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climate control
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filtration
fluid & gas handling
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pneumatics
process control
sealing & shielding



A Series Piston Accumulators

0.5 to 300 Litres, 250 and 350 bar



ENGINEERING YOUR SUCCESS.

Description

Piston Accumulators up to 80 Litres volume, 200mm Bore, 250 Bar & 350 Bar. Parker A series piston accumulators offer quality design and premium technical features which guarantee optimum performance life.

Premium quality design and technical features guarantee optimum performance and service life from every model, while differing wall thicknesses to suit 250 or 350 bar working pressures allow the designer to specify precisely the right performance envelope for the application.

Parker Olaer have developed very sophisticated simulation software to optimize sizing recommendations for hydraulic accumulators. You can download the accumulator sizing software from www.Parker.com/acde.

Markets

- Industrial
- Oil & Gas
- Energy

Features/Benefits

- **Effective heat dissipation is vital for long seal life. Compact, rugged steel shell and end caps allow heat to dissipate efficiently, while the bore of the accumulator is micro-finished to maximise seal life.**
- **Rapid response in high cycling applications is assured by Parker's lightweight piston design. The dished profile of the aluminium piston gives extra gas capacity while maintaining stability in the bore, and permits a greater usable volume of fluid. Piston position sensors, available as an optional feature, enable the condition of the accumulator's precharge to be monitored.**
- **Long service intervals are made possible by total separation of oil and gas, even under the most severe operating conditions. Downtime is minimised by the use of threaded caps to simplify maintenance of the accumulator, permitting quick and easy installation of seals.**
- **Parker's A series piston accumulators feature a wide piston seal assembly comprising a unique five-bladed V-profile O-ring with back-up washers, which eliminates seal roll-over even in high speed applications. The V-O-ring holds full pressure throughout long idle periods between cycles, providing dependable, full pressure storage of hydraulic energy.**
- **Enhanced nitrogen gas retention.**
- **High cycle rates and high flow rates.**
- **Designed for long life – non sudden failure.**

Applications

- Die casting
- Industrial Hydraulic Power Units
- Machine Tools
- Automotive
- Marine & Offshore
- Wind Energy
- Transport Rail & Truck
- Mobile Construction & Agriculture
- Construction Equipment

Main Features

Actual Bore Sizes & Maximum Flow Rates

Model	Pressure	Nominal Bore ø	Actual Bore ø	Max. Recommended Flow Rate*
	bar	mm	mm	l/m
A2	250/350	50	51.4	380
A3	250/350	75	76.2	825
A4	250/350	100	102.4	1500
A5	250	125	127	2200
A6	250/350	150	146.9	3100
A8	250	200	200	5700

*Note: Based on 4m/sec maximum piston speed, port & fitting size will become limiting factors for most applications.

250 and 350 Bar Pressure Ranges

A Series accumulators are available to suit maximum working pressures of 250 and 350 bar. The same premium quality design and technical features guarantee optimum performance and service life from every model, while differing wall thicknesses to suit 250 or 350 bar working pressures allow the designer to specify precisely the right performance envelope for the application.

Materials

- Shell – high strength steel
- End caps – steel
- Pistons – lightweight aluminium alloy
- Cast iron low temperature Arctic piston available upon request
- Piston and end cap seals – NBR (standard); other compounds to suit application
- Piston seal backup washers – PTFE
- Piston bearing rings – PTFE
- Gas valve assembly – stainless steel
- Gas valve protector – steel
- Paint finish – black primer (standard – others on request)

Custom Designs

For unique applications and hostile environments, different designs, materials and coatings can be supplied. Please contact our engineering department to discuss custom solutions to individual application requirements.



Available Options

A wide variety of options are available for A Series accumulators, including:

- Threaded and manifold port styles and sizes
- Seal compounds
- Metric and inch mounting styles
- High flow gas ports for use with remote gas storage bottles
- Water service versions
- Gas valves
- Safety fuses
- Accumulator mounting systems
- Precharge monitors and piston position sensors
- Certifications to suit different market requirements

Water Service

A Series piston accumulators are available for use with water as the fluid medium. Modifications include plating of all working surfaces. Please consult Parker for details.

