard	STI-3665RD
Digital Anemometer	STI-3305ADD
WaterScout SMEC 300 Soil Sensor	STI-6470-20
Leaf Wetness Sensor	STI-3666
LightScout UV Light Sensor	STI-36761
Other sensors available in full Spectrum Catalog	

STEP 3: CHOOSE YOUR RETRIEVER

DESCRIPTION	PART NUMBER
WatchDog Retriever	STI-3910
OPTIONAL: Solar Power Package	STI-3999
OPTIONAL: Tripod Mount with Stakes	STI-3396TPS
OPTIONAL: SpecWare Pro 9 Software	STI-36549P
OPTIONAL: Retriever to PC 75' Cable	STI-3927C75
Additional Retriever Information: <ul style="list-style-type: none"> Receives all data from Pup network, each Retriever supports up to 12 Pups Includes USB Flash Drive and USB data cable Includes 6 lithium AA batteries. Can also be powered by DataScout modem, Direct-Connect cable or Solar Power Package Single button operation: switch modes, download data, upload configuration, and Tri-colored LEDs indicate mode, battery level, data communication status, and configuration status Non-volatile memory preserves your logged data, even when the batteries are removed 900 MHz radios 	

STEP 4: CHOOSE YOUR MODEM TO SEND DATA ONLINE FOR SPECCONNECT

DESCRIPTION	PART NUMBER
Cellular Modem Including Solar Panel	STI-3923
Wi-Fi Modem Including AC/DC Power Cord	STI-3920
Wi-Fi Modem Including Solar Panel	STI-3920S
Additional Modem Information: <ul style="list-style-type: none"> Communicate data to the web using either a Cellular or Wi-Fi signal Tri-colored LEDs indicate battery level, data communication, and wireless signal/connection status Choose between Solar power package which includes rechargeable battery and 5W solar panel, or the AC/DC power adapter (Max 17VDC) Required for connection to SpecConnect, sold separately Provides power to attached Watchdog Stations and Retrievers 	

SOIL MOISTURE METERS - SPECTRUM TECHNOLOGIES



Backed with proven measurement technology, the TDR 150, 250 & TDR350 accurately measures soil moisture across a full range of soil conditions. An ergonomic design and built-in display provide quick and easy measurements to validate your cultural practices.



TDR 150/250/350 Features:

- ✓ Measures soil moisture (Volumetric Water Content), Salts (Electrical Conductivity) and surface temperature, plus optional Infrared Temp sensor
- ✓ Backlit Display - Easy to see on early mornings and bright sunny days
- ✓ Improved Layout & Larger Digits - Clearly view readings, settings and icons
- ✓ Integrated Bluetooth & GPS - Greater accuracy with onboard components **(not on TDR 250)**
- ✓ Internal Data Logger - Records approximately 50,000 measurements with GPS coordinates **(no GPS on TDR 250)**
- ✓ Manually download the data with a USB flash drive, no special software or cable required
- ✓ Hands free operation allows you to instantly view data on your smartphone or tablet via FieldScout Mobile App
- ✓ SpecConnect FieldScout Pro subscription automatically uploads data to your personal web portal to view enhanced mapping and reporting features **(not on TDR 250)**



FIELDSCOUT TDR 150, 250 & 350

DESCRIPTION	PART NUMBER
TDR 150 with Carrying Case (No Rods)	STI-6445
TDR 250 Economy Meter (No Case or Rods)	STI-6250
TDR 350 with Carrying Case (No Rods)	STI-6435
Infrared Temperature Sensor (TDR 150)	STI-6445TS
Infrared Temperature Sensor (TDR 350)	STI-6435TS
Two 1.5" Rods	STI-6428FS4
Two 3" Rods	STI-6429FS4
Two 4.8" Rods	STI-6431FS4
Two 8" Rods	STI-6432FS4

COMPACTION/FIRMNESS METERS - SPECTRUM TECHNOLOGIES



Based on USGA technology, the FieldScout® TruFirm® offers a quick, easy and affordable method to measure the firmness of turf, bunker sands and other playing surfaces. Data acquired from the device allows turf management professionals to measure the relationship between the compaction of the soil and the moisture level to quantify the performance of playing conditions.



TruFirm Features:

- ✓ Easy to Use – simply raise and drop the hammer in one motion
- ✓ Evaluate trends and monitor sections of turf relative to one another
- ✓ FieldScout Mobile App lets you instantly see data on your smart phone or tablet
- ✓ The lower the value, the firmer the turf
- ✓ Easy-to-use design provides instantaneous measurements
- ✓ Logged data can be sent via Bluetooth to a iOS and Android device for plotting specific greens or other surfaces



FIELDSCOUT TRUFIRM

DESCRIPTION	PART NUMBER
TruFirm Firmness Meter w/Bluetooth	STI-64905



SC900 Soil Compaction Meter:

- ✓ Includes 1/2 in and 3/4 in cone tip
- ✓ Takes compaction readings every inch from 0 to 18"
- ✓ Exclusive ultrasonic depth sensor captures readings in 1" increments
- ✓ Compaction data is displayed in PSI or kPa (1 psi = 6.9 kPa)
- ✓ Connects to any GPS receiver that has a serial output option
- ✓ Equipped with internal data logger and RS-232 port
- ✓ Configure and download meter with FieldScout software
- ✓ Upload your data to SpecConnect for maps of compaction by depth, or depth to hard pan layer

FIELDSCOUT SC900 METER

DESCRIPTION	PART NUMBER
FieldScout SC900 Compaction Meter	STI-6110FS
GPS/DGPS Cable	STI-2950CVS
GPS Unit Mounting Bracket	STI-7250
1/2" Replacement Tip (Fine Soils)	STI-6106
3/4" Replacement Tip (Coarse Soils)	STI-6107



FIELDSCOUT® MOBILE APPS - SPECTRUM TECHNOLOGIES



Data at your fingertips! We've made it easier for you to send data from the field to your smartphone. FieldScout Basic is a free Mobile App download from Apple App Store or Android Google Play. FieldScout Pro can collect data, evaluate trends, log and analyze multiple data points. Wireless data can be sent via Bluetooth to an IOS or Android device and saved to the Cloud. Pull together soil moisture and EC data from your TDR meter and firmness data from your TruFirm to fine-tune agronomic and cultural practices for greens or other surfaces.

FIELDSCOUT MOBILE APP BASIC vs. PRO

DESCRIPTION	Basic	Pro
Base Grid Map	X	X
Change Number of Grid Zones	X	X
Email Map/Results View	X	X
Save Average Measurement by Zone	X	X
Customizable Google Map Image		X
Freeform Notes		X
Guided Auto-Advancing through Zones		X
Auto-upload and SpecConnect Sharing		X
Add User Note or Comment		X
Irrigation/Soil Moisture Audit		X



FIELDSCOUT MOBILE APP

DESCRIPTION	PART NUMBER
SpecConnect FieldScout Pro 1-Yr Subscription for 1-3 Devices	STI-3035A
SpecConnect FieldScout Pro 1-Yr Subscription for 4-7 Devices	STI-3035B
SpecConnect FieldScout Pro 1-Yr Subscription for 8+ Devices	STI-3035C



The FieldScout® GreenIndex+® Turf app utilizes the latest advancements in smartphone camera technology to measure plant health via the chlorophyll content (relative greenness) of turf. The app captures turfgrass images with an iPhone or iPad, calculates the Dark Green Color Index (DGCI), and displays a visual rating. Measurements can be compared to identify variability or trends in turf health across golf course turf, providing valuable data for decisions regarding fertilization and irrigation.

