



**Gas Connectors & Accessories**



# WATER APPLICATION



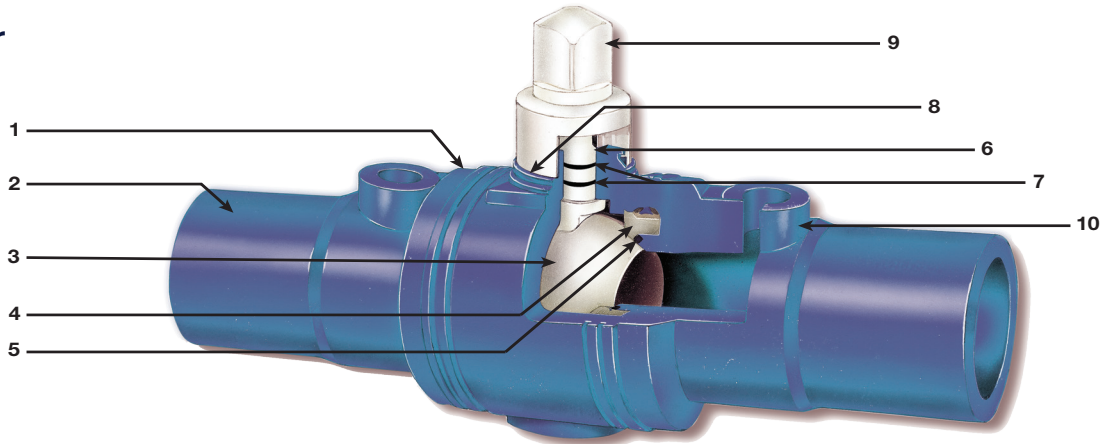
## POLYTEC POLYETHYLENE BALL VALVES



1-262-784-8180 or FAX 1-262-287-0086 • Visit: [www.rwlyall.com](http://www.rwlyall.com)

# Lyall Polytec Ball Valves provide high performance applications to the following areas:

- Water
- Agriculture
- Irrigation
- Sewer



No	Component	Material	Operating Feature
1	Body	Polyethylene	PE 4710 (PE100)
2	End	Polyethylene	PE 4710 (PE100)
3	Ball	Acetal/Polypropylene*	Excellent strength and thermal resistance
4	Retainer	Polypropylene	Positive seal under any condition. Retains seat under high differential pressure.
5	Ball Seat	Nitrile (NBR)	Reliable sealing from -20° F to 140° F
6	Stem	Acetal	Excellent durability and strength
7	Stem Seal	Nitrile (NBR)	Redundant sealing with dual O-rings
8	Weather Seal	Nitrile (NBR)	Protects from ground water and dirt.
9	Operator Nut	Polypropylene	2 inch (50mm) square or hexagon
10	Purge Connector	Polyethylene	Integral easy-purge connection

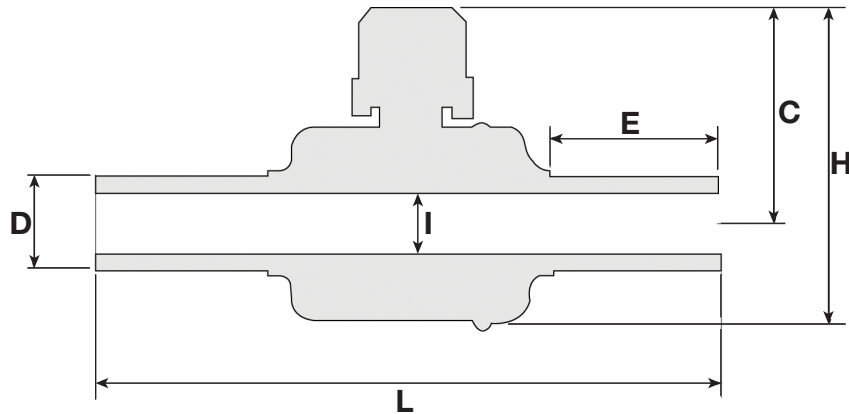
\* 2 IPS (RP) valves and smaller = Acetal    2 IPS (FP) valves and larger = Polypropylene

Item	Operating Feature
Sizes	All standard 1/2 through 1-1/4 CTS and 1/2 through 16 IPS and 20 mm through 400 mm metric sizes
Design/Testing	ASME B16.40, AWWA C901, AWWA C906
Materials	High Density PE 4710
Operating Pressure (SDR 11)	160 PSI (PE4710)
Temperature	32° F to 140° F / 0° C to 60° C
Bore	Standard (Reduced) Port and Full Port
Pipe Connection	Butt Fusion, Socket Fusion, Electrofusion or LYCOFIT® Mechanical Fittings (up to 2 IPS)
Operation	90 degree operating standard (360° optional)
Valve Boxes	Supported by all leading valve box manufacturers.

