



aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
**hydraulics**  
pneumatics  
process control  
sealing & shielding



# AP Series Piston Accumulators

6 to 300 Litres, 250 & 350 Bar



ENGINEERING YOUR SUCCESS.

## Description

Piston Accumulators up to 300 Litres volume, 360mm Bore, 250 Bar & 350 Bar. Parker AP piston accumulators offer quality design and premium technical features which guarantee optimum performance life.

Parker's AP piston accumulators are a premium specification product designed for use in high performance applications such as industrial press, die casting and plastic injection moulding, where large volumes of fluid have to be displaced at high speed (250 & 350 bar).

A wide range of bore/stroke combinations enables the piston accumulator with the required volume to be selected in a size that will optimise the use of available space, while metric mountings and a choice of port styles simplify connection. Parker offers a full range of clamps to provide secure mounting.

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](http://www.Parker.com/acde).

## Markets

- Industrial
- Oil & Gas
- Energy

## Features/Benefits

- **Special multi-element sealing systems have been developed to combine good servo application and load holding properties with the wear characteristics required to withstand continuous use at piston speeds of up to 8m/s.**
- **For unique applications and hostile environments, different designs, materials and coatings can be supplied. Please contact your local Parker sales company to discuss custom solutions to individual application requirements.**
- **180mm and 250mm bore accumulators feature threaded caps to minimize downtime and simplify maintenance of the accumulator, permitting quick and easy installation of seals. 360mm bore units use a screwed ring to retain the gas and oil caps, reducing the mass of parts handled during maintenance and providing additional protection for the gas valve.**
- **Carbon steel body and Aluminium piston design.**
- **High burst test safety factor.**

## Applications

- Die casting
- Plastic injection moulding
- Presses
- Machine tools
- Renewable energy

# Applications

Ideal for die casting and plastic injection moulding

## AP Series Piston Accumulators

Parker's AP Series accumulators are a premium specification product designed for use in high performance applications such as die casting and plastic injection moulding, where large volumes of fluid have to be displaced at high speed. Special multi-element sealing systems have been developed to combine good servo application and load holding properties with the wear characteristics required to withstand continuous use at piston speeds of up to 8m/s.

A wide range of bore/stroke combinations enables an accumulator with the required volume to be selected in a size that will optimise the use of available space, while metric mountings and a choice of port styles simplify connection. Parker offers a full range of clamps to provide secure mounting.



# Main Features

## Actual Bore Sizes & Maximum Flow Rates

Model	Actual Bore $\varnothing$	Max. Recommended Flow Rate*
	mm	l/m
AP180	180	12,000
AP250	250	23,000
AP360	360	45,000