FieldScout GreenIndex+ Turf:

- ✓ Quantify turf color and quality
- ✓ Identify turf stress before it's too late
- ✓ Make critical decisions in real time without high up-front costs
- ✓ Customize the visual rating calculation for different species of grass and specific plots of land
- ✓ Data is logged and geo-referenced, and can be emailed to a personal computer for further analysis



FIELDSCOUT GREENINDEX+ TURF APP

DESCRIPTION	PART NUMBER
FieldScout GreenIndex+ Turf App	STI-2910TA
FieldScout GreenIndex+ Turf Board	STI-2910T



DLI 100 Light Meter:

Why measure light? Improve density and quality of your turf. Every turf variety needs a certain amount of light to thrive. Position the meters throughout your golf course to compare light levels and the effect those changes have on turf quality. You can also use multiple meters simultaneously to compare light levels and the impact on turf health, quality and aesthetics.

- ✓ Affordable & simple 1 button operation
- ✓ Runs for 24 hours to calculate DLI
- ✓ Battery included

LIGHTSCOUT DLI 100 METER

DESCRIPTION	PART NUMBER
LightScout DLI 100 Meter - Single Unit	STI-3405T
LightScout DLI 100 Meter - Set of 3	STI-3405T3



SoilStik™ pH Meter:

Easy to use and cost-efficient meter. Manage pH for a healthier growing environment and better soil, water, disease, and nutrient management.

- ✓ Flat surface electrode measures pH in soils, semi-solids, solids, and liquids
- ✓ RENEW indicator tells you when it's time to replace your electrode
- ✓ Records 15 sequentially tagged readings, allowing detection of changes over time
- ✓ Automatic temperature compensation
- ✓ Simultaneous display of pH and temperature
- ✓ Water resistant design floats in water and protects the meter in wet environments
- ✓ Includes protective sensor cap, rinse bottle, two CR2032 batteries, pH 4 & 7 standard solutions, and soft case

SOILSTIK pH METER

DESCRIPTION	PART NUMBER
FieldScout SoilStik pH Meter	STI-2105
SoilStik Flat Sensor Replacement	STI-2106
Refill Solutions - pH 4 and 7, 60mL Each	STI-2110



Direct Soil EC Meter:

Instant and accurate direct EC and temperature measurements.

- ✓ Professional-grade meter
- ✓ No need to prepare samples - simply sample through the profile
- ✓ Paired sensor tip provides maximum soil-sensor contact and higher accuracy
- ✓ Automatic temperature compensation, long lasting, and waterproof
- ✓ Includes battery and EC calibration standard

FIELDSCOUT DIRECT SOIL EC METER

DESCRIPTION	PART NUMBER
FieldScout Soil Meter with 8" Probe & Case	STI-2265FS
FieldScout EC 8" Replacement Probe	STI-2265PROBE
FieldScout Soil Meter with 24" Probe & Case	STI-2265FSTP
FieldScout EC 24" Replacement Probe	STI-2265FST24P

LIGHTNING DETECTION SYSTEMS



In business since 2001, Wxline is the leader in the design and manufacture of state-of-the-art systems, which address the most demanding lightning safety and equipment protection needs. Critical safety, warning, and protection equipment must function reliably when needed most, so Wxline designs systems that minimize the potential for human error and function in severe weather and a lightning environment - immune to power outages, loss of internet, loss of cell phone service, and loss of personal computers.

Features:

- ✓ Automatic alarm triggering with user-set range categories
- ✓ No false alarms, patented technology
- ✓ Sensor and communication self-test
- ✓ Battery-powered with 5-year min. battery lifespan, for easy installation
- ✓ NEMA 4X Sensor enclosure
- ✓ Fiber-Optic communication from the Sensor allows for completely isolated integration - no electrical conductors enter the structure



Strike View Software



Email and Text Message



STRIKE GUARD LIGHTNING DETECTION

DESCRIPTION	PART NUMBER
STRIKE GUARD WARNING SYSTEM - Sensor, tripod, receiver, relays, battery backup & 100' fiber-optic cable	SG001
STRIKE VIEW SERVER SOFTWARE - For single computer	SG002
STRIKE VIEW CLIENT SOFTWARE - Connect an additional computer to Strike View Server over LAN	SG002-NET
STRIKE GUARD EXTENDED WARRANTY - Extends factory warranty from 1 to 3 years with advance exchange	SG003



Automatically alert personnel to Strike Guard CAUTIONS, WARNINGS, or ALARMS with WAVE Siren Stations. Voice-coil, folded exponential horns provide loud audible alerts while high-intensity xenon strobes provide persistent visual alerts.

SIREN & STROBE STATIONS

DESCRIPTION	PART NUMBER
WAVE Siren Station - SINGLE Horn, AC Power	WAVE-SS01
WAVE Siren Station - DUAL Horn, AC Power	WAVE-SS02
WAVE Siren Station - TRIPLE Horn, AC Power	WAVE-SS03
WAVE Siren Station - QUAD Horn, AC Power	WAVE-SS04
<i>Multi-function, Remote Siren Station with all weather 120-degree directional horn(s), radio receiver, AC power supply with rechargeable battery back-up, mounting plate, and antenna</i>	
WAVE Siren Station - SINGLE Horn w/STROBE, AC	WAVE-SS01-ST
WAVE Siren Station - DUAL Horn w/STROBE, AC	WAVE-SS02-ST
WAVE Siren Station - TRIPLE Horn w/STROBE, AC	WAVE-SS03-ST
WAVE Siren Station - QUAD Horn w/STROBE, AC	WAVE-SS04-ST
<i>High-intensity clear Strobe illuminates during Lightning Alarm Mode until Alarm expires.</i>	
WAVE Siren Station - SINGLE Horn, SOLAR Power	WAVE-SS01-SO
WAVE Siren Station - DUAL Horn, SOLAR Power	WAVE-SS02-SO
WAVE Siren Station - TRIPLE Horn, SOLAR Power	WAVE-SS03-SO
WAVE Siren Station - QUAD Horn, SOLAR Power	WAVE-SS04-SO
<i>Solar power eliminates the need for AC power at the Siren Station location. 55 WATT Solar panel with mounting hardware and bracket includes upgraded battery.</i>	
WAVE Siren Station - SINGLE, STROBE & SOLAR	WAVE-SS01-SO-ST
WAVE Siren Station - DUAL, STROBE & SOLAR	WAVE-SS02-SO-ST
WAVE Siren Station - TRIPLE, STROBE & SOLAR	WAVE-SS03-SO-ST
WAVE Siren Station - QUAD, STROBE & SOLAR	WAVE-SS04-SO-ST
<i>Remote station with both Strobe and Solar options factory installed.</i>	
WAVE STROBE Only Station	WAVE-SSOS
<i>Remote Strobe Station with high-intensity strobe, radio receiver, AC power supply with rechargeable battery back-up and antenna</i>	
WAVE SIREN Extended Warranty from 1 to 3 years	WAVE-SS-EWAE
* Each station requires separate warranty.	



Features:

- ✓ Wireless activation from up to 2 miles away
- ✓ Programmable hours of operation
- ✓ Multi-stage strobe and audible notification
- ✓ Strobe-less and Strobe-only options available
- ✓ Many strobe colors available
- ✓ AC-powered or Solar-powered options
- ✓ Adjustable horn volume



WAVE TRANSMITTER

The WAVE Transmitter activates WAVE Siren Stations and WAVE Sequencers by sending coded radio frequency messages to an unlimited number of units within a 2-mile radius. The Transmitter is an essential component to the WAVE System and is necessary to activate and control remote equipment.

DESCRIPTION	PART NUMBER
WAVE Transmitter	WAVE-TR01
WAVE Transmitter Extended Warranty from 1 to 3 years	WAVE-TR-EWAE

WXLINE EQUIPMENT INDOOR BULKHEADS

Protect your equipment and streamline installations by having equipment factory-installed in a Wxline Equipment Indoor Bulkhead (WxEIB) or outdoor Solar Bulkhead.

