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# Bladder Accumulators

EHV from 250 to 690 bar

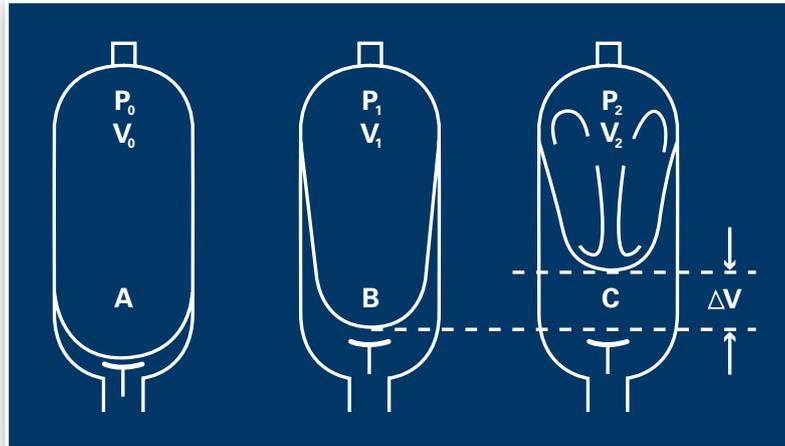


ENGINEERING YOUR SUCCESS.

# Main Features

## Operation principle

Operation of the Parker Olaer gas loaded bladder accumulator is based on the considerable difference in compressibility between a gas and a liquid, enabling a large quantity of energy to be stored in an extremely compact form. This enables a liquid under pressure to be accumulated, stored and recovered at any time. Its special design allows the bladder (the strategic component) to compress the gas and usually form into three lobes in order for the accumulator to store, then to deliver the fluid under pressure, as required.



<b>V0</b> = Nitrogen capacity of the accumulator	<b>P0</b> = Initial preload of the accumulator
<b>V1</b> = Gas volume at the minimum hydraulic pressure	<b>P1</b> = Gas pressure at the minimum hydraulic pressure
<b>V2</b> = Gas volume at the maximum hydraulic pressure	<b>P2</b> = Gas pressure at the maximum hydraulic pressure
<b><math>\Delta V</math></b> = Returned and/or stored volume of working fluid between $P_1$ & $P_2$	

**A** - Bladder in the precharge position, which means that it is only filled with nitrogen. The anti-extrusion system closes the hydraulic orifice and prevents the destruction of the bladder.

*Maximum pressure differential ( $P_2/P_0$ ): 4:1*

**B** - Position at the minimum operating pressure ; there must be a certain amount of fluid between the bladder and the hydraulic orifice, such that the anti-extrusion system does not close the hydraulic orifice. Thus,  $P_0$  must always be  $< P_1$ .

**C** - Position at the maximum operating pressure. The volume difference  $\Delta V$  between the minimum and maximum positions of the operating pressures represents the working fluid quantity.

## Your Benefits

- To increase your production rates thanks to large instantaneous flow rates that only accumulators can provide.
- Some spare power available at any time.  
 Example : EHV 50-330/90 Average flow : 650 L/min
- Maximum pressure available: 320 Bar  
 Minimum pressure available: 250 Bar  
 Average power = Average flow x Average pressure/600 = 308 kW
- The accumulator's ability to run independently reduces the installation cost while reducing your equipment running cost.
- With an accumulator in compliance with the European Standard, your Parker Olaer accumulator is suitable for use in more than 35 countries making it boundary friendly.

- Various bladder materials available which are compatible with a range of fluids and temperatures.
- Anti-extrusion system; fluidport assembly for high pressure.

Taking into account the different needs of various applications, Parker Olaer offers different protections external and/or internal: Bare metal, nickel plating, epoxy paint, PTFE, Rilsan® and phenolic coating.

This extensive range enables us to offer accumulators operating from - 50 to +150 °C with pressures of up to 690 Bar and capacities of up to 57 litres.

As the market leader in bladder type accumulators, Parker Olaer has participated in the development of the EN 14359:2006 standard, which specifies the material, design, manufacturing, fatigue tests, safety devices and documentation (including the instruction manual), for pressure accumulators and gas bottles for hydraulic applications.

## Technical Characteristics

The accumulator comprises a pressure vessel including a valve steme device, a rubber bladder and a fluid port assembly.

- Shell material options include alloyed steel, stainless steel, aluminium, titanium and composites.

# How to size?

Parker Olaer has developed very sophisticated simulation software to optimize accumulator sizing recommendations. The behaviour of accumulators used in applications such as pulsation dampening, surge alleviation, thermal expansion and energy storage can be simulated. Our software can be downloaded from our website [www.parker.com/acde](http://www.parker.com/acde). You may also contact your local Parker Olaer office for sizing assistance.

The graph is useful to estimate the size of an accumulator used to store or deliver a specific volume of liquid within a given pressure range. These curves are the graphic representation of an adiabatic\* cycle (fast cycling rate -  $N = 1.4$  perfect gas assumption) or isothermal\* cycle for an accumulator working at 20°C with a precharge  $P_0 = 0,9 P_1$ .

They do not take into consideration the real gas compression correction factor, the real adiabatic coefficient and the polytropic rate of the application. Depending on the application data, the influence of these factors may be significant, and require that some calculations adjustments be made. The Parker Olaer simulation software takes all these factors into account.