Operating Temperatures, Seals and Fluids

A Series piston accumulators are fitted as standard with nitrile (NBR) seals. A range of alternative seal materials is available for use at higher or lower temperatures, or with synthetic or high water content fluids, as shown in the table. Other seals are also available for use in exceptional conditions – please consult the factory with details of the application. The shells of Parker’s A series accumulators are CE approved for operation at temperatures between -40°C and +150°C.

Filtration

For maximum component life, the system should be protected from contamination by effective filtration. Fluid cleanliness should be in accordance with ISO 4406. The quality of filters should be in accordance with the appropriate ISO standards. The rating of the filter media depends on the system components and the application. The minimum required for hydraulic systems should be class 19/15 to ISO 4406, which equates to 25µ (β10≥75) to ISO 4572.

Safety

Charging must be carried out by qualified personnel. Before taking any readings or pressurizing with nitrogen, the accumulator must be isolated from the hydraulic system and the fluid side discharged in order to depressurize it. Use only nitrogen (N₂) to pressurize the accumulator.

Danger of Explosion – Never Charge with Oxygen

The types of nitrogen permitted are: type S (99.8% pure); type R (99.99% pure); type U (99.993% pure).

Approvals

Approvals	A2	A3	A4	A5	A6	A8
PED 2014/68/EU	•	•	•	•	•	•
CRN	•	•	•	•	•	•

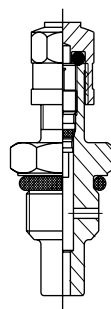
Other approvals available upon request.

Mounting

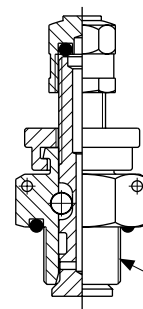
The optimum mounting orientation is vertical however angled and horizontal mountings are permissible if the hydraulic fluid is kept clean; high levels of contaminants in the fluid can result in uneven or accelerated seal wear.

Gas Valves

The standard gas charging valve fitted to A Series 250 and 350 bar piston accumulators is a cored-type gas valve, rated at 350 bar. A mechanically opened and closed poppet-type gas valve cartridge, also rated at 350 bar, is available as an option.



Standard Cored-Type Gas Valve



Optional Poppet-Type Gas Valve

Both types of charging valve may be used with the Charging and Gauging Kit.

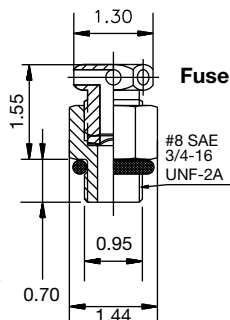
Safety Fuses (Burst Discs)

Safety fuses are available on A Series accumulators to prevent over-pressurization of gas due to external heat or excess hydraulic pressure. They comprise a housing incorporating a disc which is calibrated to rupture at a pre-determined pressure, to be specific by the customer at the time of ordering. Please contact the factory for further information.

Available Options

If your application requires a piston accumulator, gas bottle, or special option that falls outside of Parker’s broad offering, consult your local distributor, Parker representative, or the factory with your specific requirements. Parker has the manufacturing and engineering expertise to design and build piston accumulators to your exacting requirements, from simple modifications of standard units to complete designs. Some example of Parker’s past special designs include:

- High Pressures
- Special and Stainless Steel Materials
- Piston Position and Velocity Sensors and Switches
- Water Service
- Non-Standard Capacities
- Extreme Temperatures



Piston Accumulator Seal Kits

Seal kits are available for all A Series accumulator models however it is recommended to buy a piston assembly with seal already assembled.

When ordering seal kits, please supply the complete model number from the identification plate and specify the fluid type and the temperature at which the accumulator is to be used.