EQUIPMENT INDOOR BULKHEADS

DESCRIPTION	PART NUMBER
Strike Guard Receiver Equip. Indoor Bulkhead	WXEIB-SG
<i>Strike Guard Lightning Data Receiver is mounted in 17 x 14 x 10 inch polycarbonate enclosure with complete lightning protection for incoming conductors and power supply. Preassembled for indoor mount. STRIKE GUARD RECEIVER PURCHASED SEPARATELY.</i>	
Strike Guard & WAVE Transmitter EIB	WXEIB
<i>Strike Guard Lightning Data Receiver & WAVE Transmitter assembled and mounted in a 20 x 16 x 10 inch poly-carbonate enclosure with complete lightning protection for incoming conductors and power supply. Pre-assembled for indoor mount. STRIKE GUARD RECEIVER & WAVE TRANSMITTER PURCHASED SEPARATELY.</i>	
Solar Strike Guard & WAVE Equip. Bulkhead	WXESB
<i>Strike Guard Lightning Receiver & WAVE Transmitter assembled and mounted in a 20 x 16 x 10 inch poly-carbonate enclosure designed for solar power with battery back-up. Includes complete lightning protection for incoming conductors and powersupply. STRIKE GUARD RECEIVER & WAVE TRANSMITTER PURCHASED SEPARATELY.</i>	

**EIB with
Strike Guard
Data Receiver**



**EIB with
Strike Guard
Data Receiver
& WAVE
Transmitter**



An industrial touchscreen PC is added to the WxEIB door for dedicated Strike View Software oversight. The WxEIB and Wxline PC are designed to function in a lightning environment - even with loss of internet and commercial power. Bulkhead connectors include USB, HDMI, Ethernet, and power.

EQUIPMENT INDOOR BULKHEADS with PC

DESCRIPTION	PART NUMBER
Strike Guard Receiver EIB with PC	WX-PC-SG
<i>Strike Guard Receiver WxEIB with Wxline PC mounted on door for dedicated Strike View Software oversight. Includes complete lightning protection for incoming conductors and power supply. Pre-assembled with the latest Microsoft Windows software and Strike View Software installed on PC for turnkey use. STRIKE GUARD RECEIVER PURCHASED SEPARATELY.</i>	
Strike Guard & WAVE Transmitter EIB with PC	WXEIB-PC
<i>Strike Guard Lightning Data Receiver & WAVE Transmitter Strike are installed in WxEIB with Wxline PC mounted on door for dedicated Strike View Software oversight. Includes complete lightning protection for incoming conductors and powersupply. Pre-assembled with the latest Microsoft Windows software and Strike View Software installed on PC for turnkey use. STRIKE GUARD RECEIVER & WAVE TRANSMITTER PURCHASED SEPARATELY.</i>	
PC & Monitor 1 to 3-year Extended Warranty	WX-PC-EWAE



LIGHTNING PROTECTION EQUIPMENT

The ultimate protection of electrical equipment from lightning is the disconnection of the equipment from conductive electrical systems. The WAVE Sequencer, typically installed in a Critical Asset Protection Bulkhead (CAPB), automatically initiates a programmable shutdown process to place critical equipment in a protected state upon lightning ALARM. The protected asset is automatically reconnected and powered back on upon the ALL-CLEAR.

**WAVE
Sequencer**



CRITICAL ASSET PROTECTION BULKHEAD Features:

- ✓ Selective isolation - disconnects selected conductors from the critical asset
- ✓ Selective grounding - grounds disconnected conductors
- ✓ Selective shutdown - disconnects power conductors via independent circuits with programmable delays to provide the ultimate defense against over-voltages, electrical over-stress and lightning surge currents

**PUMP
CAPB**



CENTRAL CAPB



**REMOTE
CAPB**



POWER SHUT-OFFS

DESCRIPTION	PART NUMBER
WAVE Sequencer	WAVE-PS01
<i>Receives RF Transmitter messages and provides 3 outputs to control relays/contactors for managing the loads represented by pumps, irrigation systems and other critical equipment. Includes 3 ft. antenna with 25' cable, radio receiver, battery back up and AC power supply.</i>	
WAVE Sequencer Direct Connect	WAVE-PS01-DC
<i>Provides direct connect interface (no WAVE Transmitter required) to the Strike Guard Lightning Data Receiver main or auxiliary relay.</i>	
Pump Sta. Critical Asset Protection Bulkhead	CAPB-PUMP
<i>WAVE Sequencer-based remote wireless or Strike Guard direct connect for contact-closure relay signaling to initiate automated lightning ALARM shut-down/start-up of pump stations.</i>	
Central Critical Asset Protection Bulkhead	CAPB-CENTRAL
<i>Includes a WAVE Sequencer with fully-assembled-and-tested relay isolation bank, AC Power secondary surge suppressor, RF surge suppressor, and AC over-current protection appropriate for Satellite or Decoder systems.</i>	
Remote Critical Asset Protection Bulkhead	CAPB-REMOTE
<i>Includes a WAVE Sequencer with three programmable 12 VDC relay control outputs, and fully-assembled and tested relay isolation bank to manage power source disconnection and reconnection for protection of power sources & irrigation satellites during local thunderstorms.</i>	
WAVE Sequencer 1 to 3 Years Ext. Warranty	WAVE-PS01-EWAE



Add a STROBE for visual indication of ON/OFF condition

Part # STROBE-CAPB

OTTERBINE AERATING FOUNTAINS



Otterbine's Aerating Fountains should not be confused with floating fountains. These aerators are engineered to provide results along with beautiful, dynamic spray patterns. Superior construction allows provides an industry first 5-year warranty. Offering both beauty and function; these systems operate in as little as 30 inches of water and all 1-5HP Aerating Fountain spray patterns are interchangeable.

If replacing another manufacturer's unit or an older Otterbine
- **ASK ABOUT ADDITIONAL AVAILABLE DISCOUNTS**



SUNBURST

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	4'	7'	10'	11'
SPRAY DIAMETER :	15'	24'	30'	40'
GPM:	530	640	775	1,100



GEMINI

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	5'	9'	12'	15'
SPRAY DIAMETER :	10'	16'	24'	34'
GPM:	555	665	800	1,125



Features

1. High-tech thermoplastic pumping chambers are staged to allow for easy interchange
2. Rugged low visibility closed cell foam filled float includes handles and protective pockets for lights
3. Industrial strength thermoplastic screen helps keep debris out of the unit
4. Electrical quick disconnect is part of the upper plate
5. Mixed flow pumping system achieves maximum pumping capacities
6. Oil cooled, efficient 3450 RPM custom built motor
7. Corrosion resistant, durable 18 gauge/316 grade stainless steel motor housing



SATURN

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	1½'	3'	4½'	5'
SPRAY DIAMETER :	7'	11'	20'	24'
GPM:	400	480	580	825

OTTERBINE AERATING FOUNTAINS



ROCKET

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	11'-13'	17'-19'	20'-22'	23'-25'
SPRAY DIAMETER :	5'	5'	5'	5'
GPM:	110	155	200	290



COMET

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	9'-11'	16'-18'	19'-21'	21'-23'
SPRAY DIAMETER :	8'	8'	8'	8'
GPM:	130	185	240	325



TRISTAR

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	8'	12'	16'	19'
SPRAY DIAMETER :	13'	17'	23'	27'
GPM:	150	210	275	400



OMEGA

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	8'	11'	15'	18'
SPRAY DIAMETER :	14'	20'	28'	34'
GPM:	150	210	275	400