**Sizing of an accumulator** to be installed in the following example conditions:

$P_2$  : Maximum available pressure : 210 Bar

$P_1$  : Minimum working pressure : 100 Bar

$P_0$  : Nitrogen precharge : 90 Bar

$\Delta V$  : Volume to be stored : 14L

Condition : Isothermal (No temperature variation)

**A/Compression ration**  $\alpha = P_2/P_1 = 210/100 = 2,1$

**B/From the value 2,1** on the  $\alpha$  axis, draw a vertical line that intersects the isothermal reference curve in A.

**C/From the value 14** on the  $\Delta V$  axis, draw a vertical line. The intersection point of this line with the horizontal line meeting A indicates a required accumulator size of 32 L.

**Calculation of the volume drawn off from an accumulator.**

Accumulator size = 12 L

$P_2 = 185$  Bar;  $P_1 = 100$  Bar;

$P_0 = 90$  Bar; Adiabatic condition

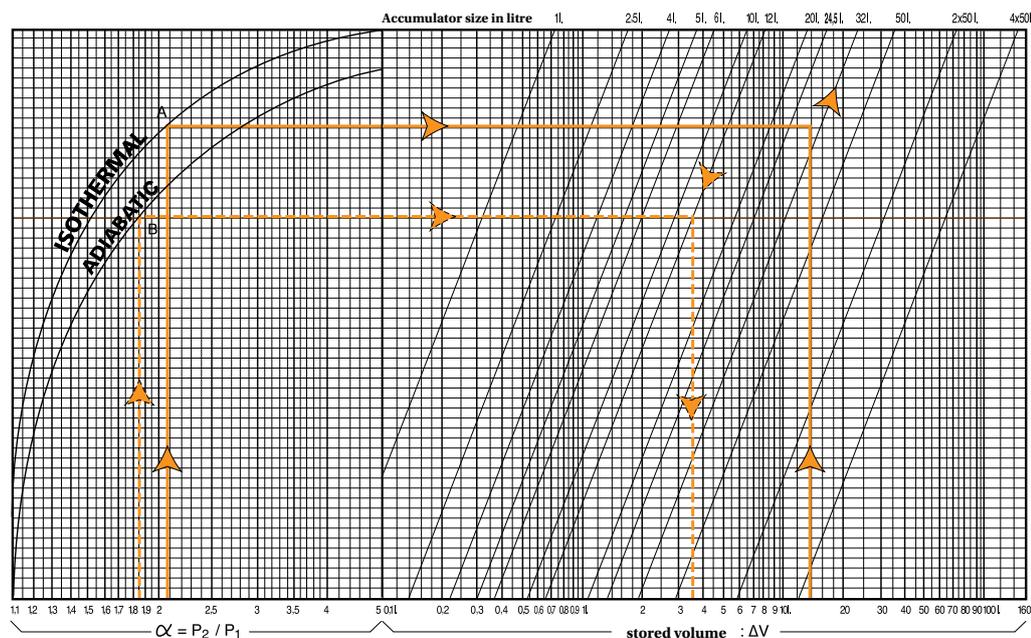
$\alpha = P_2/P_1 = 185/100 = 1,85$

$\Delta V$  : 3,5 litres

**\*Reminder**

**Isothermal:** The transformation is said to be isothermal when the compression or expansion of the gas occurs at a rate slow enough to allow a good thermal exchange, allowing the gas to remain at constant temperature.

**Adiabatic:** The transformation is said to be adiabatic when the cycle is quick and does not allow a temperature exchange with the ambient media.



Basic sizing chart for accumulator used in energy storage.

# Technical Characteristics

EHV Range from 0.2 to 10 Litres

Range 350 bar

Type	Effective Gas vol. Litres	Work pressure (PS) bar	Max Flow Rate l/min	Weight in kg	Clamps x (quantity)	O-ring + anti-extrusion ring	Support bracket	Fixation assembly	Dimensions in mm							
									A max height	B	C	øD max	ød	øE	F on flats	G connection
EHV 0,2 - 350/00*	0.17	350	120	2.5	A 56x1	consult page 10	-	-	268	38	24	58	16	39	24	G 1/2"
EHV 0,5 - 350/00*	0.60	350	240	3	E 95x1		-	-	259	54	28	91	16	50	32	G 3/4"
EHV 1 - 350/00*	1	350	240	6	E 114x1		CE 89	-	330	54	66	116	22.5	50	32	G 3/4"
EHV 1,6 - 350/90	1.6	350	240	8	E 114x1		CE 89	-	442	54	66	116	22.5	50	32	G 3/4"
EHV 2,5 - 350/90	2.4	350	450	11	E 114x2		CE 89	-	549	66	66	116	22.5	68	50	G 1 1/4"
EHV 4 - 350/90	3.7	350	450	15	E 168x1		CE 108	EF1	434	65	66	170	22.5	68	50	G 1 1/4"
EHV 5 - 350/90	5	350	450	17	E 114x2		CE 89	-	898	66	66	115	22.5	68	50	G 1 1/4"
EHV 6 - 350/90	6	350	450	20	E 168x1		CE 108	EF1	560	65	66	170	22.5	68	50	G 1 1/4"
EHV 10 - 350/90	10	350	450	31	E 168x2		CE 108	EF1	825	65	66	170	22.5	68	50	G 1 1/4"