# SMALL BODY PE VALVES



## High Density PE 4710



### CTS Valve Sizes and Dimensions (approx)

Nominal Valve Size	D inch/mm	L inch/mm	H inch/mm	C inch/mm	I inch/mm	Port	Cv	E inch/mm	Weight lbs/kg
1/2 CTS	0.625 / 15.9	11.50 / 292	5.12 / 130	3.70 / 94	1.06 / 27	Full	9	3.62 / 92	0.97 / 0.44
1 CTS	1.125 / 28.6	11.50 / 292	5.12 / 130	3.70 / 94	1.06 / 27	Full	36	3.62 / 92	1.01 / 0.46
1-1/4 CTS	1.375 / 34.9	11.50 / 292	5.12 / 130	3.70 / 94	1.06 / 27	Full	55	3.62 / 92	1.00 / 0.46

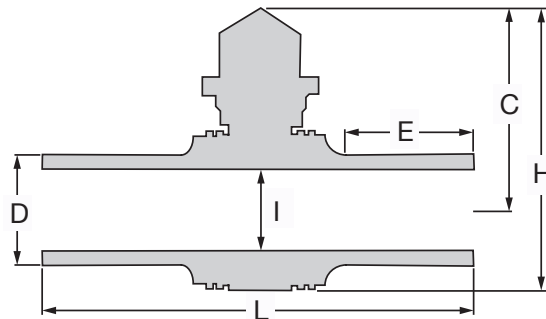
All CTS valve sizes are available in a full range of wall thicknesses. Contact your Lyall representative for available ISO and other metric sizes.

### IPS Valve Sizes and Dimensions (approx)

Nominal Valve Size	D inch/mm	L inch/mm	H inch/mm	C inch/mm	I inch/mm	Port	Cv	E inch/mm	Weight lbs/kg
1/2 IPS / SDR 9.3	0.840 / 21.3	11.50 / 292	5.12 / 130	3.70 / 94	1.06 / 27	Full	20	3.62 / 92	0.97 / 0.44
3/4 IPS / SDR 11	1.050 / 26.7	11.50 / 292	5.12 / 130	3.70 / 94	1.06 / 27	Full	32	3.62 / 92	0.99 / 0.45
1 IPS / SDR 11	1.315 / 33.4	11.50 / 292	5.12 / 130	3.70 / 94	1.06 / 27	Full	50	3.62 / 92	1.01 / 0.46
1-1/4 IPS / SDR 11	1.660 / 42.1	11.50 / 292	5.12 / 130	3.70 / 94	1.06 / 27	Std	79	3.62 / 92	1.01 / 0.46
1-1/2 IPS / SDR 11	1.900 / 48.3	12.20 / 310	5.51 / 140	3.78 / 96	1.26 / 32	Std	104	2.80 / 71	1.80 / 0.80
2 IPS	2.375 / 60.3	12.20 / 310	5.51 / 140	3.78 / 96	1.38 / 35	Std	118	3.31 / 84	1.90 / 0.86

Where applicable, other SDR's are available upon request. Contact your Lyall representative for available ISO and other metric sizes.

## High Density PE 4710



### IPS Valve Sizes and Dimensions (approx)

Nominal Valve Size	D inch/mm	L inch/mm	H inch/mm	C inch/mm	I inch/mm	Port	Cv	E inch/mm	Weight lbs/kg
2 IPS / SDR 11	2.37 / 60.3	19.60 / 498	9.65 / 250	7.01 / 178	1.77 / 45	Full	164	6.69 / 170	4.19 / 1.90
3 IPS / SDR 11	3.50 / 88.9	21.29 / 541	12.00 / 305	8.50 / 216	2.52 / 64	Full	375	6.69 / 170	8.60 / 3.90
4 IPS / SDR 11	4.50 / 114.3	21.29 / 541	12.00 / 305	8.50 / 216	2.52 / 64	Std	407	6.69 / 170	9.70 / 4.40
4 IPS / SDR 11	4.50 / 114.3	24.02 / 610	14.92 / 381	10.39 / 264	3.58 / 91	Full	591	6.69 / 170	18.52 / 8.40
6 IPS / SDR 11	6.62 / 168.3	24.02 / 610	14.92 / 381	10.39 / 264	3.58 / 91	Std	854	6.69 / 170	22.27 / 10.1
6 IPS / SDR 11	6.62 / 168.3	26.18 / 665	18.94 / 485	13.03 / 331	4.80 / 122	Full	1280	6.69 / 170	38.36 / 17.4
8 IPS / SDR 11	8.62 / 219.1	30.12 / 765	24.80 / 630	16.57 / 421	6.69 / 170	Full	2146	6.69 / 170	91.49 / 41.5
10 IPS / SDR 11	10.75 / 273.0	30.12 / 765	24.80 / 630	16.57 / 421	7.95 / 202	Full	3074	6.69 / 170	97.22 / 44.1
12 IPS / SDR 11	12.75 / 323.8	30.12 / 765	24.80 / 630	16.57 / 421	7.95 / 202	Full	3645	6.69 / 170	100.75 / 75.70
14 IPS / SDR 11	14.00 / 355.6	35.83 / 910	31.18 / 805	19.33 / 491	11.38 / 289	Full	5736	6.69 / 170	248.02 / 112.5
16 IPS / SDR 11	16.00 / 406.4	35.86 / 910	31.18 / 805	19.33 / 491	11.38 / 289	Full	6559	6.69 / 170	256.40 / 116.3

Where applicable, other SDR's are available upon request. Contact your Lyall representative for available ISO and other metric sizes.