OTTERBINE AERATING FOUNTAINS



CONSTELLATION

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	4'	6'	9'	10'
SPRAY DIAMETER :	18'	28'	35'	36'
GPM:	150	210	275	400



PHOENIX

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	8'	11'	15'	18'
SPRAY DIAMETER :	14'	20'	28'	34'
GPM:	150	210	275	400



GENESIS

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	6'	10'	15'	18'
SPRAY DIAMETER :	24'	32'	50'	62'
GPM:	150	210	275	400



EQUINOX

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	10'	13'	15'	20'
SPRAY DIAMETER :	35'	40'	58'	72'
GPM:	150	210	275	400

OTTERBINE AERATING FOUNTAINS

Ordering Information - Otterbine Aerating Fountains

1st STEP: Aerating Fountain Unit

DESCRIPTION	PART NUMBER
1 HP, 115V Single-Phase AF Unit	OTT-01-0011-116
1 HP, 230V Single-Phase AF Unit	OTT-01-0011-216
2 HP, 230V Single-Phase AF Unit	OTT-01-0012-216
3 HP, 230V Single-Phase AF Unit	OTT-01-0013-216
3 HP, 230V 3-Phase AF Unit	OTT-01-0013-236
3 HP, 460V 3-Phase AF Unit	OTT-01-0013-436
5 HP, 230V Single-Phase AF Unit	OTT-01-0015-216
5 HP, 230V 3-Phase AF Unit	OTT-01-0015-236
5 HP, 460V 3-Phase AF Unit	OTT-01-0015-436
Includes: Motor Unit, Pumping Chamber, Float, Power Control Center with Timer, Surge Arrestor and GFCI	

2nd STEP: Aerating Fountain Pattern

DESCRIPTION	PART NUMBER
Sunburst Pattern, 1-3HP	OTT-18-0038
Sunburst Pattern, 5HP Only	OTT-18-0081
Gemini Pattern, 1-3HP	OTT-18-0039
Gemini Pattern, 5HP Only	OTT-18-0082
Saturn Pattern, 1-3HP	OTT-18-0040
Saturn Pattern, 5HP Only	OTT-18-0083
Phoenix Pattern, 1-5HP	OTT-18-0041
Rocket Pattern, 1-5HP	OTT-18-0042
Tristar Pattern, 1-5HP	OTT-18-0043
Comet Pattern, 1-5HP	OTT-18-0044
Genesis Pattern, 1-5HP	OTT-18-0045
Constellation Pattern, 1-5HP	OTT-18-0046
Equinox Pattern, 1-5HP	OTT-18-0077
Omega Pattern, 1-5HP	OTT-18-0079

Options

DESCRIPTION	PART NUMBER
2in1 PCC, 2 Units Only (no lights)	OTT-11-1700
2in1 PCC, 2 Units & 2 Light Sets	OTT-11-2700
PCC Phase Monitor for 230V 3-Phase	OTT-17-0083-230
PCC Phase Monitor for 460V 3-Phase	OTT-17-0083-460
PCC Light Ready Panel	OTT-18-0111
Wind Control with Auto Shut-Off	OTT-01-0004-004
Screen Kit for Sunburst, Gemini, Saturn	OTT-12-0076
Cable Pigtail Protector (for Storage)	OTT-178-017
Install Kit with 2 Duckbill Anchors	OTT-F-W-KIT
Light controls will fit in standard PCC unless ordering GFCI or Phase Monitor option (separate enclosure required).	

3rd STEP: Power Cable

DESCRIPTION	PART NUMBER
12/3 Power Cable, Single Phase	OTT957-001
12/4 Power Cable, 3-Phase	OTT957-002
10/3 Power Cable, Single Phase	OTT957-009
10/4 Power Cable, 3-Phase	OTT957-010
8/3 Power Cable, Single-Phase	OTT-34-0002
8/4 Power Cable, 3-Phase	OTT-34-0003
6/3 Power Cable, Single Phase	OTT-34-0004
Cable connectors will be vulcanized to the cable. Sold in 25' increments with a 50' minimum length.	

AERATING FOUNTAIN SPECS (1 HP-5 HP)

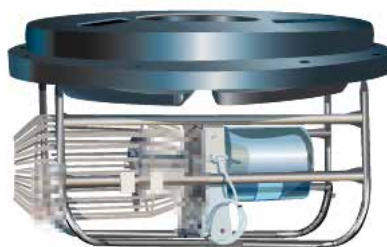
HP	Electrical Rating	Amp Draw	#12 Max . Cable Run	#10 Max. Cable Run	#8 Max. Cable Run	#6 Max. Cable Run
1	115V Single Phase	14	-	150'	250'	-
1	208/230V Single Phase	8.3 / 7.5	300' / 375'	500' / 600'	800' / 975'	-
2	208/230V Single Phase	13.7 / 12.4	175' / 225'	300' / 375'	475' / 575'	750' / 925'
3	208/230V Single Phase	15.5 / 14	-	250' / 325'	425' / 525'	675' / 825'
3	208/230V 3-Phase	9.7 / 8.6	300' / 375'	500' / 625'	800' / 975'	-
3	460V 3-Phase	4.3	1000'	-	-	-
5	230V Single Phase	23	-	-	300'	500'
5	208/230V 3-Phase	15.1 / 13.4	200' / 250'	300' / 400'	500' / 625'	-
5	460V 3-Phase	7.2	925'	1000'	-	-

OTTERBINE INDUSTRIAL AERATORS



Otterbine's experience in aquaculture is obvious in the performance driven results of our surface and subsurface industrial aeration systems. Constructed from 316 stainless steel, thermoplastics and rugged low speed motors; these systems are designed to withstand the demands of severe aquatic environments.

The High Volume is Otterbine's power house providing over 3.3lbs. of oxygen per horsepower hour and pumping over 920GPM per hour. These systems provide unique solutions to managing water quality, and are available in low profile spray patterns and horizontal mixers. All Industrial Aerators can operate in as little as 3ft of water and are supported by a comprehensive 3-year warranty.



*Triton Mixer
and Aspirator*

*Sub-Triton Mixer
and Aspirator*



HIGH VOLUME

	1 HP	2 HP	3 HP	5 HP
SPRAY HEIGHT:	1½'	2'	3'	4½'
SPRAY DIAMETER :	4'	7'	9'	11'
GPM:	920	1,525	2,100	3,000

TRITON & SUB-TRITON MIXERS

	1 HP	2 HP	3 HP
VOLUME INFLUENCED: (Cubic Feet of Water)	490,000	980,000	1,470,000

TRITON & SUB-TRITON ASPIRATORS

	1 HP	2 HP	3 HP
VOLUME INFLUENCED: (Cubic Feet of Water)	490,000	980,000	1,470,000

OTTERBINE INDUSTRIAL AERATORS

Ordering Information - Otterbine Industrial Aerators

1st STEP: Industrial Aerating Unit

DESCRIPTION	PART NUMBER
1 HP, 115V Single-Phase IA Unit	OTT-01-0091-116
1 HP, 230V Single-Phase IA Unit	OTT-01-0091-216
2 HP, 230V Single-Phase IA Unit	OTT-01-0092-216
3 HP, 230V Single-Phase IA Unit	OTT-01-0093-216
3 HP, 230V 3-Phase IA Unit	OTT-01-0093-236
3 HP, 460V 3-Phase IA Unit	OTT-01-0093-436
5 HP, 230V 3-Phase IA Unit	OTT-01-0095-236
5 HP, 460V 3-Phase IA Unit	OTT-01-0095-436
Includes: Motor Unit, Pumping Chamber, Float (floating units), Bottom Barrier (sub-surface units), Air Tube (aspirators), PCC with Timer, Surge Arrestor and GFCI.	