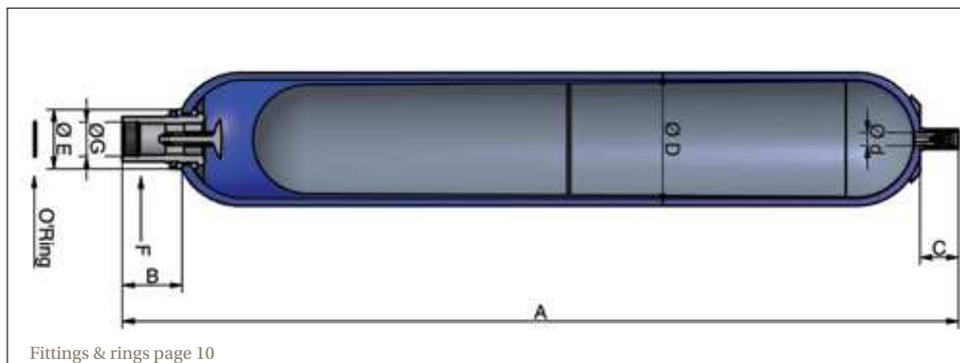
\* According to the PED, article 3.3

Range 690 bar

Type	Effective Gas vol. Litres	Work pressure (PS) bar	Max Flow Rate l/min	Weight in kg	Clamps x (quantity)	O-ring + anti-extrusion ring	Support bracket	Dimensions in mm							
								A max height	B	C	øD max	ød	øE	F on flats	G connection**
EHV 1 - 690/90*	1.1	690	360	8.9	E 114x1	consult page 10	CE 89	376	68	69	122	22.5	68	45	G 1"
EHV 2,5 - 690/90	2.4	690	360	15	E 114x2		CE 89	551	68	69	122	22.5	68	45	G 1"
EHV 5 - 690/90	5	690	360	29	E 114x2		CE 89	900	68	69	122	22.5	68	45	G 1"

\* According to the PED, article 3.3

\*\*With the special adaptor



For alternative gas valves, see page 8.

Above dimensions are in mm and are subject to manufacturing tolerances.

# EHV Range from 10 to 50 Litres

## Range 330 bar

Type	Effective Gas vol. Litres	Work pressure (PS) bar	Max Flow Rate l/min	Weight in kg	Clamps x (quantity)	O-ring + anti-extrusion ring	Support bracket	Fixation assembly	Dimensions in mm							
									A max height	B	C	øD max	ød	øE	F on flats	G connection
EHV 10 - 330/90	9.2	330	900	31	D 226x2	consult page 10	CE 159A	EF2	587	103	66	226	22.5	101	70	G 2"
EHV 12 - 330/90	11	330	900	36	D 226x2		CE 159A	EF2	687	103	66	226	22.5	101	70	G 2"
EHV 20 - 330/90	17.8	330	900	49	D 226x2		CE 159A	EF2	897	103	66	226	22.5	101	70	G 2"
EHV 24.5 - 330/90	22.5	330	900	56	D 226x2		CE 159A	EF2	1032	103	66	226	22.5	101	70	G 2"
EHV 32 - 330/90	32	330	900	81	D 226x2		CE 159A	EF3	1420	103	66	226	22.5	101	70	G 2"
EHV 42 - 330/90	42	330	900	87	D 226x2		CE 159A	EF3	1562	103	66	226	22.5	101	70	G 2"
EHV 50 - 330/90	48.5	330	900	110	D 226x2		CE 159A	EF3	1936	103	66	226	22.5	101	70	G 2"
EHV 57 - 330/90	53	330	900	116	D 226x2		CE 159A	EF3	1936	103	66	226	50	101	70	G 2"

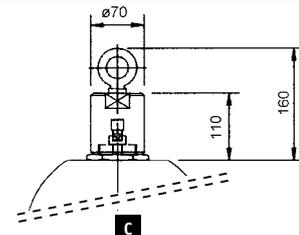
## Range 480 bar

Type	Effective Gas vol. Litres	Work pressure (PS) bar	Max Flow Rate l/min	Weight in kg	Clamps x (quantity)	O-ring + anti-extrusion ring	Support bracket	Fixation assembly	Dimensions in mm							
									A max height	B	C	øD max	ød	øE	F on flats	G connection
EHV 10 - 480/90	9.2	480	900	33	D 226x2	consult page 10	CE 159A	EF2	593	103	74	228	22.5	101	70	G 2"
EHV 12 - 480/90	11	480	900	43	D 226x2		CE 159A	EF2	693	103	74	228	22.5	101	70	G 2"
EHV 20 - 480/90	17.8	480	900	63	D 226x2		CE 159A	EF2	903	103	74	228	22.5	101	70	G 2"
EHV 32 - 480/90	32	480	900	97	D 226x2		CE 159A	EF3	1428	103	74	228	22.5	101	70	G 2"
EHV 50 - 480/90	48.5	480	900	132	D 226x2		CE 159A	EF3	1967	103	99	228	51	101	70	G 2"

## Range 690 bar

Type	Effective Gas vol. Litres	Work pressure (PS) bar	Max Flow Rate l/min	Weight in kg	Clamps x (quantity)	O-ring + anti-extrusion ring	Support bracket	Dimensions in mm						
								A max height	B	øD max	ød Stem	øE	F on flats	G connection *
EHV 12 - 690/90	11	690	900	97	11060x2	consult page 10	11061	682	84	267	50	110	77	G 2"
EHV 20 - 690/90	16.5	690	900	134	11060x2		11061	872	84	267	50	110	77	G 2"
EHV 37 - 690/90	33.4	690	900	227	11060x2		11061	1417	84	267	50	110	77	G 2"
EHV 54 - 690/90	53	690	900	318	11060x2		11061	1932	84	267	50	110	77	G 2"

\* Requires a special adaptor



Above dimensions are in mm and are subject to manufacturing tolerances.