Seal Kit Numbers

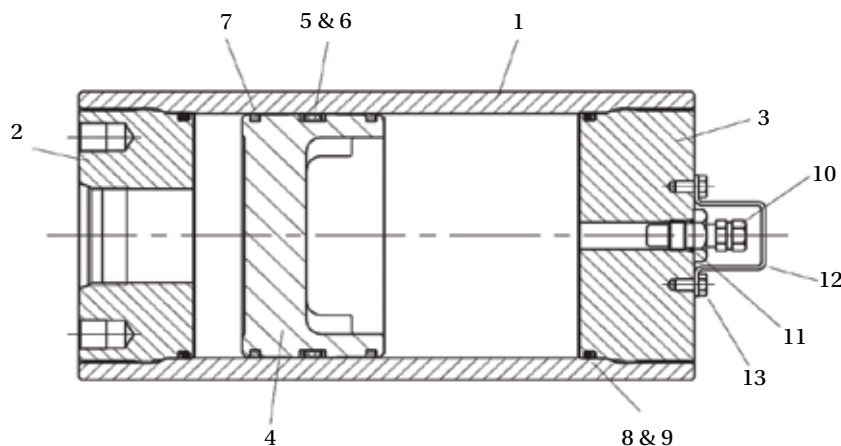
The seal kits listed contain items 5, 6, 7, 8, 9 and 11.

Parts List

- | | |
|-------------------------------|-------------------------------|
| 1. Shell | 10. Gas valve |
| 2. Hydraulic cap | 11. Gas valve O-ring |
| 3. Gas cap | 12. Gas valve protector |
| 4. Piston | 13. Gas valve protector screw |
| 5. V-O-ring | |
| 6. V-O-ring back-up washers | |
| 7. PTFE bearing ring (piston) | |
| 8. O-ring | |
| 9. O-ring back-up washer | |

Bore Size, Pressures & Temperature Range

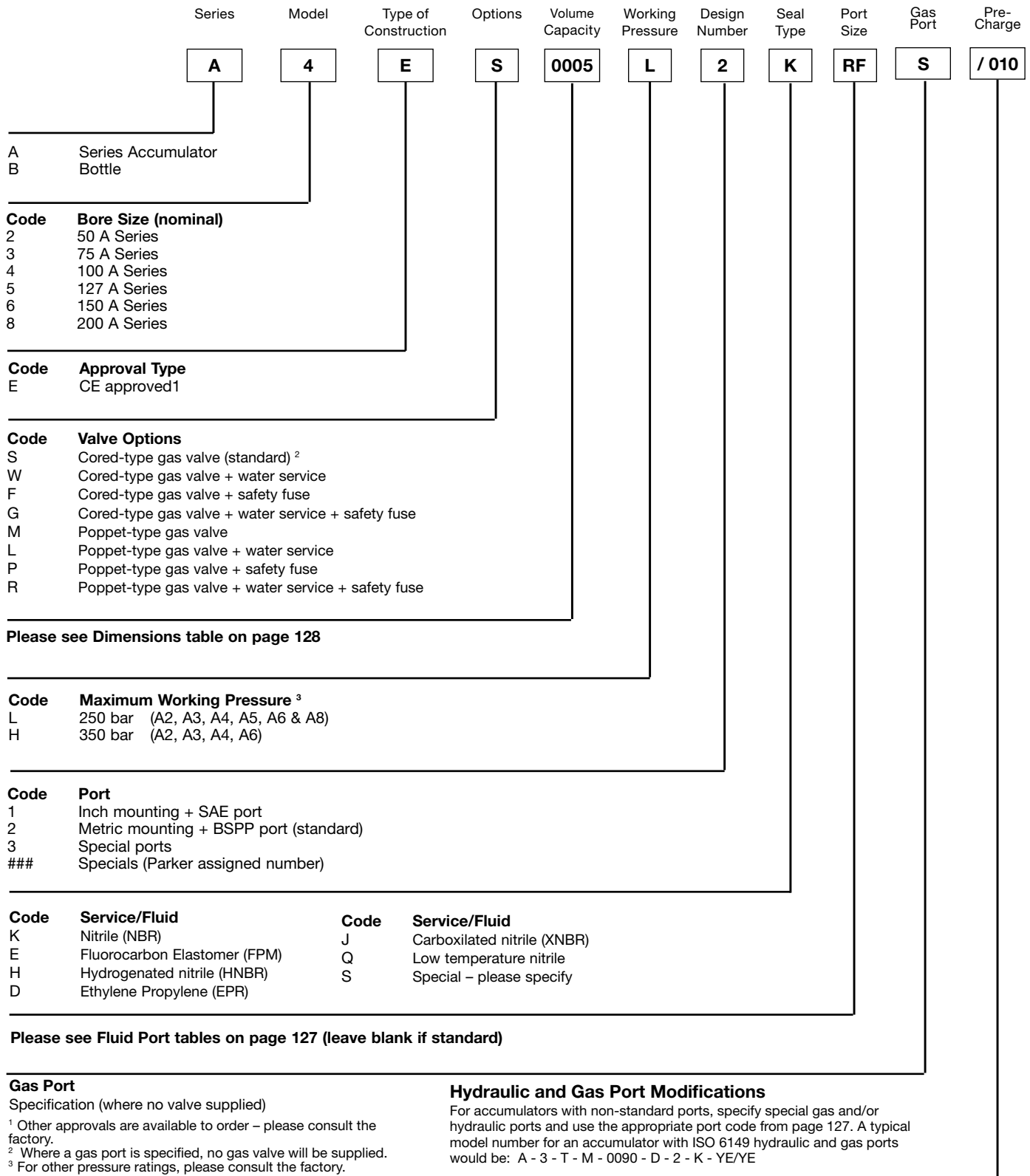
Bore Size (mm)	Max. Working Pressure (bar)	Volume (Litres)	
		Min	Max
A2	250/350	0.08	2
A3	250/350	0.25	8
A4	250/350	0.7	12
A5	250	2	14
A6	250/350	3.8	38
A8	250	9.5	76