2nd STEP: Industrial Pattern/Model

DESCRIPTION	PART NUMBER
High Volume	OTT-18-0061
Sub-Triton	OTT-18-0062
Triton Aspirator	OTT-18-0063
Sub-Triton Mixer	OTT-18-0064
Triton Mixer	OTT-18-0065

3rd STEP: Power Cable

DESCRIPTION	PART NUMBER
12/3 Power Cable, Single Phase	OTT957-001
12/4 Power Cable, 3-Phase	OTT957-002
10/3 Power Cable, Single Phase	OTT957-009
10/4 Power Cable, 3-Phase	OTT957-010
8/3 Power Cable, Single-Phase	OTT-34-0002
8/4 Power Cable, 3-Phase	OTT-34-0003
6/3 Power Cable, Single Phase	OTT-34-0004
Cable connectors will be vulcanized to the cable. Sold in 25' increments with a 50' minimum length.	

Options

DESCRIPTION	PART NUMBER
2in1 PCC, 2 Units Only (no lights)	OTT-11-1700
PCC Phase Monitor for 230V 3-Phase	OTT-17-0083-230
PCC Phase Monitor for 460V 3-Phase	OTT-17-0083-460
Screen Kit for High Volume	OTT-F-800-001B
Cable Pigtail Protector (for Storage)	OTT178-017
Install Kit with 2 Duckbill Anchors	OTT-F-W-KIT

INDUSTRIAL AERATOR SPECS (1 HP-5 HP)

HP	Electrical Rating	Amp Draw	#12 Max . Cable Run	#10 Max. Cable Run	#8 Max. Cable Run	#6 Max. Cable Run
1	115V Single Phase	13.4	-	150'	250'	-
1	208/230V Single Phase	6.8	325' / 425'	600' / 675'	950' / 1000'	-
2	208/230V Single Phase	11.9	200' / 225'	325' / 375'	525' / 600'	825' / 925'
3	208/230V Single Phase	13.5	-	275' / 325'	450' / 500'	725' / 800'
3	208/230V 3-Phase	8.5	350' / 375'	550' / 625'	900' / 1000'	-
3	460V 3-Phase	4.2	1000'	-	-	-
5	208/230V 3-Phase	14.4	200' / 225'	325' / 350'	500' / 575'	-
5	460V 3-Phase	7.5	900'	1000'	-	-

OTTERBINE SMALL POND FOUNTAINS



Whether you're looking for aeration or an attractive display, this all-in-one fountain and circulator is the ideal solution for small ponds less than three quarters of an acre in size. Easily converted in just minutes between the included four aerating fountain patterns and horizontal circulator. Smaller ponds tend to be shallow, and therefore need a system that will achieve proven results. Make sure when deciding on a small pond aeration system to compare circulation and oxygen transfer rates. When set to the Gemini pattern this unit adds an amazing 1.13lbs of oxygen per horsepower hour and pumps 506GPM per hour. Enjoy the beauty of this aerating fountain at night by purchasing the deluxe package which comes complete with a beautiful 2-light led system, with colored lenses available.



Rocket



Phoenix



Gemini



High Volume



Mixer

1/2 HP FRACTIONAL SERIES

	GEMINI	HIGH VOLUME	PHOENIX	ROCKET	MIXER
SPRAY HEIGHT:	4'	2'	10.½'	10.½'	n/a
SPRAY DIAMETER :	4½'	2½'	10½'	3'	n/a
GPM:	506	435	195	179	245,000ft ³

OTTERBINE SMALL POND FOUNTAINS



Ordering Information - Fractional Series

1st STEP: Fractional Series Unit

DESCRIPTION	PART NUMBER
1/2 HP, 115V Single Phase	OTT-04-0010-115
1/2 HP, 230V Single-Phase	OTT-04-0010-230
1/2 HP, 115V 1-Phase DELUXE LED	OTT-04-0011-115
1/2 HP, 230V 1-Phase DELUXE LED	OTT-04-0011-230
1/2 HP, 115V 1-Phase DELUXE RGBW	OTT-04-0042-115
1/2 HP, 230V 1-Phase DELUXE RGBW	OTT-04-0042-230

Includes: 5 interchangeable spray patterns, mini power control center with GFCI and timer, and debris screen.

DELUXE LED unit includes 2-light set* with 7W LED Bulbs (Bright White or Warm White), and Quick Disconnect on both the unit and lights.

DELUXE RGBW unit includes 4W color changing sequencing light set* with remote (Optional WiFi Controller available).

* Additional cable run for lights required



Features

1. Includes corrosion resistant adjustable spray impellers/patterns to produce 4 spray patterns, and a horizontal mixer (comes assembled as Gemini)
2. Rugged low visibility foam filled polyethylene float with recessed light pockets
3. Oil cooled, efficient 3250 RPM custom built motor
4. Corrosion resistant, durable 18 gauge/316 grade stainless steel motor housing
5. Stainless steel brackets allow for easy conversion between fountain patterns and mixer model
6. Adjustable discharge angle +/- 8 degrees (Mixer model only)

2nd STEP: Power Cable

DESCRIPTION	PART NUMBER
12/3 Power Cable (Fractional Unit)	OTT-GP3999
16/2 Power Cable (Lights)	OTT-34-0011

Cable is hardwired to unit unless Quick Disconnect option or DELUXE unit is ordered.
Sold in 25' increments with a 50' minimum length.
Maximum Cable Run: 115V - 300', 230V - 600'

Options

DESCRIPTION	PART NUMBER
Mini-RGBW WiFi Kit for 115V units	OTT-12-0809
Mini-RGBW WiFi Kit for 230V units	OTT-12-0810
Quick Disconnect for Power Cable	OTT-18-0085
Light Lens Kit - RD/BL/GRN/YL/PNK	OTT-12-0085
Light Single Lens - Choose Color	OTT-12-0091

OTTERBINE GIANT FOUNTAINS



When you want to create a bold impression look to any of the patterns found within the Giant Fountain line. These fountains create sensational displays wherever they are found. From the staggering 90' height of our Super Nova to the magnificent multi-dimensional cascading pattern of the Equinox, on-lookers are mesmerized by the magnificence of these fountains. Constructed for ease of use, the Giant Fountain line allows for shallow operating depths of only 40" and are backed by an all-inclusive 4-year warranty.



TRIAD

	10 HP	15 HP	25 HP
SPRAY HEIGHT:	36'	40'	50'
SPRAY DIAMETER :	33'	37'	42'
GPM:	300	390	500



ARIES

	10 HP	15 HP	25 HP
SPRAY HEIGHT:	27'	30'	37'
SPRAY DIAMETER :	85'	101'	121'
GPM:	300	390	500



Features

1. Special polyethylene float allows for easy height adjustment to make it less visible in the water
2. High quality Grundfos pump and Franklin 3450 RPM motor ensure years of trouble-free run time
3. Large center wheels assist installation and removal eliminating the need for a crane in most applications
4. Removable stainless steel intake screen allows for cleaning in the water and protects pump from debris