# Flanged Connection

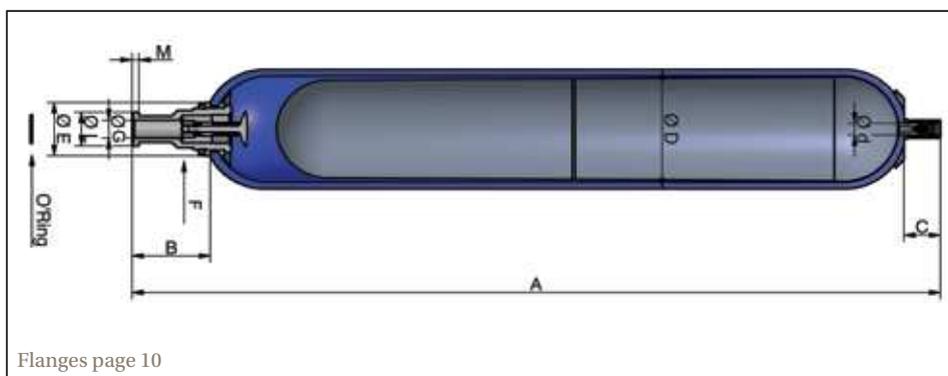
EHVF Range from 2.5 to 10 Litres

Range 350 bar

Type	Effective Gas vol. Litres	Work pressure (PS) bar	Max Flow Rate l/min	Max Weight in kg	Clamps x (quantity)	Connection (norme ISO 6162)	Support bracket	Fixation assembly	Kit of flange (page 10)	Dimensions in mm									
										A max height	B	C	øD max	ød	øE	F on flats	øG	øL	M
EHVF 2,5 - 350/90	2.4	350	450	11	E 114x2	1" SAE 6000 PSI	CE 89	EF4	BR 400-25	595	111	66	116	22.5	68	50	22	47.9	9.5
EHVF 4 - 350/90	3.7	350	450	15	E 168x2		CE 108	EF1	BR 400-25	480	110	66	170	22.5	68	50	22	47.9	9.5
EHVF 5 - 350/90	5	350	450	17	E 114x2		CE 89	EF4	BR 400-25	944	111	66	116	22.5	68	50	22	47.9	9.5
EHVF 6 - 350/90	6	350	450	20	E 168x2		CE 108	EF1	BR 400-25	606	110	66	170	22.5	68	50	22	47.9	9.5
EHVF 10 - 350/90	10	350	450	31	E 168x2		CE 108	EF1	BR 400-25	871	110	66	170	22.5	68	50	22	47.9	9.5

