



# Lightraulics® Hollow Piston Cylinder

For working pressures up to 700 bar



ENGINEERING YOUR SUCCESS.

**Overview**

# Lightraulics® Hollow Piston Cylinders

For working pressures up to 700 bar

Lightraulics® Hollow Piston Cylinders are mainly used in steel reinforced concrete construction, foundation engineering and wind turbine applications. Parker's ultra-light Hollow Piston Cylinders cut time on site, boost productivity, reduce the need for mechanical handling and enhance operator safety.

In place of traditional steel cylinders, which are heavy, cannot be moved without assistance and are difficult to locate accurately, Lightraulics® Hollow Piston Cylinders are weighing typically between 1/3 and 1/4 of a comparable steel cylinder. They are built from corrosion-resistant lightweight alloys and



carbon fibre composite materials and can be positioned quick and easy – often by a single operator. The result: Higher productivity, a saving in time and manpower, and a reduced risk of injury.

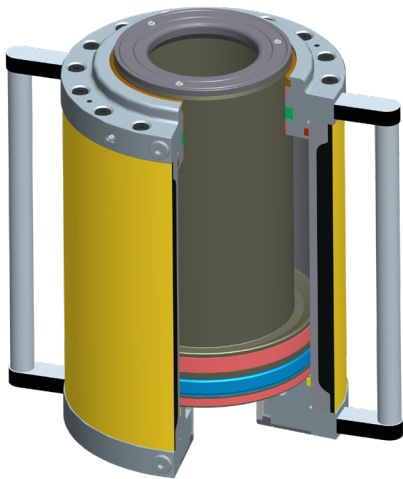
Lightraulics® Hollow Piston Cylinders are available in tie rod and roundline design. All Hollow Piston Cylinder series are available in a wide range of capacities, with stroke lengths up to 350 mm. To find the series, which fits best for your application, please see the table on page 37.

## Typical Masses of Comparable Tie Rod Cylinders

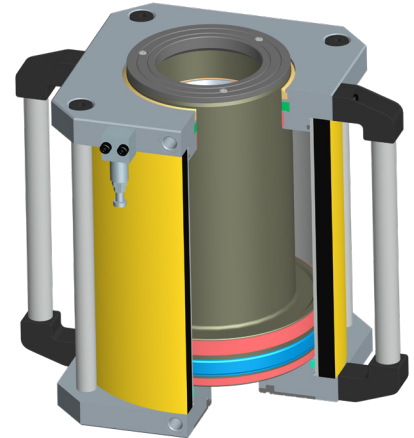
Load tones	Stroke mm	Steel Cylinder kg	Aluminium Cylinder kg	Lightraulics® Cylinder kg
80	250	80	44	23
120	180	88	57	25
140	250	125	75	36
170	250	185	not available	52
270	250	340	not available	69
400	250	590	not available	93

**Overview**

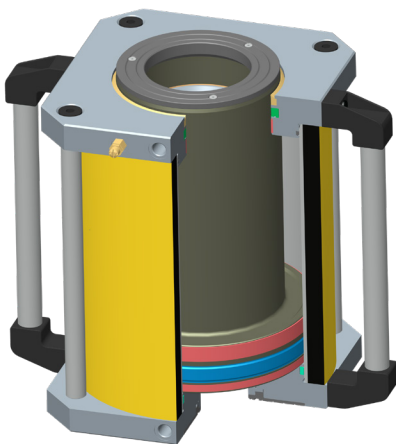
**Lightraulics® Hollow Piston Cylinders**



◀ **Lightraulics® Hollow Piston Roundline Cylinder**  
with 150 bar retraction pressure  
Available capacities: 100t - 500t






**Lightraulics® Hollow Piston Tie Rod Cylinder** ▶  
with 100 bar retraction pressure  
Available capacities: 100t - 400t



◀ **Lightraulics® Hollow Piston Tie Rod Cylinder**  
with 50 bar retraction pressure  
Available capacities: 40t - 270t

**How to choose the best design for your application**

Properties	Hollow Piston Roundline Cylinders 150 bar retraction ▶ p. 38	Hollow Piston Tie Rod Cylinders 100 bar retraction ▶ p. 50	Hollow Piston Tie Rod Cylinders 50 bar retraction ▶ p. 46
Tonnage	100t -500t	100t -400t	40t -270t
Stroke Length	150 - 350 mm	100 - 300 mm	100 - 300 mm
Retraction Speed	***	**	*
Weight saving	***	**	***
Outer dimensions	 1.6 - 1.7 x bore Ø	 1.4 - 1.7 x bore Ø	 1.4 - 2.0 x bore Ø
Additional attachment options	Alternative bolt pattern at top and bottom side	Alternative bolt pattern at top and bottom side	-

# Technical

## Product Specifications

Working pressure	700 bar (10,152 psi)
Retraction pressure	150 bar (2,175 psi)
Test pressure	770 bar (11,167 psi)
Stroke length	up to 300 mm
Maximum piston speed	0.3 m/s
Barrel material	thinwalled metal with composite reinforcement and abrasion protective aramid overwrap
Piston rod material	hard anodized aluminium
Tie rod material	anodized aluminium (for 50 bar retraction pressure) galvanised steel (for 100 bar retraction pressure)
Port size	both ports M 18x1,5
Sealing system	
– piston seal	thermoplastic polyester elastomer
– rod seal	polyurethane
– wiper seal	polyester-based
– O-rings	polyurethane
Temperature range	-10 °C to +65 °C
Fluid medium	mineral hydraulic oil

For customised specifications, please contact [CLDE\\_Quote@parker.com](mailto:CLDE_Quote@parker.com) with details of your application.