EQUINOX

	10 HP	15 HP	25 HP
SPRAY HEIGHT:	28'	31'	41'
SPRAY DIAMETER :	80'	85'	106'
GPM:	300	390	500

OTTERBINE GIANT FOUNTAINS



SUPERNOVA

	10 HP	15 HP	25 HP
SPRAY HEIGHT:	55'	70'	95'
SPRAY DIAMETER :	1'	1'	1'
GPM:	225	350	400



POLARIS

	10 HP	15 HP	25 HP
SPRAY HEIGHT:	27'	30'	35'
SPRAY DIAMETER :	13'	8'	8'
GPM:	675	750	1,200



MYSTIC

	10 HP	15 HP	25 HP
SPRAY HEIGHT:	40'	50'	65'
SPRAY DIAMETER :	6'	6'	6'
GPM:	450	500	800



AQUASTAR

	10 HP	15 HP	25 HP
SPRAY HEIGHT:	36'	40'	50'
SPRAY DIAMETER :	33'	37'	42'
GPM:	225	350	400

OTTERBINE GIANT FOUNTAINS

Ordering Information - Otterbine Giant Fountains

1st STEP: Giant Fountain Unit

DESCRIPTION	PART NUMBER
10 HP, 230V Single-Phase GF Unit	OTT-01-0602-216
10 HP, 208V 3-Phase GF Unit	OTT-01-0602-226
10 HP, 230V 3-Phase GF Unit	OTT-01-0602-236
10 HP, 460V 3-Phase GF Unit	OTT-01-0602-436
15 HP, 230V Single-Phase GF Unit	OTT-01-0603-216
15 HP, 208V 3-Phase GF Unit	OTT-01-0603-226
15 HP, 230V 3-Phase GF Unit	OTT-01-0603-236
15 HP, 460V 3-Phase GF Unit	OTT-01-0603-436
25 HP, 208V 3-Phase GF Unit	OTT-01-0604-226
25 HP, 230V 3-Phase GF Unit	OTT-01-0604-236
25 HP, 460V 3-Phase GF Unit	OTT-01-0604-436
Includes: Motor Unit, Pumping Chamber, Float, Power Control Center with Timer, Surge Arrestor and GFCI. 575V, 3-Phase Units also available.	

2nd STEP: Aerating Fountain Pattern

DESCRIPTION	PART NUMBER
Equinox Pattern	OTT-18-0054
Mystic Pattern	OTT-18-0055
Polaris Pattern	OTT-18-0056
Supernova Pattern	OTT-18-0057
Aquastar Pattern	OTT-18-0058
Triad Pattern	OTT-18-0059
Aries Pattern	OTT-18-0060

3rd STEP: Power Cable

DESCRIPTION	PART NUMBER
10/4 Power Cable	OTT957-010
8/4 Power cable	OTT-34-0003
6/4 Power Cable	OTT-34-0005
4/4 Power Cable	OTT-34-0007
Cable is hardwired to unit unless Quick Disconnect option is ordered. Sold in 25' increments with a 50' minimum length.	

Options

DESCRIPTION	PART NUMBER
Power Quick Disconnect, 10HP 460V	OTT-18-0027
Power Quick Disconnect, 10/4, 8/4, 6/4	OTT-18-0028
Power Quick Disconnect, 4/4	OTT-18-0029
SubMonitor Option (3-Phase Only)	OTT-18-0037
PCC Phase Monitor	OTT-18-0020
Wind Control with Auto Shut-Off	OTT-01-0004-004
Wind Control with Auto Shut-Off & Spray Reduction - 10HP & 15HP	OTT-01-0004-005
Wind Control with Auto Shut-Off & Spray Reduction - 25HP	OTT-01-0004-006
16/2 Wind Control Cable	OTT-34-0011
Phase Monitor option offers protection from phase imbalance, single-phasing, phase reversal, low and high voltage and improper frequency. SubMonitor option extends warranty to 5 years	

AERATING GIANT FOUNTAIN SPECS (10 HP-25 HP)

HP	Electrical Rating	Amp Draw	#10 Max . Cable Run	#8 Max. Cable Run	#6 Max. Cable Run	#4 Max. Cable Run
10	230V Single Phase	47	-	-	250'	375'
10	208V 3-Phase	34.5	-	225'	350'	575'
10	230V 3-Phase	30	-	275'	450'	700'
10	460V 3-Phase	15	700'	1000'	-	-
15	230V Single Phase	67	-	-	-	275'
15	208V 3-Phase	51	-	-	250'	375'
15	230V 3-Phase	44	-	-	300'	475'
15	460V 3-Phase	22	475'	775'	1000'	-
25	208V 3-Phase	81	-	-	-	250'
25	230V 3-Phase	70	-	-	-	300'
25	460V 3-Phase	35	-	475'	775'	1000'

OTTERBINE FOUNTAIN GLO™ LIGHTING

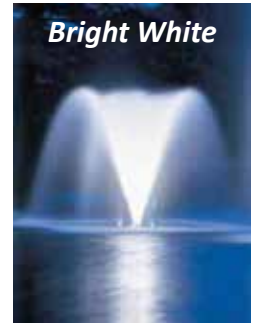
The perfect addition to any Otterbine spray pattern, Fountain Glo lighting systems are available in a variety of platforms each designed to create radiant displays once the sun sets. All feature energy efficient LED lamps to deliver many years of service without the need to change bulbs. Whether you select standard LED Low Voltage light system or upgrade to color changing and sequencing RGBW light sets, each Fountain Glo lighting system is designed to create rich, vibrant light to accentuate any fountain pattern.

LED Low Voltage (6.5W) for 1HP-25HP Units

- Available in 2, 3, 4, 6, 8, 12 & 16 lights
- Choose from Bright White or Warm White lamps
- Constructed of corrosion resistant thermal plastics



LIGHTS:	2	3	4	6	8*	12*	16*
Lamp Wattage Total (6.5W):	13	20	26	39	52	78	104
*Multiple cable runs required (One cable run for every four lights).							



Mini-RGBW (4W) for 1/2HP Units

- Available in 2, 3 & 6 lights
- Handheld remote up to 100' from panel
- Thousands of colors
- Preprogrammed color changing sequences
- Wi-Fi Option available
- Constructed of corrosion resistant thermal plastics



LIGHTS:	2	3	6
Lamp Wattage Total (4W):	8	12	24

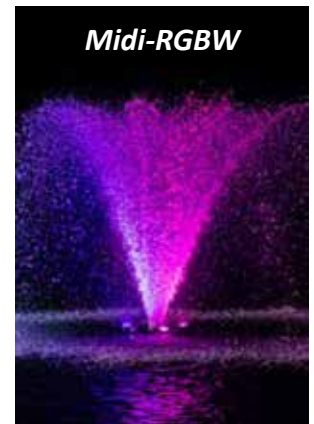


Midi-RGBW (9W) for 1HP-5HP Units

- Available in 3, 4, 6 & 8 lights
- Handheld remote up to 150' from panel
- Thousands of colors
- Preprogrammed color changing sequences
- Wi-Fi Option available
- Constructed of 304 stainless steel



LIGHTS:	3	4	6	8
Lamp Wattage Total (9W):	27	36	54	72



Maxi-RGBW (40W or 80W) for 1HP-25HP Units

- Available in 4 lights
- 24 Pre-programmed sequences
- Custom sequences available
- Over 70,000 operating hours
- Constructed of 316 stainless steel



WATTAGE:	40W	80W
Lamp Wattage Total (4 lights):	150	331



OTTERBINE FOUNTAIN GLO™ LIGHTING

LED 6.5W LIGHT SETS

DESCRIPTION	PART NUMBER
2 Light Set, 6.5W LED	OTT-02-0050-002
3 Light Set, 6.5W LED	OTT-02-0050-003
4 Light Set, 6.5W LED	OTT-02-0050-004
6 Light Set, 6.5W LED	OTT-02-0050-006
8 Light Set, 6.5W (for 10HP-25HP)*	OTT-02-0053-008
12 Light Set, 6.5W (for 10HP-25HP)*	OTT-02-0053-012
16 Light Set, 6.5W (for 10HP-25HP)*	OTT-02-0053-016

Light Sets include control with timer and transformer mounted in Unit's PCC, unless 460V. **Indicate Bright White (5700K) or Warm White (3000K) when ordering.**

* 8-lights req. 2 wire runs, 12-lights req. 3 wire runs, 16-lights req. 4 wire runs.