Seal Kit Part Numbers with piston seals assembled

Model	Nitrile NBR Code K	Fluorocarbon Elastomer FPM Code E	Ethylene Propylene EPR Code D	Hydrogenated Nitrile HNBR Code H	Carboxylated Nitrile XNBR Code J	Low Temp. Nitrile NBR CODE Q
Model	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number
A2	RK0200K000	RK0200E000	RK0200D000	RK0200H000	RK0200J000	RK0200Q000
A3	RK0300K000	RK0300E000	RK0300D000	RK0300H000	RK0300J000	RK0300Q000
A4	RK0400K000	RK0400E000	RK0400D000	RK0400H000	RK0400J000	RK0400Q000
A5	RK0500K000	RK0500E000	RK0500D000	RK0500H000	RK0500J000	RK0500Q000
A6	RK0600K000	RK0600E000	RK0600D000	RK0600H000	RK0600J000	RK0600Q000
A8	RK0800K000	RK0800E000	RK0800D000	RK0800H000	RK0800J000	RK0800Q000

A Series: How to order



Code	Pre-Charge (for example)	Code	Pre-Charge (for example)
010	10 bar	020	20 bar

Port Options

Fluid Ports - Standard

Port Type	Code	A2		A3		A4		A5	A6		A8
		250 bar	350 bar	250 bar	350 bar	250 bar	350 bar	250 bar	250 bar	350 bar	250 bar
G 3/4 BSPP	Leave Blank	•	•	•	•						
G 1 BSPP	Leave Blank					•	•	•		•	
G 1 1/2 BSPP	Leave Blank								•		
G 2 BSPP	Leave Blank										•

Optional Threaded Ports

BSPP ¹			Metric to DIN 3852-1			Metric to ISO 6149-1			SAE Thread		
Thread Size	From Model	Code	Thread Size	From Model	Code	Thread Size	From Model	Code	Thread Size	From Model	Code
G 3/4	A2	RC	M14	A2	GA	M14	A2	YA	#5	A2	TA
G 1	A3	RD	M18	A2	GB	M18	A2	YB	#6	A2	TB
G 1 1/4	A3	RE	M22	A2	GC	M22	A2	YC	#8	A2	TC
G 1 1/2	A4	RF	M27	A2	GD	M27	A2	YD	#10	A2	TI
G 2	A4	RG	M33	A3	GE	M33	A3	YE	#12	A2	TD
-	-	-	M42	A3	GF	M42	A3	YF	#16	A3	TE
-	-	-	-	-	-	-	-	-	#20	A3	TF
-	-	-	-	-	-	-	-	-	#24	A3	TG

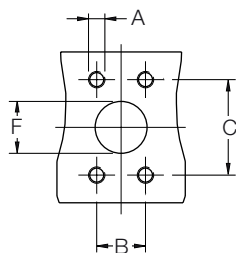
¹ Where the required fluid port is the standard BSPP size for the accumulator bore diameter chosen (see dimension D, page 128), the fluid port field in the order code on page 126 should be left blank.