Range 330 bar

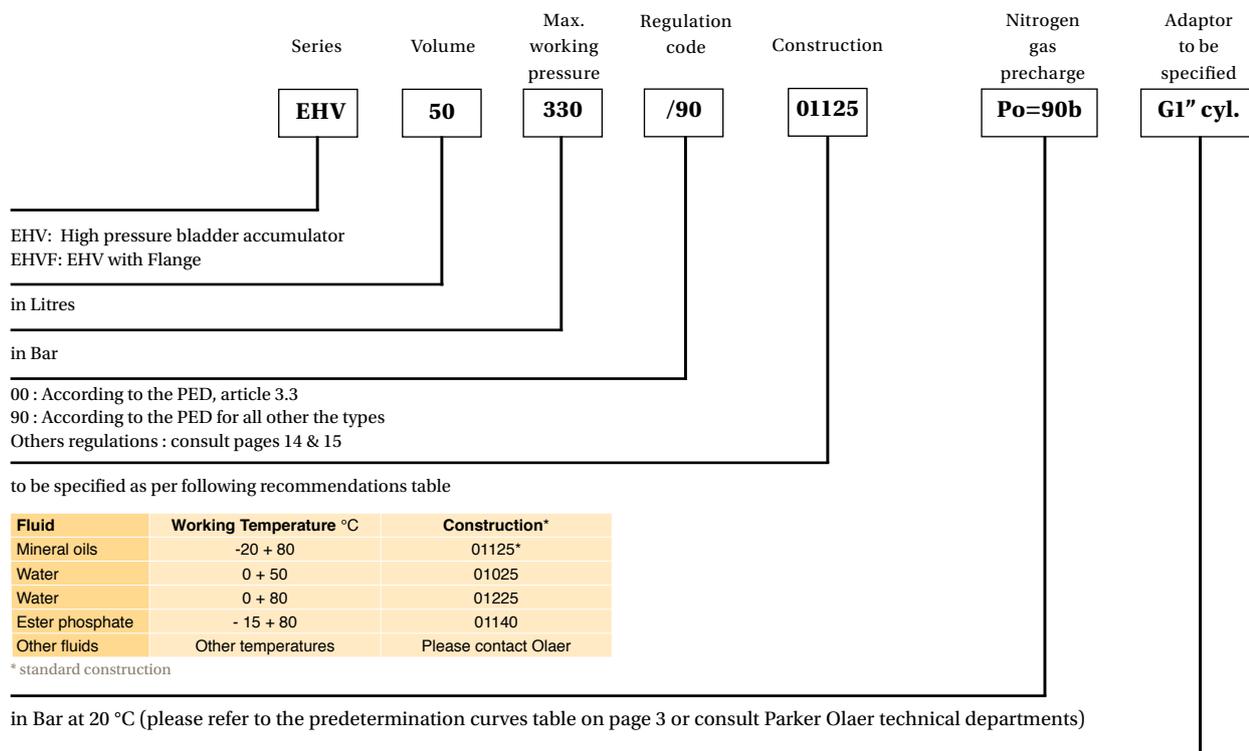
Type	Effective Gas vol. Litres	Work pressure (PS) bar	Max Flow Rate l/min	Max Weight in kg	Clamps x (quantity)	Connection (norme ISO 6162)	Support bracket	Fixation assembly	Kit of flange (page 10)	Dimensions in mm									
										A max height	B	C	øD max	ød	øE	F on flats	øG	øL	M
EHVF 10 - 330/90	9.2	330	900	31	D 226x2	1 1/2" SAE 6000 PSI	CE 159A	EF2	BR 400-38	627	143	66	226	22.5	101	70	34	63.8	12.5
EHVF 12 - 330/90	11	330	900	36	D 226x2		CE 159A	EF2	BR 400-38	727	143	66	226	22.5	101	70	34	63.8	12.5
EHVF 20 - 330/90	17.8	330	900	49	D 226x2		CE 159A	EF2	BR 400-38	937	143	66	226	22.5	101	70	34	63.8	12.5
EHVF 24.5 - 330/90	22.5	330	900	56	D 226x2		CE 159A	EF2	BR 400-38	1072	143	66	226	22.5	101	70	34	63.8	12.5
EHVF 32 - 330/90	32	330	900	81	D 226x2		CE 159A	EF3	BR 400-38	1460	143	66	226	22.5	101	70	34	63.8	12.5
EHVF 42 - 330/90	42	330	900	87	D 226x2		CE 159A	EF3	BR 400-38	1602	143	66	226	22.5	101	70	34	63.8	12.5
EHVF 50 - 330/90	48.5	330	900	110	D 226x2		CE 159A	EF3	BR 400-38	1976	143	66	226	22.5	101	70	34	63.8	12.5
EHVF 57 - 330/90	53	330	900	116	D 226x2		CE 159A	EF3	BR 400-38	2072	143	66	226	22.5	101	70	34	63.8	12.5



For alternative gas valves, see page 8.

Above dimensions are in mm and are subject to manufacturing tolerances.

# How to order?



blind: with blank adaptor or without adaptor (refer to dimension I in table on page 10 and specify reduction size).

## Ordering an accumulator

Please indicate type for accessories as per tables on page 4 to 7, and for peripheral materials as per table on pages 8 and 9.

**Safety Blocks**

Are designed to incorporate in a single compact block a variety of functions necessary for the correct operation of a hydraulic system fitted with accumulators. This includes manual and/or electrical drain, isolation, flow control and pressure relief.

Channel cross section : 10 mm (DI 10 block), 16 mm (DI 16 block), 20 mm (DI 20 block), 24 mm (DI 24 block), 32 mm (DI 32 block), 50 mm (DI 50 block). Maximum working pressure : 330 to 690 Bar depending on models. According with the fluids of group II (PED). Options for ATEX compliant blocks construction carbon steel or stainless steel.