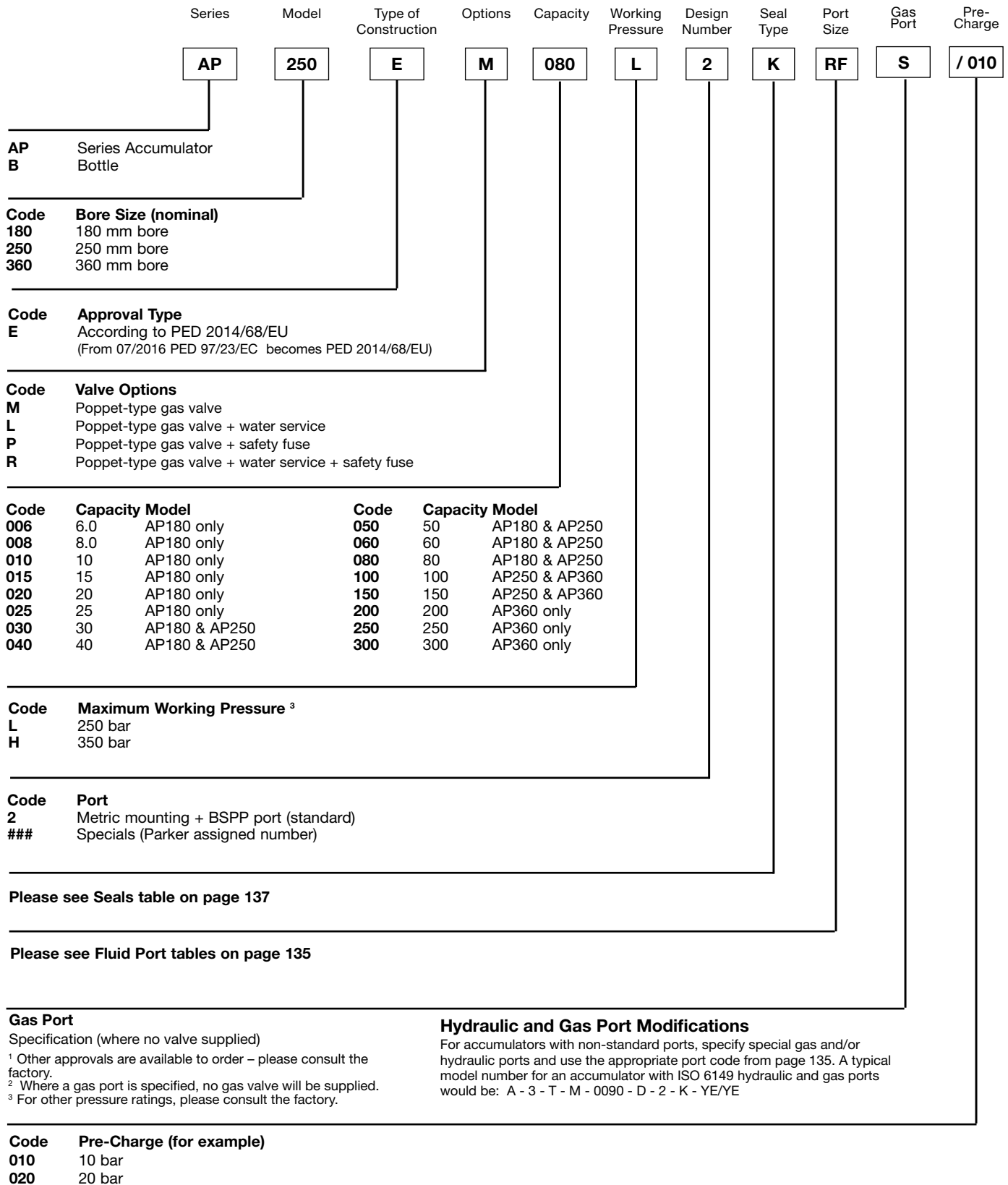
## Materials

- Shell – high strength steel
- End caps – steel
- Pistons – lightweight aluminium alloy
- Cap end seals – NBR (standard): other compounds to suit application
- Piston bearing rings – filled PTFE
- Piston seals – filled PTFE (standard): other compounds to suit application
- Gas valve assembly – stainless steel
- Gas valve protector – steel
- Paint finish – black primer, suitable for epoxy paint finishes (standard) – other finishes 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.

# AP Series: How to order



**Hydraulic and Gas Ports**

The BSPP ports shown are supplied as standard at the fluid ends of AP Series 250 bar accumulators, and at the gas ends of these accumulators when ordered for use with gas bottles. A range of optional threaded and flanged ports is also available, as shown below. All ports are specified by adding the relevant code to the accumulator model number.

**BSPP Threaded Ports**

Thread Size	From Model	Code
G1	All models	<b>RD</b>
G1 1/4		<b>RE</b>
G1 1/2 (standard)		<b>RF</b>
G2		<b>RG</b>

**Optional Flanged Ports**

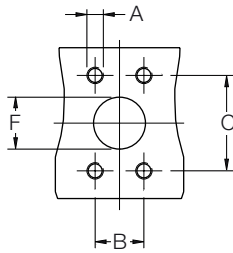
Bore Ø	ISO Port Style	DN10	DN13	DN19	DN25	DN32	DN38	DN51	DN56	DN63	DN70	DN80
180	ISO 6162		•	•	•	•	•	•				
	ISO 6164	•	•	•	•	•	•	•	•	•		
250	ISO 6162		•	•	•	•	•	•				
	ISO 6164	•	•	•	•	•	•	•	•	•	•	•
360	ISO 6162		•	•	•	•	•	•				
	ISO 6164	•	•	•	•	•	•	•	•	•	•	•