Optional Flanged Ports

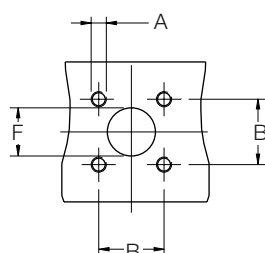
A Series Piston Accumulators are available with metric flange ports to ISO 6162/3000 psi and ISO 6164/6000 psi as shown in the tables. Inch pattern flange ports and flange ports for higher pressure operation are also available, please consult the factory for details.

Flange Ports to ISO 6162/3000 psi						
Flange Size	From Model	A *	B ± 0.25	C ± 0.25	F	Code
DN13	A3	M8	17.5	38.1	13	MT
DN19	A3	M10	22.3	47.6	19	MU
DN25	A3	M10	26.2	52.4	25	MV
DN32	A3	M10	30.2	58.7	32	MW
DN38	A4	M12	35.7	69.9	38	MJ
DN51	A4	M12	42.9	77.8	51	ML
DN64	A6	M12	50.8	88.9	64	MM
DN76	A8	M16	61.9	106.4	76	MN

ISO 6162 Flanged Port Dimensions



ISO 6164 Flanged Port Dimensions



Flange Ports to ISO 6164/6000 psi					
Flange Size	From Model	A	B ± 0.25	F +0.0 -1.5	Code
DN10	A2	M6 x 1	24.7	10.0	SD
DN13	A2	M8 x 1.25	29.7	13.0	SE
DN19	A3	M8 x 1.25	35.4	19.0	SF
DN25	A3	M10 x 1.5	43.8	25.0	SG
DN32	A3	M12 x 1.75	51.6	32.0	SH
DN38	A4	M16 x 2	60.1	38.0	SP
DN51	A6	M16 x 2	69.3	51.0	SQ
DN56	A6	M20 x 2.5	83.4	56.0	SX

A Series 250 bar, Volume 0.5 to 300 Litres

Standard version (Carbon Steel shell/seal NBR) compatible with mineral oils (2).

According to PED 2014/68/EU, EN 14359, Fluid Group 2 (3).

Part number	Model	Code	Bore ø	Fluid Volume	Gas Volume Litres	250 bar Maxi Weight Kg	350 bar Maxi Weight Kg	250 bar			350 bar			C mm	E2	F mm	L mm
								øD mm	A mm	G BSPP	øD mm	A mm	G BSPP				
A2ES0045L2K*	A2	0005	51.4	0.10	0.10	18	27	61	172	G 3/4	64	172	G 3/4	27 (1)	-	-	-
A2ES0010L2K*		0010		0.15	0.20	2	3		211			211					
A2ES0015L2K*		0015		0.25	0.25	25	33		250			250					
A2ES0029L2K*		0029		0.50	0.50	3	43		360			360					
A2ES0058L2K*		0058		1.00	1.00	44	62		590			590					
A3ES0029L2K*	A3	0029	76.2	0.50	0.55	9	9	91	260	G 3/4	96	260	G 3/4	29 (1)	M10	60	15
A3ES0058L2K*		0058		1.00	1.00	11	11		364			364					
A3ES0090L2K		0090		1.50	1.50	13	13		481			481					
A3ES0116L2K		0116		2.00	2.00	14	15		573			573					
A3ES0183L2K		0183		3.00	3.00	16	20		814			814					
A4ES0058L2K	A4	0058	102.4	1.00	1.10	15	18	121	295	G 1	127	306	G 1	29 (1)	M12	82	18
A4ES0116L2K		0116		2.00	2.00	18	22		411			422					
A4ES0231L2K		0231		3.80	4.00	23	30		640			651					
A4ES0347L2K		0347		5.70	5.90	29	38		872			883					
A4ES0578L2K		0578		9.50	9.60	41	54		1330			1341					
A5ES0058L2K	A5	0058	127.0	1.00	1.30	22	-	153	272	G 1	-	346	-	29 (1)	M12	100	18
A5ES0116L2K		0116		2.00	2.20	26	-		496			645					
A5ES0231L2K		0231		3.80	4.10	32	-		645			943					
A5ES0347L2K		0347		5.70	6.00	39	-		943			-					
A5ES0578L2K		0578		9.50	9.80	52	-		-			-					
A6ES0231L2K	A6	0231	146.9	3.80	4.30	35	53	175	442	G 1 1/2	180	487	G 1	29 (1)	M12	110	18
A6ES0347L2K		0347		5.70	6.20	42	60		554			600					
A6ES0578L2K		0578		9.50	10.00	54	74		778			824					
A6ES0924L2K		0924		15.00	15.70	73	96		1113			1159					
A6ES1155L2K		1155		19.00	19.40	85	110		1337			1383					
A6ES1733L2K		1733		28.50	28.90	112	148		1896			1941					
A6ES2310L2K		2310		38.00	38.40	147	183		2454			2500					
A8ES0578L2K		A8		0578	200.0	9.50	10.70		98			-					
A8ES1155L2K	1155		19.00	20.20		122	-	1232	1532								
A8ES1733L2K	1733		28.50	29.70		146	-	1774	1834								
A8ES2310L2K	2310		38.00	39.10		170	-	2136	2738								
A8ES2772L2K	2772		45.00	46.20		189	-	-	-								
A8ES2888L2K	2888		47.00	48.20		194	-	-	-								
A8ES3465L2K	3465		57.00	58.00		217	-	-	-								
A8ES4620L2K	4620		76.00	77.20		266	-	-	-								

