



Gas/Wastewater/Irrigation



LYALL-POLYTEC POLYETHYLENE BALL VALVES

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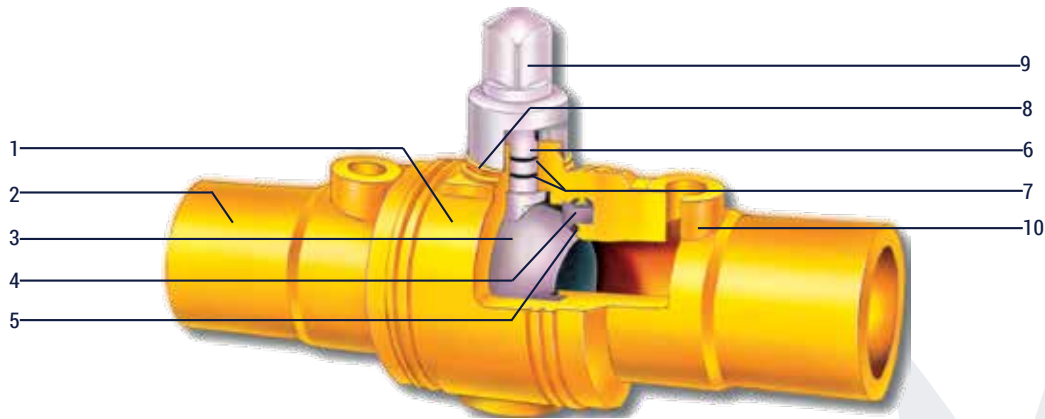
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RWLyall.com

PE Ball Valves From the Best Team in the Business

For more than a decade, Lyall and Polytec Co., LTD have provided a high quality line of PE Ball Valves. Combining Lyall's years of expertise in the gas piping and distribution industry with Polytec's extensive knowledge in the development of polyethylene products, a full range of high quality, cost-effective residential and industrial PE Ball Valves, sized ½ CTS through 16 IPS are available. In addition to standard offerings, Lyall can provide fusion service of longer "pup" lengths to meet customer specifications.



No	Component	Material	Operating Feature
1	Body	Polyethylene	PE 2406 (PE80), PE 3408 (PE100)
2	End	Polyethylene	PE 2406 (PE80), PE 3408 (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	ASTM D2513, ASME B16.40, CFR 49 Part 192, CSA B137.4
Materials	Medium Density PE 2406 / High Density PE 3408
Operating Pressure (SDR 11)	80 PSI (PE 2406) / 100 PSI (PE3408)
Temperature	-20° F to 140° F / -29° 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.

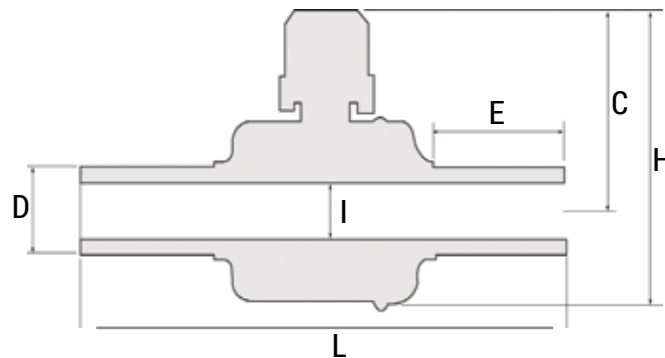
SMALL BODY PE VALVES - MDPE and HDPE



Medium Density PE 2406



High Density PE 3408



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	11.81 / 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	11.81 / 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.

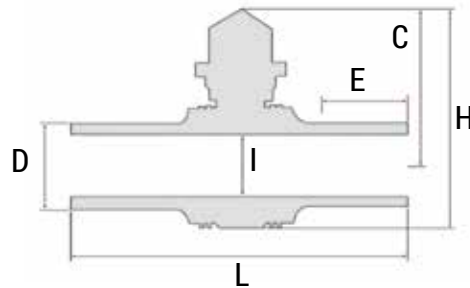
LARGE BODY PE VALVES - MDPE and HDPE



Medium Density PE 2406



High Density PE 3408



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	19.53 / 497	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	21.18 / 541	11.81 / 305	8.50 / 216	2.52 / 64	Full	375	6.69 / 170	8.60 / 3.90
4 IPS / SDR 11	4.50 / 114.3	21.18 / 538	11.81 / 300	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	7.09 / 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	7.48 / 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



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 ASME B16.40, the Code of Federal Regulations, Part 192 and other international standards. 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 and 150 psi 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 and 150 psi to verify the pressure containing ability of the valve closure and seat seals.

SUSTAINED PRESSURE VERIFICATION

Testing is conducted at 970 psi Hoop and at a temperature of 176° F for a minimum of 1,000 hours. The standard time for this test under these conditions is 170 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 for a minimum of 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 100° 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 100° 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.

In addition to ASME B16.40 qualification requirements, 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 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.





POLYTEC BALL VALVES

Gas/Wastewater/Irrigation

- Meets or exceeds ASTM D2513, ASME B16.40, CFR 49 Part 192, and CSA B137.4
- Each valve includes material Tracking & Traceability coding per ASTM F2897.
- All product manufactured in an ISO 9001 certified facility.
- Unrestricted flow and maximum capacity for optimal performance.
- Service rated to maximum allowable pressures.
- Precision manufacturing processes ensure lower operating torque.
- Bubble-tight seal throughout entire pressure and temperature range.
- Specially compounded nitrile seals (NBR) exceed industry standards.
- Valve body design provides resistance to mechanical and thermal loads making it the strongest part of a PE piping system.

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