### Product example Hollow Piston ▶ Roundline Cylinder

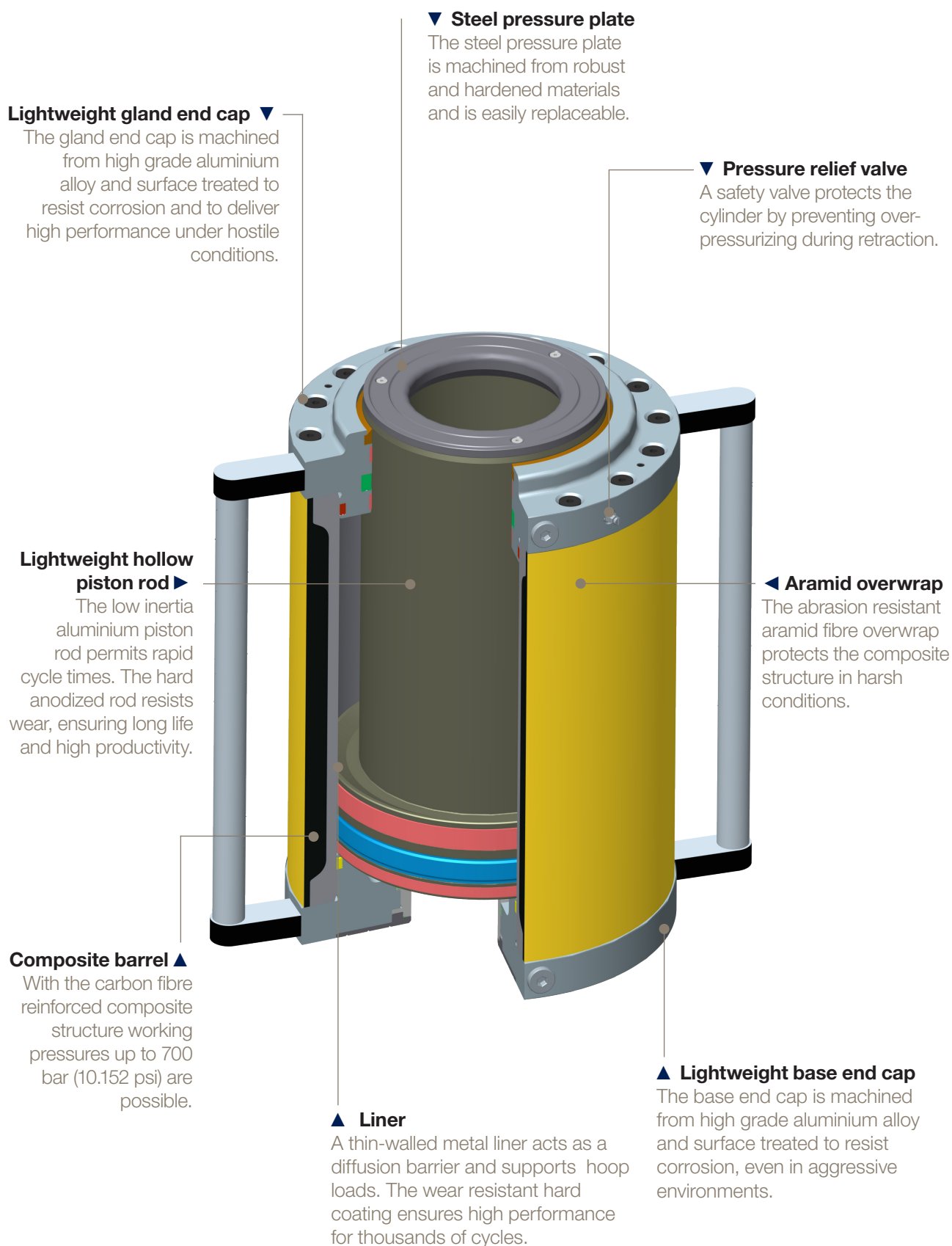
Working pressure	700 bar (10,152 psi)
Retraction pressure	150 bar (2,175 psi)
Tonnage	495 t
Passage	140 mm
Stroke	150 mm
Force	4859 kN
Weight	111.5 kg



### ◀ Product example Hollow Piston Tie Rod Cylinder

Working pressure	700 bar (10,152 psi)
Retraction pressure	50 bar (725 psi)
Tonnage	140 t
Passage	105 mm
Stroke	250 mm
Force	1385 kN
Weight	35.5 kg