**Optional Flanged Ports**

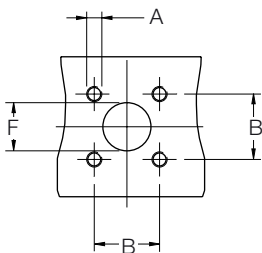
AP Series Piston Accumulators are available with metric flange ports to ISO 6162/3000 psi and ISO 6164/6000 psi as shown in the tables. Inch pattern flange ports and flange ports for higher pressure operation are also available, please consult the factory for details.

Flange Ports to ISO 6162/3000 psi						
Flange Size	From Model	A *	B ± 0.25	C ± 0.25	F	Code
DN13	180	M8	17.5	38.1	13	<b>MT</b>
DN19	180	M10	22.3	47.6	19	<b>MU</b>
DN25	180	M10	26.2	52.4	25	<b>MV</b>
DN32	180	M10	30.2	58.7	32	<b>MW</b>
DN38	180	M12	35.7	69.9	38	<b>MJ</b>
DN51	180	M12	42.9	77.8	51	<b>ML</b>
DN64	180	M12	50.8	88.9	64	<b>MM</b>
DN76	180	M16	61.9	106.4	76	<b>MN</b>

**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	180	M6 x 1	24.7	10.0	<b>SD</b>
DN13	180	M8 x 1.25	29.7	13.0	<b>SE</b>
DN19	180	M8 x 1.25	35.4	19.0	<b>SF</b>
DN25	180	M10 x 1.5	43.8	25.0	<b>SG</b>
DN32	180	M12 x 1.75	51.6	32.0	<b>SH</b>
DN38	180	M16 x 2	60.1	38.0	<b>SP</b>
DN51	180	M16 x 2	69.3	51.0	<b>SQ</b>
DN56	180	M20 x 2.5	83.4	56.0	<b>SX</b>
DN63	180	M24 x 3	102.5	63.0	<b>SR</b>
DN70	250	M24 x 3	113.1	70.0	<b>SY</b>
DN80	250	M30 x 3.5	123.7	80.0	<b>SZ</b>

# AP Series 250 & 350 bar, Volume 6 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).

Product , Part numbers, Accessories

Technical characteristics									Serie 250 Bar			Serie 350 Bar		
Model	Bore (mm)	Nominal Volume (Litres)	A	C	E	G" Port BSPP	F	L	Part number	Weight (KG)	ø D (mm)	Part number	Weight (KG)	ø D (mm)
AP180	180	6	591	42	M16x2	G1.1/2	140	20	AP180EM006L2K	83	207	AP180EM006H2K	102	220
	180	8	669						AP180EM008L2K	88		AP180EM008H2K	109	
	180	10	748						AP180EM010L2K	93		AP180EM010H2K	117	
	180	15	944						AP180EM015L2K	106		AP180EM015H2K	136	
	180	20	1141						AP180EM020L2K	118		AP180EM020H2K	155	
	180	25	1337						AP180EM025L2K	131		AP180EM025H2K	175	
	180	30	1534						AP180EM030L2K	143		AP180EM030H2K	194	
	180	40	1927						AP180EM040L2K	168		AP180EM040H2K	232	
	180	50	2320						AP180EM050L2K	193		AP180EM050H2K	270	
	180	60	2713						AP180EM060L2K	218		AP180EM060H2K	309	
	180	80	3499	AP180EM080L2K	268	AP180EM080H2K	385							
AP250	250	30	1041	42	M22x2.5	G1.1/2	170	30	AP250EM030L2K	245	290	AP250EM030H2K	317	310
	250	40	1245						AP250EM040L2K	271		AP250EM040H2K	359	
	250	50	1449						AP250EM050L2K	298		AP250EM050H2K	401	
	250	60	1652						AP250EM060L2K	325		AP250EM060H2K	442	
	250	80	2060						AP250EM080L2K	379		AP250EM080H2K	526	
	250	100	2467						AP250EM100L2K	432		AP250EM100H2K	609	
	250	150	3486						AP250EM150L2K	566		AP250EM150H2K	817	
AP360	360	100	1657 (1)	N/A	M22x2.5	G1.1/2	304	45	AP360EM100L2K	639	407	AP360EM100H2K	903	436
	360	150	2149 (1)						AP360EM150L2K	742		AP360EM150H2K	1083	
	360	200	2640 (1)						AP360EM200L2K	845		AP360EM200H2K	1264	
	360	250	3131 (1)						AP360EM250L2K	948		AP360EM250H2K	1445	
	360	300	3622 (1)						AP360EM300L2K	1051		AP360EM300H2K	1626	