* According PED 2014/68/EU Article 4.3

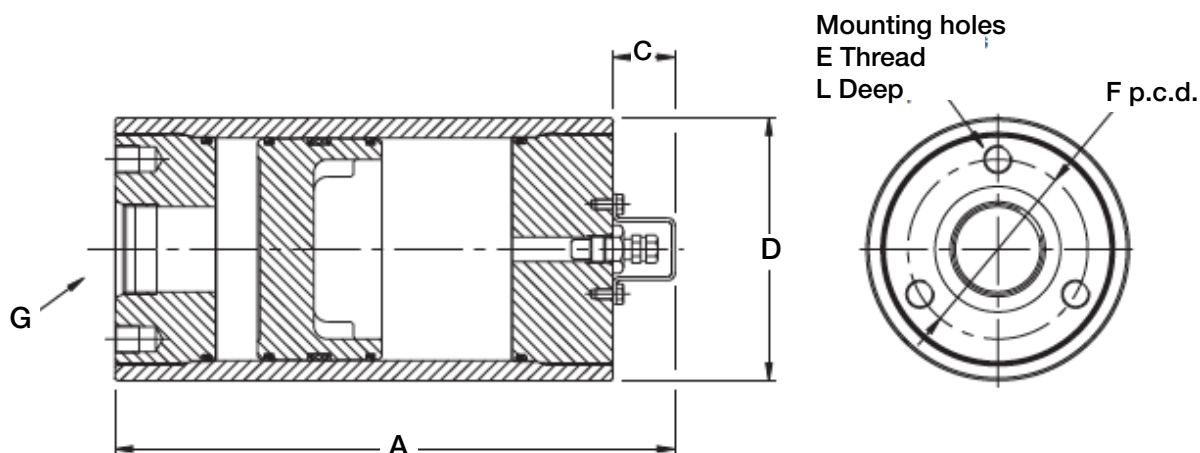
(1) Where the optional poppet-type gas valve is fitted, dimension C should be increased by 13 mm

A Series Piston accumulator are supplied as standard with the metric threaded mounting holes shown in the table. They are also available with inch pattern mounting holes, indicated by the design number in the model code