LED 6.5W LIGHT CABLE & OPTIONS

DESCRIPTION	PART NUMBER
16/2 Light Cable	OTT-34-0011
12/3 Light Cable	OTT-GP3999
Light Lens Kit - RD/BL/GRN/YL/PNK	OTT-18-0085
Light Single Lens - Choose Color	OTT-12-0091
Light Photocell Option, 110AC Control	OTT-17-0005
Light Photocell Option, 24DC Control	OTT-17-0005-024
Power Control Panel for LED Lighting	OTT-11-4020-116

2 Light Max Cable Run: 16/2 = 650' or 12/3 = 1,000'

4 Light Max Cable Run: 16/2 = 325' or 12/3 = 700'

6 Light Max Cable Run: 16/2 = 225' or 12/3 = 525'

8-16 Light Max Cable Runs: Base on 4 Lights X Cable Runs

MINI-RGBW LIGHT SETS

DESCRIPTION	PART NUMBER
2 Light 4W Set, 1/2HP Units	OTT-02-0047-002
3 Light 4W Set, 1/2HP Units	OTT-02-0047-003

Mini-RGBW Light Sets include controls with photocell and timer, and handheld remote control with 100' range.

MINI-RGBW LIGHT CABLE & OPTIONS

DESCRIPTION	PART NUMBER
16/2 Light Cable - 150' Max. Run	OTT-34-0011
12/3 Light Cable - 300' Max. Run	OTT-GP3999

MIDI-RGBW LIGHT SETS

DESCRIPTION	PART NUMBER
2 Light Set, 9W LED	OTT-02-0050-002
3 Light Set, 9W LED	OTT-02-0050-003
4 Light Set, 9W LED	OTT-02-0050-004
6 Light Set, 9W LED	OTT-02-0050-006
8 Light Set, 9W LED*	OTT-02-0053-008

Light Sets include control with timer and transformer mounted in Unit's PCC, unless 460V. Includes cable quick disconnect and handheld remote with 150' range.

* 8-lights req. 2 wire runs.

MIDI-RGBW LIGHT CABLE & OPTIONS

DESCRIPTION	PART NUMBER
16/2 Light Cable	OTT-34-0011
12/3 Light Cable	OTT-GP3999
Light Photocell Option, 110AC Control	OTT-17-0005
Light Photocell Option, 24DC Control	OTT-17-0005-024
Power Control Panel for LED Lighting	OTT-11-4020-116

2 Light Max Cable Run: 16/2 = 650' or 12/3 = 1,000'

3 Light Max Cable Run: 16/2 = 500' or 12/3 = 850'

4 Light Max Cable Run: 16/2 = 325' or 12/3 = 700'

6 Light Max Cable Run: 16/2 = 225' or 12/3 = 525'

8 Light Max Cable Runs: 16/2 = 325' or 12/3 = 700' (2 runs)

MAXI-RGBW SEQUENCING LIGHT SETS

DESCRIPTION	PART NUMBER
4 Light 40W Set, 1-5HP Units	OTT-02-0040-004
4 Light 80W Set, 10-25HP Units	OTT-02-0080-004

Maxi-RGBW Light Sets include controls with GFCI, timer and transformer mounted in a separate PCC and requires 115V.

MAXI-RGBW LIGHT CABLE & OPTIONS

DESCRIPTION	PART NUMBER
12/5 Light Cable - 600' Max. Run	OTT-34-0019
10/5 Light Cable - 1,000' Max. Run	OTT-34-0021
External Transformer for 230V Units	OTT-17-0033-001
External Transformer for 460V Units	OTT-17-0033-001

OTTERBINE AIR FLO 3 DIFFUSED AERATION SYSTEM



The Air Flo 3 is Otterbine's subsurface diffused aeration system and is a great choice when no surface spray is desired. Often referred to as a 'bubbler' system, these units operate from quiet on-shore compressors that pump air to diffusers placed at the pond bottom. Oxygen is then released in the form of bubbles throughout the water column, mixing bottom and top water layers breaking down thermal stratification and adding much needed oxygen to the pond. With no electrical components in the water, these systems are the ideal choice for water quality management solutions in recreational bodies of water. Requiring little to no maintenance, these units are constructed of corrosion resistant materials and can operate in depths from 6' to 40'. Independently tested for safety and effectiveness, the Air Flo includes a 3-year warranty on the compressors, 5-year warranty on diffusers and cabinet, and 15-years on tubing.

Ordering Information - Otterbine Air Flo System

1st STEP: Choose System

DESCRIPTION	PART NUMBER
AF3 1 Comp, 2 Single Disc Pads, 115V	OTT-03-3121-115
AF3 1 Comp, 2 Single Disc Pads, 230V	OTT-03-3121-230
AF3 1 Comp, 2 Dual Disc Pads, 115V	OTT-03-3122-115
AF3 1 Comp, 2 Dual Disc Pads, 230V	OTT-03-3122-230
AF3 1 Comp, 3 Single Disc Pads, 115V	OTT-03-3131-115
AF3 1 Comp, 3 Single Disc Pads, 230V	OTT-03-3131-230
AF3 1 Comp, 4 Single Disc Pads, 115V	OTT-03-3141-115
AF3 1 Comp, 4 Single Disc Pads, 230V	OTT-03-3141-230
AF3 2 Comp, 2 Dual Disc Pads, 115V	OTT-03-3222-115
AF3 2 Comp, 2 Dual Disc Pads, 230V	OTT-03-3222-230
AF3 2 Comp, 3 Dual Disc Pads, 115V	OTT-03-3232-115
AF3 2 Comp, 3 Dual Disc Pads, 230V	OTT-03-3232-230
AF3 2 Comp, 4 Singel Disc Pads, 115V	OTT-03-3241-115
AF3 2 Comp, 4 Single Disc Pads, 230V	OTT-03-3241-230
AF3 2 Comp, 4 Dual Disc Pads, 115V	OTT-03-3242-115
AF3 2 Comp, 4 Dual Disc Pads, 230V	OTT-03-3242-230
AF3 2 Comp, 6 Single Disc Pads, 115V	OTT-03-3261-115
AF3 2 Comp, 6 Single Disc Pads, 230V	OTT-03-3261-230
AF3 2 Comp, 6 Dual Disc Pads, 115V	OTT-03-3262-115
AF3 2 Comp, 6 Dual Disc Pads, 230V	OTT-03-3262-230
AF3 2 Comp, 8 Single Disc Pads, 115V	OTT-03-3281-115
AF3 2 Comp, 8 Single Disc Pads, 115V	OTT-03-3281-230
Includes: One or two 1/2HP compressors per cabinet and 12" Disc Fine Bubble Diffusers. <i>Air tubing is not included and is ordered separately.</i>	

2nd STEP: Air Tubing

DESCRIPTION	PART NUMBER
Weighted Tubing Kit, 100ft	OTT-12-0093-100
Weighted Tubing Kit, 500ft	OTT-12-0093-500
Unweighted Tubing Kit, 100ft	OTT-12-0094-100
Generally unweighted tubing is used from compressor housing to shoreline and weighted tubing is used from shore to diffuser manifold.	