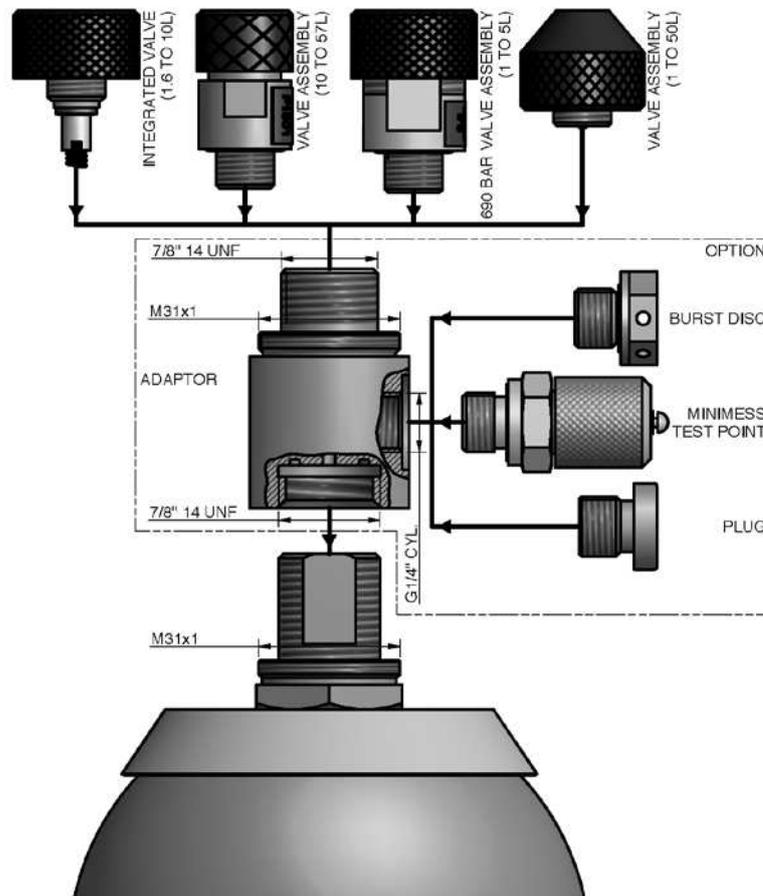


**Bursting Discs**

Parker Olaer bursting discs are available for most accumulators. For the EHV range of accumulators, we use a specially designed adaptor, available in carbon steel or stainless steel.

Burst discs are a safety device which releases the gas pressure independent of the pressure being caused by a fire or a failure of other safety equipment in the system.

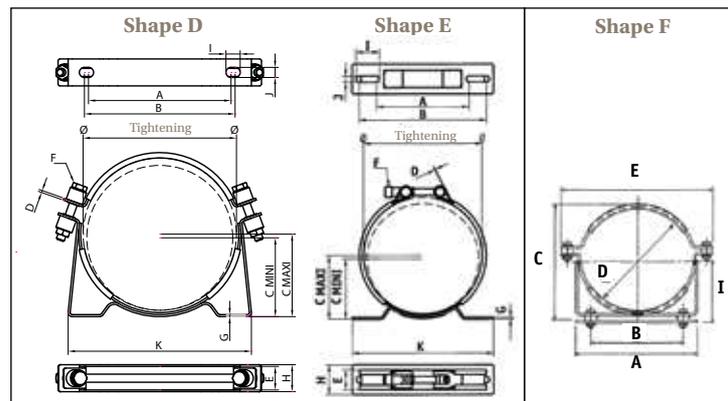
This is a secondary safety device, and it should be set higher than the normal hydraulic safety devices in the system.



# Accessories

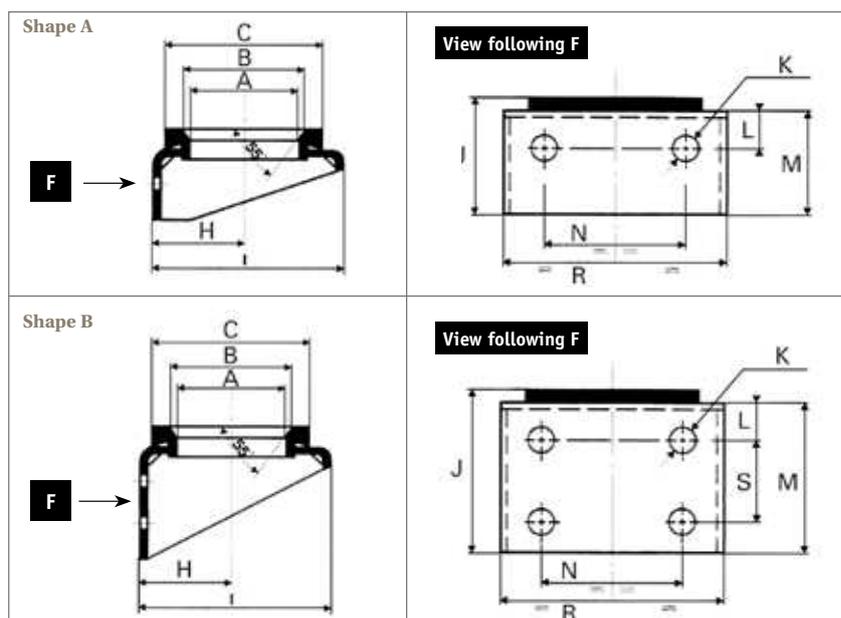
## Clamps

Type	Shape	Recommended tightening min/ max mm diameter	Dimensions in mm											Recommended tightening torque N.m.	
			A	B	C		D	E	F	G	H	I	J		K
A 56	E	54/56	92	102	36	36	3	37	M10x80	3	31	14	9	134	7
E 95	E	87/97	88	140	61.5	66.5	1.5	28	M8x75	3	40	35	9	155	7
E 114	E	112/124	88	140	73	78	1.5	28	M8x75	3	40	35	9	155	7
E 168	E	166/176	137	189	92	96	1.7	30	M10x80	3	45	35	9	210	10.5
D226	D	219/226	210	222	119	122.5	3	35	M12x80	3	40	21	15	270	11
F260	F	260	260	195	263	-	260	295	-	-	-	-	-	295	-