# Features



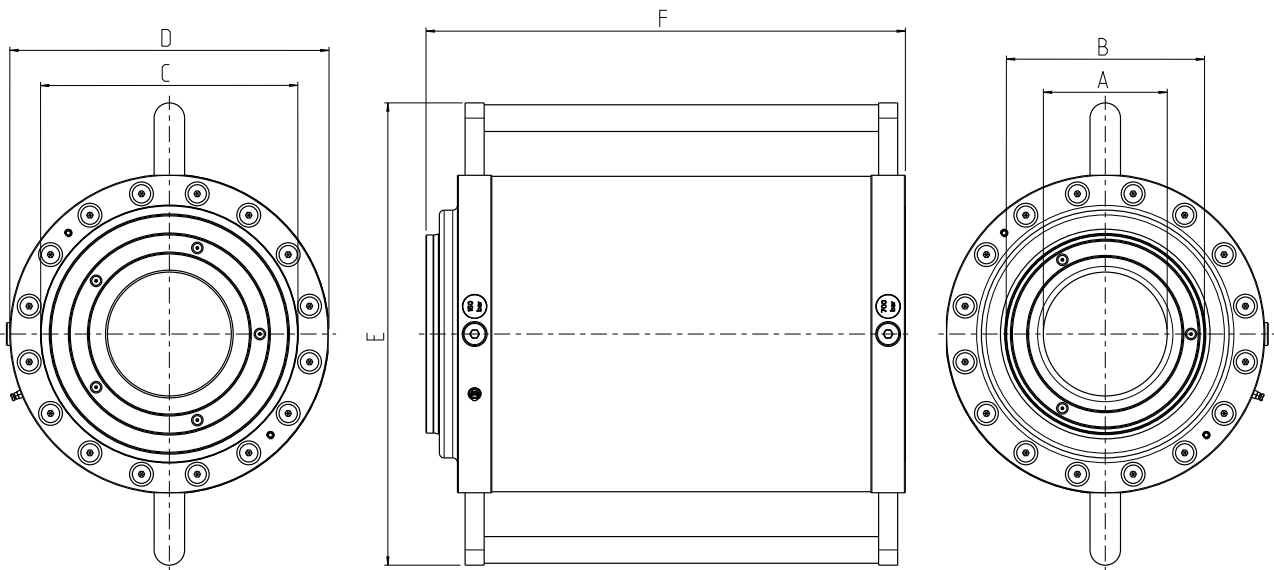
# Lightraulics® Hollow Piston Roundline Cylinders - 150 bar Retraction

## Performance

Tonnage	Passage	Stroke	Mass (kg)	Piston Area (cm²)	Force (kN)
100t	83	150	24	142.9	1000
	83	200	27	142.9	1000
125t	90	150	29	179.6	1257
	90	180	30.5	179.6	1257
	90	250	34.5	179.6	1257
140t	105	150	35	201	1407
	105	250	42	201	1407
180t	110	150	47	264.8	1854
	110	250	56.5	264.8	1854
270t	130	150	68	395.8	2771
	130	250	81.5	395.8	2771
	130	300	88.5	395.8	2771
370t	145	150	90.5	527.7	3694
	145	250	108.5	527.7	3694
430t	110	150	88.5	600.8	4206
495t	140	150	111.5	694.1	4859
500t	200	300	185	718.6	5030
	200	350	199.5	718.6	5030

## Dimensions - Standard Version

Tonnage	Passage	Stroke	A	B	C	D	E	F
100t	83	150	83	124	165	208	357	370
	83	200	83	124	165	208	357	420
125t	90	150	90	144	190	237	386	370
	90	180	90	144	190	237	386	400
	90	250	90	144	190	237	386	470
140t	105	150	105	149	200	247	397	374
	105	250	105	149	200	247	397	474
180t	110	150	110	168	225	276	426	384
	110	250	110	168	225	276	426	484
270t	130	150	130	208	270	335	485	403
	130	250	130	208	270	335	485	503
	130	300	130	208	270	335	485	553
370t	145	150	145	238	310	385	535	403
	145	250	145	238	310	385	535	503
430t	110	150	110	238	310	385	535	403
495t	140	150	140	258	340	425	576	403
500t	200	300	200	303	380	489	640	571
	200	350	200	303	380	489	640	621



In addition to this standard version, Lightraulics® Hollow Piston Roundline Cylinders with 150 bar retraction pressure are also available with two alternative bolt patterns for additional attachment options at top and bottom side. For dimensions of this version please see pages 30.

All dimensions are in millimeters unless otherwise stated. In line with our policy of continuous product improvement, specifications in this catalogue are subject to change without notice. Please enquire for exact dimensions when placing order.