Options

DESCRIPTION	PART NUMBER
Air FLOW 3 Timer Kit	OTT-17-0084
SS Tubing Clamp	OTT-46-0124
Brass Tubing Coupling	OTT-67-008



TECHNICAL DATA

AREAS

1 Acre	=	43,560 Square Feet
1 Arce	=	4,840 Square Yards
1 Acre	=	160 Square Rods
1 Square Rod	=	272.25 Square Feet
1 Square Mile	=	640 Acres
1 Square Foot	=	144 Square Inches
1 Square Yard	=	9 Square Feet
1 Square Inch	=	6.452 Square cm
Area of a Circle	=	Radius ² x 3.1416
Area of a Square	=	One Side Squared
Area of a Rectangle	=	Length x Width
Area of a Triangle	=	Base x 1/2 x Height

WEIGHTS

1 Kilogram (kg)	=	2.204 Pounds
1 Pound	=	454 Grams
1 Stone	=	14 Pounds
1 US Gallon (Water)	=	8.3357 Pounds
1 Cubic Foot (Water)	=	62.3554 Pounds
1 Liter	=	2.2 Pounds
Soil, Undisturbed	=	100 Pounds/cu ft
Soil, Dry & Loose	=	80-90 Pounds/cu ft
Soil, Moist	=	75-100 Pounds/cu ft
Sand, Dry	=	90-105 Pounds/cu ft

PRESSURES

1 Foot of Water	=	0.433 Pounds/sq in (psi)
1 Pound/sq in (psi)	=	2.31 Feet of Head
1 Bar	=	14.5 Pounds/sq in (psi)
1 Atmosphere	=	14.6963 psi

METRIC TO U.S.

Millimeters (mm)	x	.03937	=	Inches
Centimeters (cm)	x	.3937	=	Inches
Meters (m)	x	3.281	=	Feet
Meters (m)	x	1.094	=	Yards
Kilometers (km)	x	.62137	=	Miles
Kilometers (km)	x	3280.87	=	Feet
Liters (l)	x	1.0567	=	Quarts
Liters (l)	x	.2642	=	Gallons
Liters (l)	x	.455	=	Pounds
Temp. in C°	x	1.80 + 32	=	Temp in F°

VOLUMES

1 Cubic Foot	=	1,728 Cubic Inches
1 Gallon	=	231 Cubic Inches
1 Cubic Yard	=	27 Cubic Feet
1 Cubic Foot	=	7.48 Gallons
1 Cubic Yard	=	202 Gallons
1 Ounce	=	16 Drams
1 Quart	=	32 Ounces
1 Gallon	=	4 Quarts
1 Gallon	=	0.833 Imperial Gallons
1 Acre Inch	=	27,154 Gallons
1 Ace Foot	=	325,851 Gallons
Volume of a Cube	=	Area of Base x Height

FLOWS

1 Gallon/Minute (gpm)	=	0.002228 Cubic ft/sec
1 gpm	=	0.13368 Cubic ft/min
1 Cubic Foot/Second	=	448.83 gpm
1 Cubit Foot/Minute	=	264 gpm
1 Acre Inch/Hour	=	452.57 gpm
1 Acre Foot/Day	=	226.3 gpm
1,000,000 Gallons/Day	=	694.4 gpm

MISCELLANEOUS

1 Horsepower	=	33,000 Foot lbs/min
1 Horsepower	=	746 Watts
1 Horsepower	=	0.746 Kilowatts (kw)
British Therm. Unit (btu)	=	Calories x 3.968
1 Rod	=	16.5 Feet
1 Mile	=	5,280 Feet
Circumference of Circle	=	Diameter x 3.1416

U.S. TO METRIC

Inches (in)	x	25.5	=	Millimeters
Inches (in)	x	2.54	=	Centimeters
Feet (ft)	x	.3048	=	Meters
Yards (yd)	x	.9144	=	Meters
Miles (mi)	x	1.6093	=	Kilometers
Feet (ft)	x	.0003048	=	Kilometers
Quarts (qt)	x	.945	=	Liters
Gallons (gal)	x	3.78	=	Liters
Pounds (lbs)	x	2.2	=	Liters
Temp. in F° -32	x	.5666	=	Temp in C°

To Order Parts: (800) 296-7442 • Sales: (800) 243-4355

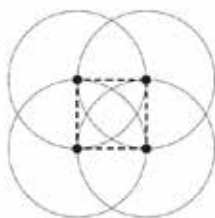


TECHNICAL DATA

PRECIPITATION RATE FORMULAS

Square-spaced sprinklers in pattern:

$$\frac{\text{gpm} \times 96.3 \times 360}{\text{Spacing} \times \text{Spacing} \times \text{Sprinkler Arc}}$$

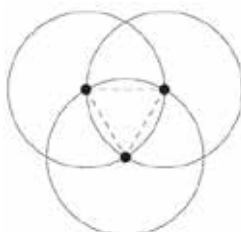


Ex. Toro Flex 35 with #32 nozzle at 80 psi.
60' square spacing, 180° part-circle

$$\frac{22.7 (\text{gpm}) \times 96.3 \times 360}{60' \times 60' \times 180^\circ} = \frac{786963.6}{648000} = 1.214 \text{ inches per hour}$$

Triangular-spaced sprinklers in pattern:

$$\frac{\text{gpm} \times 96.3 \times 360}{\text{Spacing} \times \text{Spacing} \times .866 \times \text{Arc}}$$

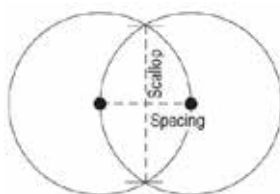


Ex. Toro Infinity 55 with #53 nozzle at 65 psi.
60' triangular spacing

$$\frac{25.1 (\text{gpm}) \times 96.3 \times 360}{60' \times 60' \times .866 \times 180^\circ} = \frac{870166.8}{561168} = 1.551 \text{ inches per hour}$$

Sprinklers in Single-row pattern:

$$\frac{\text{gpm} \times 96.3 \times 360}{\text{Spacing} \times \text{Scallop} \times \text{Arc}}$$



Ex. Toro Flex 54 with #56 nozzle at 80 psi.
80' single-row spacing

$$\frac{40.7 (\text{gpm}) \times 96.3 \times 360}{80' \times 69.28' \times 360^\circ} = \frac{1410987.6}{1995264} = .707 \text{ inches per hour}$$

SPRINKLER SPACING

Toro does not recommend designing for zero (0) mph wind conditions

Wind Speed	Square Spacing	Triangular Spacing	Single-Row
0-7 mph	50% of Diameter	55% of Diameter	50% of Diameter
8-10 mph	45% of Diameter	50% of Diameter	45% of Diameter
over 10 mph	40% of Diameter	45% of Diameter	40% of Diameter

MISCELLANEOUS

Water Velocity:

$$\frac{0.48 \times \text{gpm}}{\text{Pipe ID} \times \text{Pipe ID}}$$

Ex. 52 gpm in 2" Class 200 PVC pipe

$$\frac{0.48 \times 52 \text{ gpm}}{2.129" \times 2.129"} = \frac{24.96}{4.533} = 5.506 \text{ feet per sec.}$$

Voltage Loss:

$$\frac{\text{Ohms (10.4 copper)} \times \text{Length} \times \text{Amps}}{\text{Circular Mills of Wire (CM)}} \times 2 \text{ (for AC power)}$$

Ex. Lynx Satellite,
1,000' away, 115V

$$\frac{10.4 \times 1000' \times 1.2A}{10,380 \text{ CM (\#10)}} = \frac{12480}{10380} = 1.2 \times 2 = 2.4 \text{ volt loss}$$

Power Consumption:

$$\text{Watts} = \text{Voltage} \times \text{Amps} \quad \text{or} \quad \text{Amps} = \frac{\text{Watts}}{\text{Voltage}}$$

Ex. (10) Lynx Satellites at max power and 120V = 120V x (1.2A x 10) = 1,440 watts (1.44 kw)
(1) Water cooler rated for 1,500 watts at 120V = 1,500 / 120V = 12.5 amp draw

Wire CM

#14	=	4,107
#12	=	6530
#10	=	10,380
#8	=	16,509
#6	=	26,251
#4	=	41,740
#2	=	66,360
#1/0	=	105,600

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53rd Edition