## Support Brackets

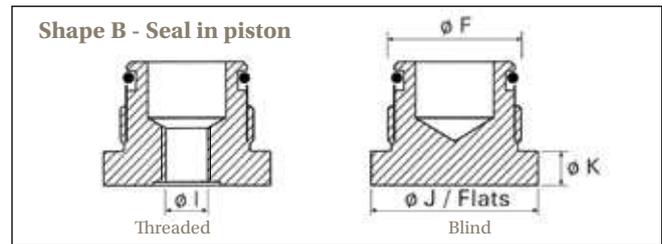
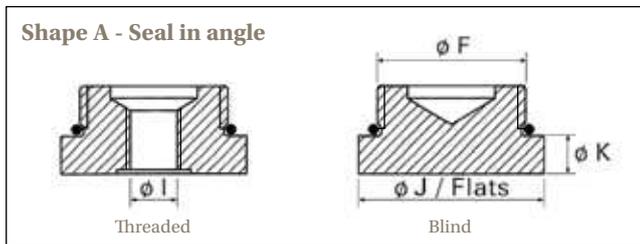
Type	Shape	A	B	C	H	I	J	K	L	M	N	R	S	Weight
CE 89	A	89	101	125	73	140	75	13	25	60	75	130	-	0.8
CE 108	A	108	120	150	92	175	95	17	25	80	160	210	-	1.5
CE 159A	B	159	170	200	123	235	115	17	25	100	200	260	40	2.9
CE 11061	B	-	-	-	137	250	206	17	45	191	108	216	111	6



Above dimensions are in mm and are subject to manufacturing tolerances.

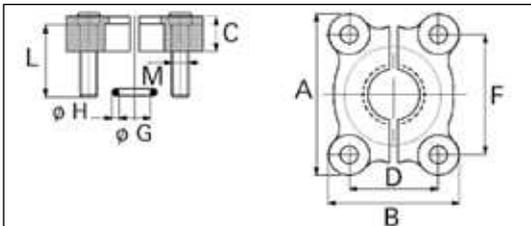
**Fittings EHV**

Accumulator model	Connection of accumulator ø F gas cyl.	Connection of fitting ø l gas cyl.	Shape	J/Flats	K	O-Ring & Back-up ring
EHV 0.5 & 1 & 1.6 Litres 350 Bar	3/4"	3/8"	A/B	-	8	A.O-Ring 21.3 x 2.4
		Blind	A/B	32	10	B. O-Ring 16.9 x 2.7
EHV 2.5 to 10 Litres 350 Bar	1 1/4"	3/4"	A/B	50	8	A. O-Ring 36.2 x 3
		Blind	A/B	27	10	B. O-Ring 30 x 3
EHV 0.2 Litres 350 Bar	1/2"	1/4"	A	41	13	O-Ring 18 x 2
		Blind	A	65	15	A. BU R 22 x 28 x 0.69 x 2
EHV 1 to 5 Litres 690 Bar	1"	1/2"	B	65	15	B. O-Ring 21.3 x 3.6
		Blind	B	65	15	A. O-Ring 54 x 3
EHV 10 to 50 Litres 330/480 Bar	2"	1"	A/B	65	15	B. O-Ring 48 x 3
		Blind	A/B	65	15	O-Ring 43.82 x 5.33
EHV 10 to 50 Litres 690 Bar	2"	1"	B	65	15	BU R 45 x 54 x 0.85 x 2
		Blind	B	65	15	



These accessories are designed to perfectly fit Parker Olaer accumulators. They meet the latest regulations and are compliant with the CETOP standard.

**Flanges Kits EHV**



Type	A	B	C	D	F	ø G	ø H	L	M
BR 400-25	81	70	24	27.75	57.15	32.92	3.53	40	M12
BR 400-38	113	95	30	36.5	79.4	47.22	3.53	50	M16

These flanges are conforming following to ISO 6162.

**Fixation Mounting Frames**

Type	A	B	C	D	E	F	G	H	J
EF1*	670	570	225	92	96	340	370	270	50
EF2**	670	570	285	123	115	340	370	270	50
EF3***	1405	1300	285	123	115	340	370	270	55

\* For Accumulators Volume 4 & 6 & 10L \*\* For Accumulators Volume 10 UP TO 24.5L  
 \*\*\* For Accumulators Volume 32 UP TO 57L

**Installed accumulator rack**

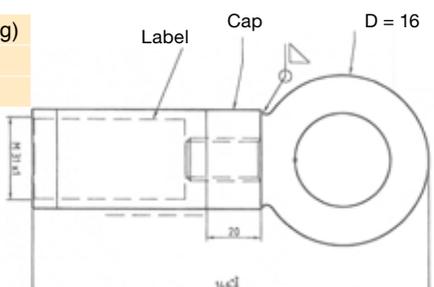
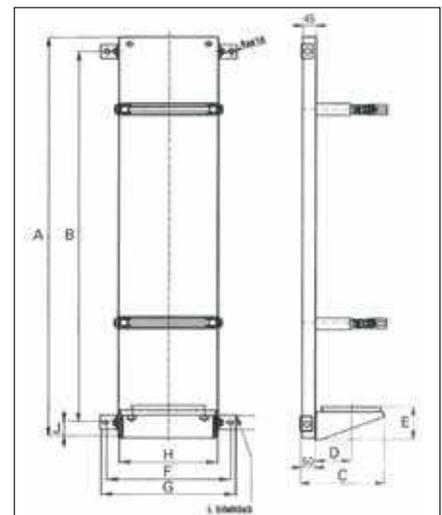
Parker Olaer design and manufacture modular compact assemblies. For any request, please refer to Parker Olaer technical services.