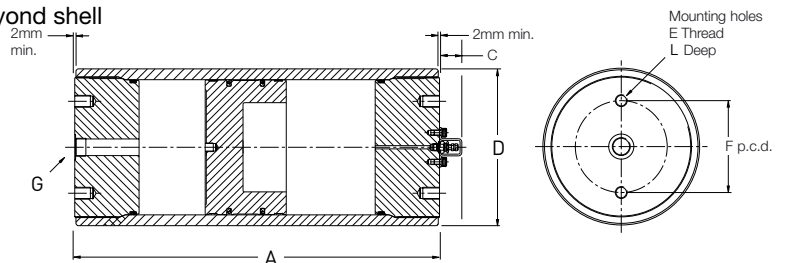
AP type includes Heavy duty Gas Valve

Flange mounting surface on AP360 series extends 2 mm beyond shell

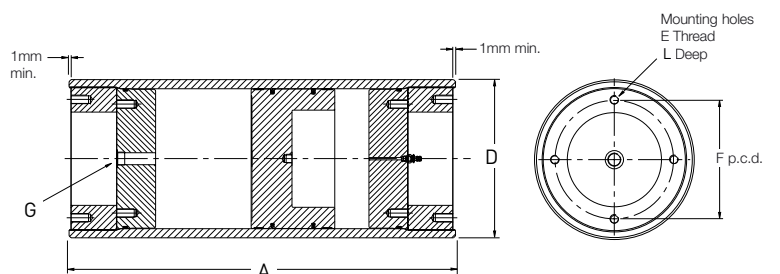
(2) For other fluids consult Parker

(3) For Fluid group 1 consideration : consult Parker

**250 Bar and 350 Bar  
 AP Series  
 180mm and 250mm Bore  
 with CE Approval**



**250 Bar and 350 Bar  
 AP Series  
 250mm and 360mm Bore  
 with CE Approval**



### 250 and 350 Bar Pressure Ranges

AP Series industrial accumulators are available in two different pressure ratings, 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 AP Series accumulator model, while differing wall thicknesses allow the designer to specify precisely the right performance envelope for the application.

### Available Options

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

- Port styles and sizes
- Seal compounds
- High flow gas ports for use with remote gas storage bottles
- Water service versions
- Safety fuses
- Mounting systems
- Precharge/piston position sensors
- Certifications to suit different market requirements

### Water Service

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

### Operating Temperatures, Seals and Fluids

Standard and optional seal combinations for AP Series accumulators are shown below. Other seals are also available for use in exceptional conditions – please consult the factory with details of the application.

### 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 (N<sub>2</sub>) 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	AP180	AP250	AP360
PED2014/68/EU	•	•	•

### 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.

### Bore Size, Pressures & Temperature Range

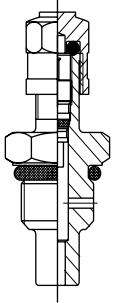
Bore Size (mm)	Max. Working Pressure (bar)	Volume (Litres)	
		Min	Max
AP180	250/350	6	80
AP250	250/350	30	150
AP360	250/350	100	300