## ADDITIONAL VALVE OPTIONS



### Stem Extensions



### Purge/Bypass Ports



### Planetary Gear (Slow Close) Valves

### High Differential Bypass (Standard in 12", 14" and 16" sizes)



### Factory Fused PE Pups



## TRACKING & TRACEABILITY

Lyall has been a leader in the development and standardization of the Tracking & Traceability encoding system. In fact, in 2012 we began shipping gas pressure carrying components marked with the 16 character identifier as published in ASTM F2897. As such, all Lyall Polytec valves include a 2D-QR-Bar Code that when scanned with decoding software will provide:

- Manufacturer
- Manufacturer Lot Code
- Production Date
- Component Material
- Component Type
- Component Size



# SUMMARY OF VALIDATION TESTING



Each valve is designed in accordance with AWWA C901 & 906 with guidance from ASME B16.40. Lyall, Polytec, and third party labs conduct testing under these specifications as well as other supplemental tests as follows:

## **SHELL TEST**

Each valve is tested at both 4 PSIG and 1.5 x design pressure to verify the pressure boundary integrity of the valve shell.

## **SEAT TEST**

Each valve seat (since the Lyall-Polytec valve is a bi-directional valve, both seats are tested) is tested at 4 PSIG and 1.5 x design pressure to verify the pressure containing ability of the valve closure and seat seals.

## **SUSTAINED PRESSURE VERIFICATION**

Testing is conducted at a temperature of 176° F at 580 psi fiber stress for 1,000 hours. The standard time for this test under these conditions is 670 psi fiber stress for 1,000 hours.

## **PRESSURE BOUNDARY VERIFICATION**

This test is designed to verify the basic pressure boundary integrity of the valve shell. ASME B16.40 requires this test to be performed at 176°F for 1,000 hours.

## **CLOSURE VERIFICATION**

This test is designed to verify the structural integrity and pressure retention capability of the valve closure element (ball). The valve is closed and the inlet pressurized at 1.1 x design pressure for 170 hours at 176°F or 1,000 hours at 100° F. The outlet is open to atmosphere.

## **TEMPERATURE RESISTANCE**

This test is designed to verify that the valve will perform properly over the temperature range of -20° F to 140° F. The valve is first cooled to -20° F, operated against a differential pressure equal to the design pressure, and subjected to shell and seat leakage tests while at -20° F. The valve temperature is then raised to 140° F and the above process is repeated. In addition to operating properly and not leaking, the valve operating torque must not exceed specified limits at both temperatures.

## **FLOW TEST**

This test is performed to verify that each valve design has at least the specified minimum flow capacity (Cv) in accordance with ASME B16.40.

Note: Cv values presented within this document are the typical values of Lyall-Polytec valves and are based upon the mathematical equation set forth by ASME B16.40. All Lyall-Polytec valves far exceed the minimum requirement set forth by ASME B16.40. Please contact your Lyall representative for a complete Test Data Package (TDP) that includes more detail on the testing that was performed.

## SUPPLEMENTAL TESTING



In addition, the following tests were conducted to ensure that the product performance exceeds our customers' requirements.

### IMPACT TEST

Each valve is subjected to impact testing at temperatures of 0° F and 100° F. A twenty pound weight with a special TUP is dropped from a height of three feet on the valve actuator, a total of five times. This test is performed at both temperatures. The valve must continue to operate properly and pass the basic valve shell and seat tests after the impacts.

### TENSILE TEST

Each valve is subjected to a tensile test at loads which would create in the attached pipe either a 25% elongation or elongation equal to that caused by thermal expansion due to 100° temperature change. The valve must remain operable and not leak during or after this test.

### CYCLE TEST

Each valve is tested for 1,000 cycles. The valves are opened each cycle against a 100 psig pressure differential. At the conclusion, each valve must pass the basic shell and seat tests.

### BLOWDOWN TEST

Each valve is subjected to a blowdown test. The intent is to verify that the valve will operate properly and the seats will not be damaged during this high-energy release. The valve is installed in a pipeline with a significant reservoir of pressurized air stored upstream. The downstream was open to atmosphere. The upstream reservoir of air is pressurized to 100 psi and the valve opened against this full differential. The reservoir of air blows through the valve. At the conclusion, each valve must pass the basic shell and seat tests.

*Note: All Lyall-Polytec valves far exceed the minimum requirements set forth by ASME B16.40, AWWA C901 and AWWA C906. Please contact your Lyall representative for a complete Test Data Package (TDP) that includes more detail on the testing that was performed.*





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