Volumes are nominal

ΔP type includes Heavy duty Gas valve

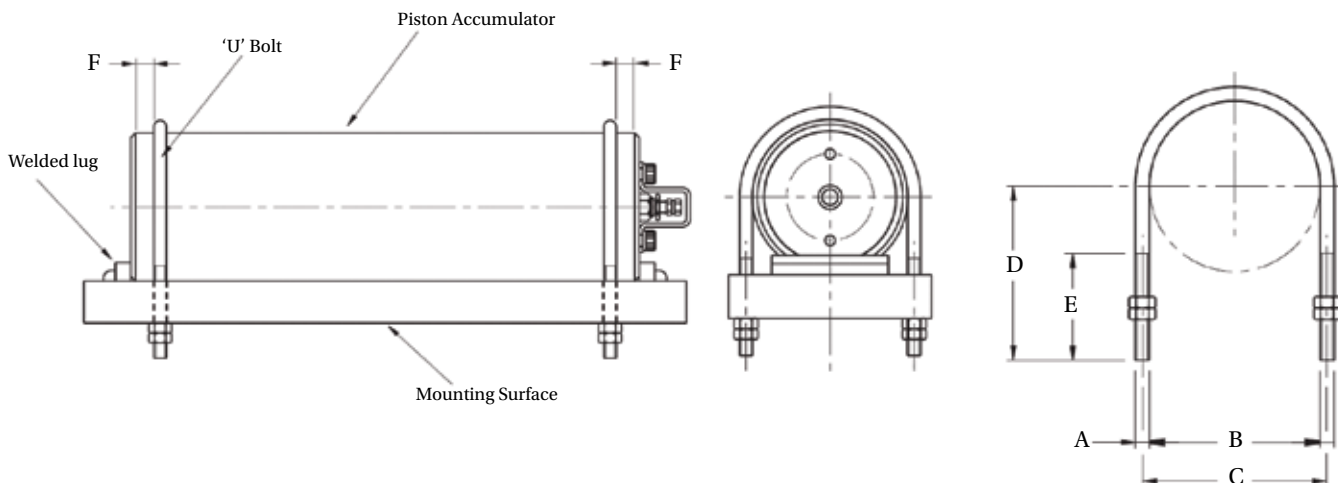
(2) For other fluids consult Parker (3) For Fluid group 1 consideration : consult Parker



Seals, Fluids and Temperature Ranges

Code	Seal Type	"Min Temp"	"Max Temp"	"Fluid Classification"	"Fluid Type"	Maximum Velocity (m/s)
K	"NBR (Nitrile)"	-29°C	74°C	"HFB-HFC HM-HV"	"Mineral Oils & Water Glycols"	4 m/s
H	"HNBR (Hydrogenated Nitrile)"	-32°C	150°C	"HFB-HFC HM-HV"	"Mineral Oils & Water Glycols"	4 m/s
E	"FPM (Fluorocarbon elastomer)"	-23°C	121°C	"HFB HM-HV"	"Synthetic Oils"	4 m/s
D	"EPDM (Ethylene Propylene)"	-40°C	121°C	HFD	"Ester Fluids"	4 m/s
Q	"LT-NBR (Low Temperature Nitrile)"	-45°C	71°C	HM-HV	"Mineral Oils"	4 m/s
X	"Low Friction T Seal Consult Parker ACDE"	-43°C	121°C	HM-HV	"Mineral Oils & Water Glycols"	4 m/s
S	"Special Consult Parker ACDE"					4 m/s

'U' Bolts for Piston Accumulators



Model	Part No.	A	B	C	D	E	F	
							Min	Max
A2	PE1093-4	M6 x 1	62	68	70	45	10	25
A3	PE1093-1	M8 x 1.25	96	104	92	60	10	25
A4	PE1093-2	M12 x 1.75	128	140	114	76	10	30
A5	PE1093-12	M12 x 1.75	158	170	140	76	15	40
A6	PE1093-3	M16 x 2	180	196	155	95	20	45
A8	PE1093-13	M16 x 2	234	250	200	95	20	50

Note: 'U' bolts should be mounted within the distances shown from the end of the accumulator, to avoid deformation of the shell.

Charging and Gauging

The charging and gauging assemblies listed in the table are suitable for use with both the standard cored-type gas valve and the optional poppet type. Each kit contains a UCA assembly incorporating a gas valve, bleed valve and gas chuck, and a 3m long charging hose with standard nitrogen bottle fittings. The kit includes 25 bar and 250 bar pressure gauges, to permit easy monitoring of the gas precharge.

Territory	Gas Bottle Fitting	Part No.
UK	5/8 BSP (male)	UCA 02
France	W 21.7 x 1/14" (female)	UCA 04
Germany	W 24.32 x 1/14" (female)	UCA 01
Italy	W 21.7 x 1/14" (male)	UCA 05
US	0.960 x 1/14" (male)	UCA 03
Universal	All available fittings (includes all fittings above)	UCA UNI

All dimensions are in millimetres unless otherwise stated.

Please note:

Resistant parts cannot be supplied as spares (tubes/ end caps)