### Seals, Fluids and Temperature Ranges

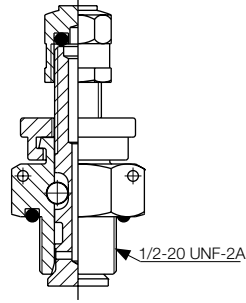
Code	Seal Type	"Min Temp"	"Max Temp"	"Fluid Type"
K	"NBR (Nitrile)"	-30°C	75°C	General purpose, petroleum-based fluids
E	"FPM (Fluorocarbon elastomer)"	-25°C	150°C	High temperature and/or synthetic fluids
D	"EPDM (Ethylene Propylene)"	-25°C	120°C	Phosphate-esters
H	"HNBR (Hydrogenated Nitrile)"	-30°C	130°C	Most oil-based and biodegradable fluids
J	"NBR (Nitrile and filled PTFE)"	-30°C	75°C	Water glycol, high water content fluids
Q	"LT-NBR (Low Temperature Nitrile)"	-45°C	71°C	General purpose fluids at low temperatures

**Gas Valves**

The standard gas charging valve fitted to AP 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.

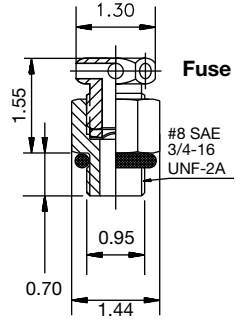
**Piston Accumulator Seal Kits**

Seal kits are available for all AP Series accumulator models. 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. Installation and maintenance are described in Bulletin 1240-M1.

The seal kits listed below contain a piston with the appropriate seals ready fitted, to minimize the risk of damage during assembly. Seal kits contain items 5, 6, 7, 8, 9, 10 and 12.

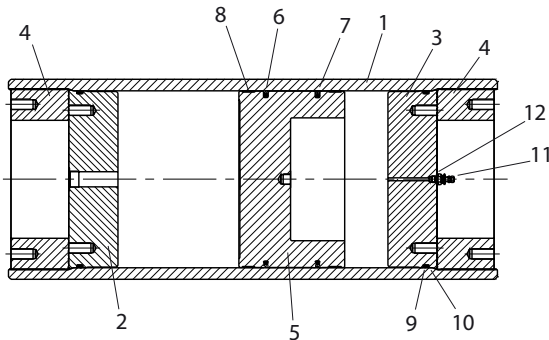
**Safety Fuses (Burst Discs)**

Safety fuses are available on AP 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.

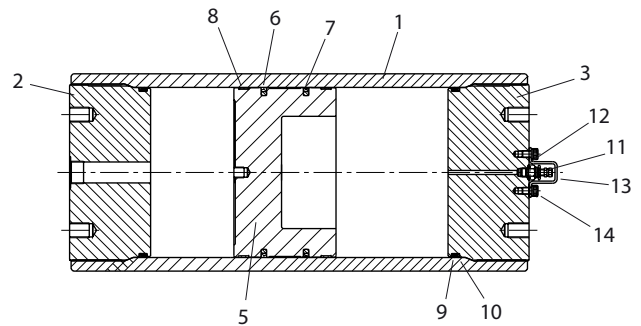


**Parts List**

1. Shell
2. Hydraulic cap
3. Gas cap
4. Retaining ring (AP360 only)
5. Piston
6. Piston oil seal assembly
7. Piston gas seal assembly
8. Piston bearing ring
9. Cap O-ring
10. Cap O-ring back-up washer
11. Gas valve
12. Gas valve O-ring
13. Gas valve protector (not AP360)
14. Gas valve protector screw (not AP360)



**360mm Bore Piston Accumulator**



**180mm and 250mm Bore Piston Accumulators**

**Seal Kits**

Seal Kit Part Numbers with piston seals assembled (remove the WP for a Seal Kit without piston seal assembled)

Model	Seal Material + Filled PTFE					
	Nitrile NBR	Fluorocarbon Elastomer FPM	Ethylene Propylene EPR	Hydrogenated Nitrile HNBR	Nitrile (HWBF) NBR	Low Temp. Nitrile NBR
AP180	PK180APKWP	PK180APEWP	PK180APDWP	PK180APHWP	PK180APJWP	PK180APQWP
AP250	PK250APKWP	PK250APEWP	PK250APDWP	PK250APHWP	PK250APJWP	PK250APQWP
AP360	PK360APKWP	PK360APEWP	PK360APDWP	PK360APHWP	PK360APJWP	PK360APQWP