## Dimensions - Alternative Bolt Pattern

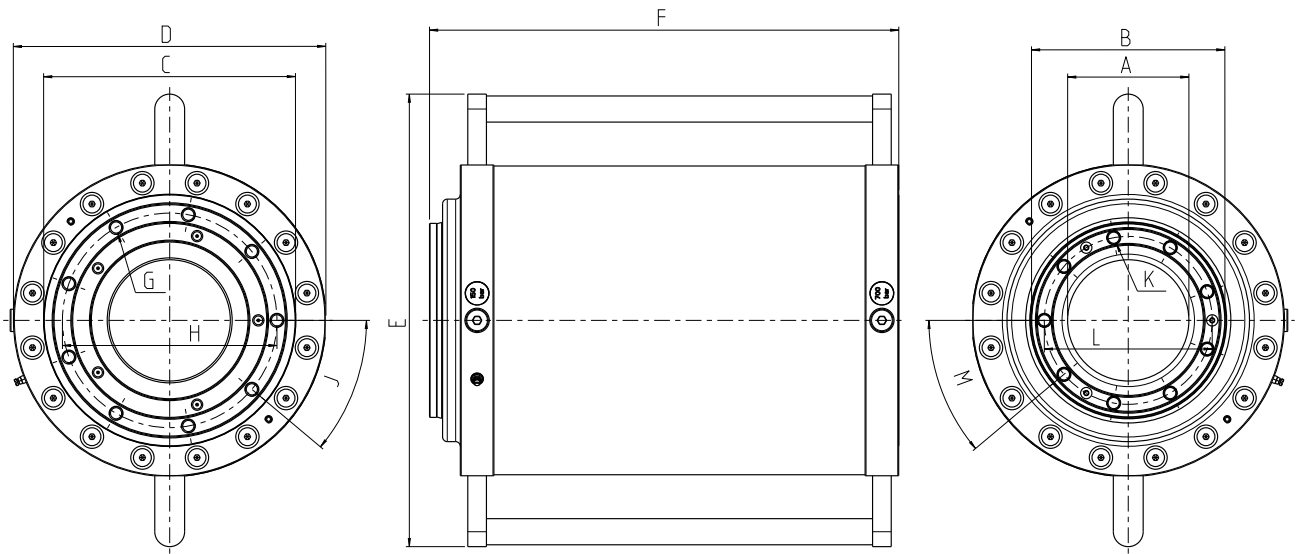
For Additional Attachments at Top and Bottom Side

Tonnage	Passage	Stroke	A	B	C	D	E	F	G	H	J	K	L	M
100t	83	150	83	124	165	208	357	365	M12	142	5x72°	M8	110	12x30°
	83	200	83	124	165	208	357	415	M12	142	5x72°	M8	110	12x30°
125t	90	150	90	144	190	237	386	365	M12	165	10x36°	M8	130	15x24°
	90	180	90	144	190	237	386	395	M12	165	10x36°	M8	130	15x24°
	90	250	90	144	190	237	386	465	M12	165	10x36°	M8	130	15x24°
140t	105	150	105	149	200	251	401	369	M12	175	10x36°	M8	135	15x24°
	105	250	105	149	200	251	401	469	M12	175	10x36°	M8	135	15x24°
180t	110	150	110	168	225	280	430	379	M12	190	9x40°	M10	150	12x30°
	110	250	110	168	225	280	430	479	M12	190	9x40°	M10	150	12x30°
270t	130	150	130	208	270	335	485	395	M14	230	9x40°	M14	180	9x40°
	130	250	130	208	270	335	485	495	M14	230	9x40°	M14	180	9x40°
	130	300	130	208	270	335	485	545	M14	230	9x40°	M14	180	9x40°
370t	145	150	145	238	310	385	535	395	M16	260	9x40°	M16	205	9x40°
	145	250	145	238	310	385	535	495	M16	260	9x40°	M16	205	9x40°
430t	110	150	110	238	310	385	535	395	M16	257	9x40°	M16	190	9x40°
495t	140	150	140	258	340	425	576	395	M18	287	9x40°	M18	216	9x40°
500t	200	300	200	303	380	489	640	463	M20	320	9x40°	M20	270	9x40°
	200	350	200	303	380	489	640	613	M20	320	9x40°	M20	270	9x40°



**Lightraulics® Hollow Piston Roundline Cylinders**

**Lightraulics® Hollow Piston Cylinders**



Note that these design variants do not include a pressure plate on the piston rod end (top side).

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## Lightraulics® Hollow Piston Tie Rod Cylinders

### - 100 bar Retraction

## Performance

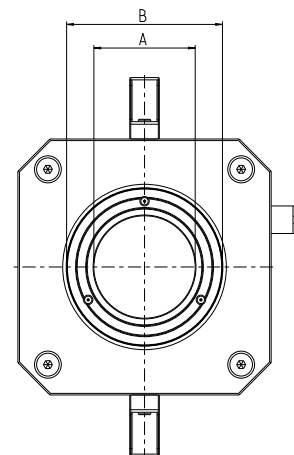
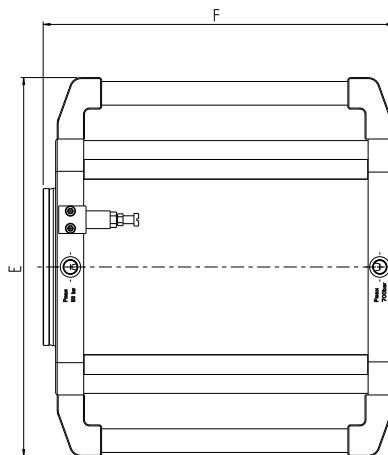
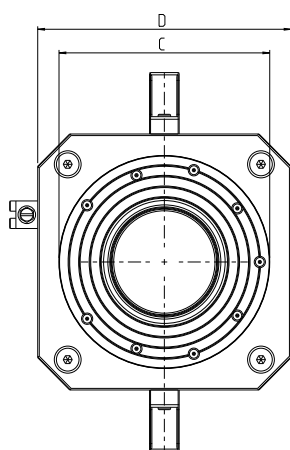
Tonnage	Passage	Stroke	Piston Area (cm <sup>2</sup> )	Force (kN)	Mass (kg)
100t	83	100	141.4	990	20
	83	150	141.4	990	22.5
	83	200	141.4	990	25.5
	83	250	141.4	990	28
120t	90	100	167.8	1175	22.5
	90	180	167.8	1175	27
	90	250	167.8	1175	30.5
	90	300	167.8	1175	33
	100	100	167.8	1175	24.5
	100	180	167.8	1175	29.5
	100	250	167.8	1175	34
	100	300	167.8	1175	37.5
140t	105	100	197.9	1385	28
	105	180	197.9	1385	33
	105	250	197.9	1385	38
	105	300	197.9	1385	41.5
170t	110	100	254.5	1781	40
	110	180	254.5	1781	48.5
	110	250	254.5	1781	55.5
	110	300	254.5	1781	60.5
200t	150	100	274.5	1922	51
	150	180	274.5	1922	61
	150	250	274.5	1922	70
	150	300	274.5	1922	76.5
270t	130	100	396.5	2775	55
	130	180	396.5	2775	66.5
	130	250	396.5	2775	76.5
	130	300	396.5	2775	84
320t	100	100	450.5	3153	59
	100	180	450.5	3153	70
	100	250	450.5	3153	79.5
	100	300	450.5	3153	86.5
360t	145	100	505.6	3539	83
	145	180	505.6	3539	97
	145	250	505.6	3539	110
	145	300	505.6	3539	119
400t	100	100	584.1	4089	73
	100	180	584.1	4089	92.5
	100	250	584.1	4089	109.5
	100	300	584.1	4089	122

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In addition to the standard version, Lightraulics® Hollow Piston Tie Rod Cylinders with 100 bar retraction are also available with alternative bolt patterns for additional attachment options at top and bottom side. For dimensions of this version please see pages 36.

## Dimensions - Standard Version

Tonnage	Passage	Stroke	A	B	C	D	E	F
100t	83	100	83	125	165	194	350	282
	83	150	83	125	165	194	350	332
	83	200	83	125	165	194	350	382
	83	250	83	125	165	194	350	432
120t	90	100	90	145	186	217	273	282
	90	180	90	145	186	217	273	362
	90	250	90	145	186	217	273	432
	90	300	90	145	186	217	273	482
	100	100	100	150	186	217	273	383
	100	180	100	150	186	217	273	363
	100	250	100	150	186	217	273	433
	100	300	100	150	186	217	273	483
140t	105	100	105	150	199	235	391	283
	105	180	105	150	199	235	391	363
	105	250	105	150	199	235	391	433
	105	300	105	150	199	235	391	483
170t	110	100	110	170	225	265	421	297
	110	180	110	170	225	265	421	377
	110	250	110	170	225	265	421	447
	110	300	110	170	225	265	421	497
200t	150	100	150	230	270	325	481	299
	150	180	150	230	270	325	481	379
	150	250	150	230	270	325	481	449
	150	300	150	230	270	325	481	499
270t	130	100	130	200	270	325	481	300
	130	180	130	200	270	325	481	380
	130	250	130	200	270	325	481	450
	130	300	130	200	270	325	481	500
320t	100	100	100	200	270	325	481	300
	100	180	100	200	270	325	481	380
	100	250	100	200	270	325	481	450
	100	300	100	200	270	325	481	500
360t	145	100	145	250	320	405	561	319
	145	180	145	250	320	405	561	399
	145	250	145	250	320	405	561	469
	145	300	145	250	320	405	561	519
400t	100	100	100	220	300	380	536	308
	100	180	100	220	300	380	536	388
	100	250	100	220	300	380	536	458
	100	300	100	220	300	380	536	508



# Lightraulics® Hollow Piston Tie Rod Cylinders

## - 100 bar Retraction

### Dimensions - Alternative Bolt Pattern

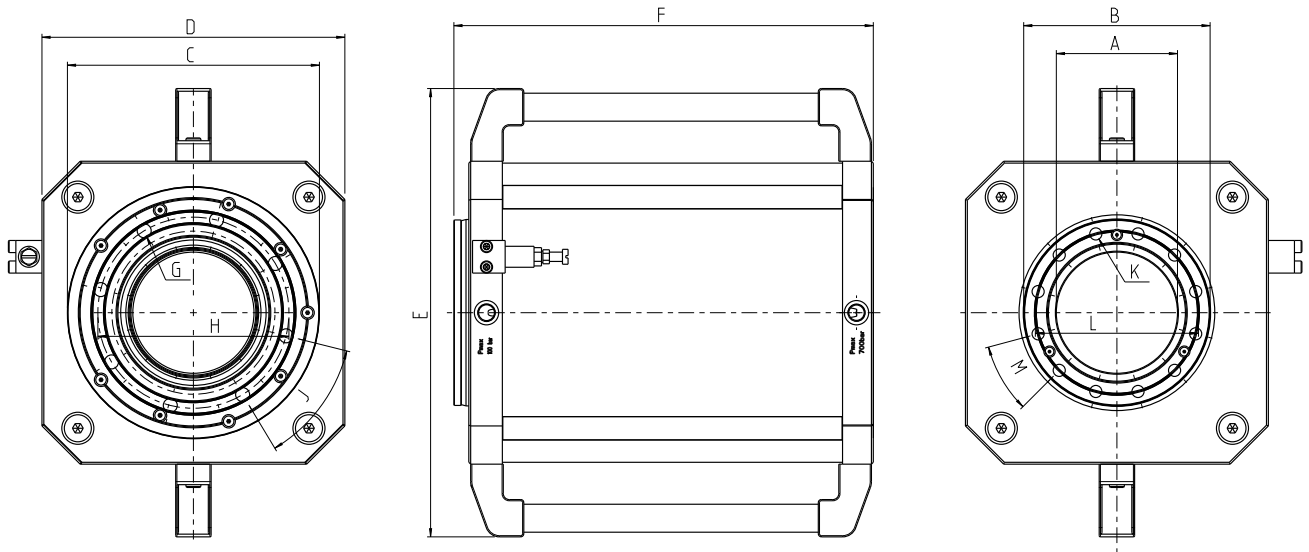
For Additional Attachments at Top and Bottom Side

Tonnage	Passage	Stroke	A	B	C	D	E	F	G	H	J	K	L	M
100t	83	100	83	125	165	194	350	278	M12	131.5	5x72°	M6	111	15x24°
	83	150	83	125	165	194	350	328	M12	131.5	5x72°	M6	111	15x24°
	83	200	83	125	165	194	350	378	M12	131.5	5x72°	M6	111	15x24°
	83	250	83	125	165	194	350	428	M12	131.5	5x72°	M6	111	15x24°
120t	90	100	90	145	186	217	273	278	M12	162.5	5x72°	M6	130	15x24°
	90	180	90	145	186	217	273	358	M12	162.5	5x72°	M6	130	15x24°
	90	250	90	145	186	217	273	428	M12	162.5	5x72°	M6	130	15x24°
	90	300	90	145	186	217	273	478	M12	162.5	5x72°	M6	130	15x24°
	100	100	100	150	186	217	273	378	M12	162.5	5x72°	M8	133	12x30°
	100	180	100	150	186	217	273	358	M12	162.5	5x72°	M8	133	12x30°
	100	250	100	150	186	217	273	428	M12	162.5	5x72°	M8	133	12x30°
140t	105	100	105	150	199	235	391	278	M12	175		M8	135	12x30°
	105	180	105	150	199	235	391	358	M12	175	*1	M8	135	12x30°
	105	250	105	150	199	235	391	428	M12	175		M8	135	12x30°
	105	300	105	150	199	235	391	478	M12	175		M8	135	12x30°
170t	110	100	110	170	225	265	421	292	M12	185	2x42°	M10	153	12x30°
	110	180	110	170	225	265	421	372	M12	185	2x48°	M10	153	12x30°
	110	250	110	170	225	265	421	442	M12	185	2x42°	M10	153	12x30°
	110	300	110	170	225	265	421	492	M12	185	3x35°	M10	153	12x30°
200t	150	100	150	230	270	325	481	292	M14	242.5	5x72°	M8	212	12x30°
	150	180	150	230	270	325	481	372	M14	242.5	5x72°	M8	212	12x30°
	150	250	150	230	270	325	481	442	M14	242.5	5x72°	M8	212	12x30°
	150	300	150	230	270	325	481	492	M14	242.5	5x72°	M8	212	12x30°
270t	130	100	130	200	270	325	481	292	M14	205	8x45°	M12	175	12x30°
	130	180	130	200	270	325	481	372	M14	205	8x45°	M12	175	12x30°
	130	250	130	200	270	325	481	442	M14	205	8x45°	M12	175	12x30°
	130	300	130	200	270	325	481	492	M14	205	8x45°	M12	175	12x30°
360t	145	100	145	250	320	405	561	311	M14	270		M12	220	12x30°
	145	180	145	250	320	405	561	391	M14	270	*2	M12	220	12x30°
	145	250	145	250	320	405	561	461	M14	270		M12	220	12x30°
	145	300	145	250	320	405	561	511	M14	270		M12	220	12x30°

Notes:

\*1: 2x42° + 2x48° + 2x42° + 3x32°

\*2: 2x45° + 1x35° + 1x55° + 2x42° + 1x35°



Note that these design variants do not include a pressure plate on the piston rod end (top side).

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## Lightraulics® Hollow Piston Tie Rod Cylinders

### - 50 bar Retraction

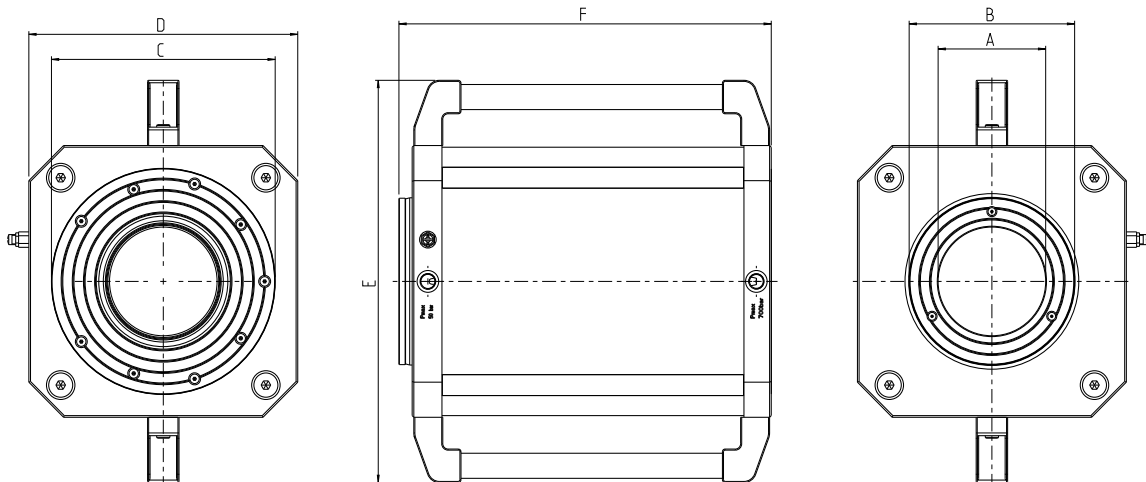
## Performance

Tonnage	Passage	Stroke	Piston Area (cm <sup>2</sup> )	Force (kN)	Mass (kg)
80t	80	100	118.8	832	18
	80	150	118.8	832	20
	80	200	118.8	832	22
	80	250	118.8	832	24
100t	83	100	141.4	990	19
	83	150	141.4	990	21.5
	83	200	141.4	990	23.5
	83	250	141.4	990	26
120t	90	100	167.8	1175	21.5
	90	180	167.8	1175	25.5
	90	250	167.8	1175	28.5
	90	300	167.8	1175	31
	100	100	167.8	1175	23.5
	100	180	167.8	1175	28
	100	250	167.8	1175	32
	100	300	167.8	1175	35
140t	105	100	197.9	1385	26.5
	105	180	197.9	1385	31.5
	105	250	197.9	1385	35.5
	105	300	197.9	1385	39
170t	110	100	254.5	1781	38
	110	180	254.5	1781	45.5
	110	250	254.5	1781	51.5
	110	300	254.5	1781	56.5
200t	150	100	274.5	1922	49
	150	180	274.5	1922	58.5
	150	250	274.5	1922	66.5
	150	300	274.5	1922	72.5
270t	130	100	396.5	2775	54.5
	130	180	396.5	2775	64.5
	130	250	396.5	2775	73
	130	300	396.5	2775	79.5

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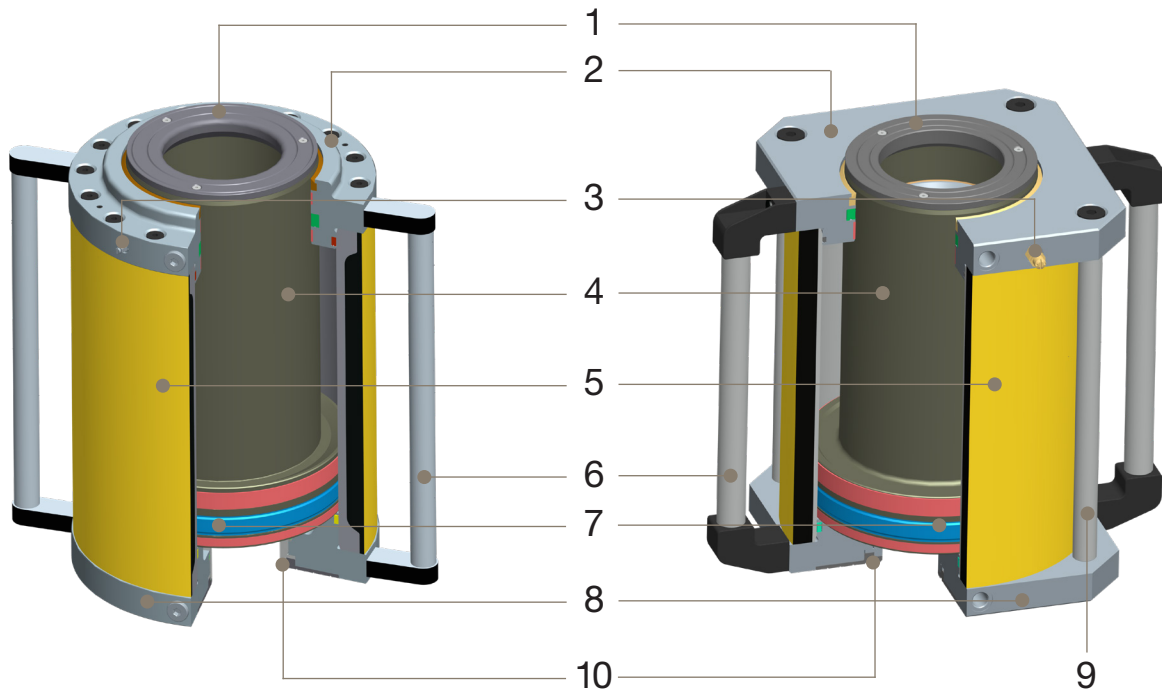
# Dimensions

Tonnage	Passage	Stroke	A	B	C	D	E	F
80t	80	100	80	130	165	194	350	282
	80	150	80	130	165	194	350	332
	80	200	80	130	165	194	350	382
	80	250	80	130	165	194	350	432
100t	83	100	83	125	165	194	350	282
	83	150	83	125	165	194	350	332
	83	200	83	125	165	194	350	382
	83	250	83	125	165	194	350	432
120t	90	100	90	145	186	217	373	282
	90	180	90	145	186	217	373	362
	90	250	90	145	186	217	373	432
	90	300	90	145	186	217	373	482
	100	100	100	147	186	217	373	283
	100	180	100	147	186	217	373	363
	100	250	100	147	186	217	373	433
	100	300	100	147	186	217	373	483
140t	105	100	105	150	199	235	391	283
	105	180	105	150	199	235	391	363
	105	250	105	150	199	235	391	433
	105	300	105	150	199	235	391	483
170t	110	100	110	170	225	265	421	297
	110	180	110	170	225	265	421	377
	110	250	110	170	225	265	421	447
	110	300	110	170	225	265	421	497
200t	150	100	150	230	270	325	481	299
	150	180	150	230	270	325	481	379
	150	250	150	230	270	325	481	449
	150	300	150	230	270	325	481	489
270t	130	100	130	200	270	325	481	300
	130	180	130	200	270	325	481	380
	130	250	130	200	270	325	481	450
	130	300	130	200	270	325	481	500



# Spare Parts

For all Lightraulics® cylinders, spare parts are available. To keep the warranty in effect, we recommend to send your cylinder to our factory for any maintenance work. If you like to enquire for a spare part for your Lightraulics® Hollow Piston Cylinder, please provide your cylinder serial number together with the type of spare part referring to the list below.



## Product Type

- |                               |                  |
|-------------------------------|------------------|
| 1 - Pressure Plate            | 6 - Handle       |
| 2 - Guiding End Cap           | 7 - Seal Kit     |
| 3 - Pressure Relief Valve     | 8 - Base End Cap |
| 4 - Piston Rod                | 9 - Tie Rod      |
| 5 - Composite Cylinder Barrel | 10 - Base Plate  |

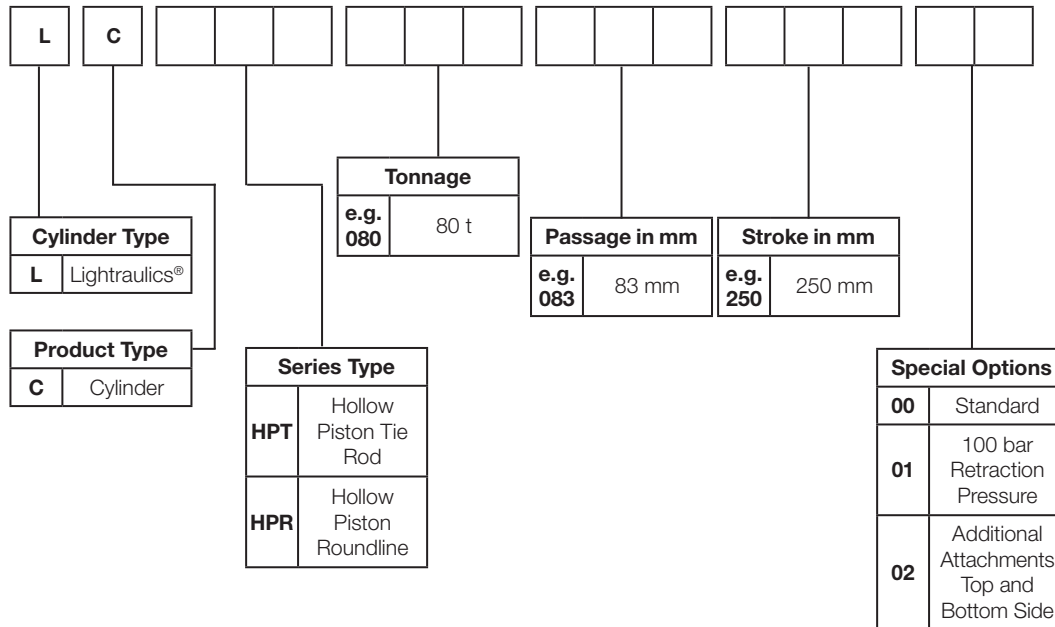
# Accessories

For further accessories like quick couplings, hoses, etc. please contact your local authorized Parker distributor.



# Order Code Lightraulics® Hollow Piston Cylinders

Please use the following order code to enquire for your Lightraulics® Hollow Piston Cylinder.



## Overhaul Service

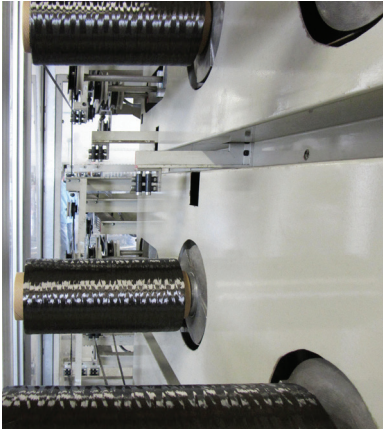
Maintaining peak performance



Parker's unique composite cylinder technology delivers continuous high performance over hundreds of thousands of cycles.

To maintain the performance and to protect your investment, we offer a maintenance and overhaul service in our own factory, to the same

exacting standards as the original manufacturing process. Factory refurbished cylinders are covered by the same warranty terms as the original product.



## More information

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(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL, IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)

### US Product Information Centre

Toll-free number: 1-800-27 27 537

www.parker.com

Your local authorized Parker distributor