**Lifting Eye**

Following EC regulation for Parker Olaer accumulators (Directive Machine 2006/42/CE)

Type	Volume Accumulators	ø D	Mounting	A	Weight (kg)
109127	1 to 60 Litres	22	Nut of protection cap M31 x 1	146	0,65
090988	10 to 54 Litres	50	On valve stem M50 x 1.5		2,05

\*Maximum load following the drawing see the sticker



Above dimensions are in mm and are subject to manufacturing tolerances.

# Accessories

The charging sets are an indispensable instrument for the verification, pressurization and nitrogen bleeding of most of the hydraulic accumulators available on the market. To use this unit, it is screwed on the gas charging valve of the accumulator and connected via a high pressure hose to the nitrogen source, equipped with a pressure regulator. If only the nitrogen pressure is to be controlled or reduced, this hose is not necessary.

**An Olaer pressure regulator – sold separately. It is mandatory to install a pressure regulator between the bottle or any nitrogen source and the charging set.**



## Model VG3

The standard set is delivered in a storage case containing the following:

- pressure gauge with standardized graduations in bar
- vent valve
- 3 connection adaptors for charging valves. (7/8" – 5/8" – 8V1).
- High pressure hose, 2.5 m length, in standard, maximum working pressure 400 Bar. This hose is fitted at each end with a female swivel coupling G 1/4" BSP for connecting to the inflation port. It can be connected to a commercial nitrogen bottles, in this case add an adaptor on one end view model in the country. For the other destinations consult Parker Olaer.
- Operating instruction french/english version

**Note:** On request, the following options are available :

- Pressure gauge with different scale divisions : 63 mm with glycerol bath back end G1/4" BSP equipped with direct gear for minimess connection. To scale divisions 0-10,0-60,0-100,0-400, with accuracy class 1.6%.
- High pressure hose of different length with adaptors for nitrogen bottles from various countries are available (specify country)

**Maximum working pressure:** limited by the maximum operating pressure of the accumulator charging set pressure. Pressure limited of the installed hydraulic system to 400 bar in any case.



## Model VGU

The standard set is delivered in a storage case containing the following:

- VGU universal tester and pressurizer (end M28 x 1.50).
- Pressure gauge kit from 0 to 25 bar.
- Pressure gauge kit from 0 to 250 bar.
- Connection adaptors for inflation valves (7/8" – 5/8" – 8V1 – M28 x 1.50).
- High pressure hose, 2.5 m long, for connecting to a nitrogen source.
- Hexagon socket screw key 6mm.
- Jackets of replacement joints.
- Operating instruction in French, English, German.

**Note:** On request, the following options are available:

- Pressure gauge kits with different scale divisions: 63mm with glycerol bath back end G1/4" cyl. equipped with direct gear for Minimess connection. Scale divisions 0-10, 0-60, 0-100, 0-400, with accuracy class 1.6%.
- High pressure hose of different length with adaptors for nitrogen bottles from various countries (specify country), at each end with a female swivel coupling G1/4" for connecting to the inflation port.

**Maximum working pressure:** limited by the maximum operating pressure of the installed hydraulic system limited to 400 bar in any case.



# Installation

**Position:** Preferably vertical (liquid connection downwards) to horizontal, depending upon application. If the accumulator is installed in any position other than vertical with fluid port down, contact Parker Olaer. The accumulator could have reduced volumetric efficiency and Parker Olaer can help you to take these factors into account.

**Mounting:** A 200mm clearance is required above the accumulator to allow for gas charging. Each accumulator is delivered with a user instructions leaflet. Ensure that the pipes connected directly or indirectly to the accumulator are not subjected to any abnormal force, Ensure that the accumulator cannot move, or minimize any movement that may occur as a result of broken connections. Parker Olaer clamps and brackets are designed for this purpose (and can be supplied as optional extras). The accumulator must not be subjected to any stress or load, in particular from the structure with which it is associated. Contact Parker Olaer in case of mounting on the movable structures.

**IT IS STRICTLY FORBIDDEN TO**

- Weld, screw or rivet anything onto the accumulator body.
- Operate in any way that may alter the mechanical properties of the accumulator.
- Use the accumulator for construction purposes. (No stress or loading)
- To modify the accumulator without prior approval from the manufacturer.

**GAS FILLING**

For safety reasons, use only pure nitrogen, minimum 99.8% volume. In most of the cases the pre-charge pressure is between 0,9 P1 and 0,25 P2. Your local Parker Olaer office can calculate the correct pre-charge pressure for your application. Parker Olaer offers a range of devices for checking nitrogen pressure as well as pre-charging accumulators. Please note that various adaptors are required to interface with different accumulator filling valves and nitrogen (N2) cylinder connections throughout the world.

The part number defines the accumulator and the material construction. Information contained on the labeling/ manufacturer’s plate:

- Olaer logo
- Product description

- Date or year of manufacture
- Reference information of the accumulator
- Allowable temperature range of the accumulator

Additional information on certain models:

- Warning messages and safety instructions (“Danger”, ”Use nitrogen only” or similar message)
- Maximum inflation pressure P0 max in bar
- Allowable pressure amplitude P max in bar
- Fluid group (1 or 2 according to the Directive 97/23/EC)
- Total dry mass in kilogram

**Maximum allowable operating pressure**

The maximum pressure (PS) is indicated on the accumulator. Check that the maximum allowable pressure is greater than that of the hydraulic system. For any other pressure, you will have to contact Parker Olaer.

**Maximum allowable operating temperature**

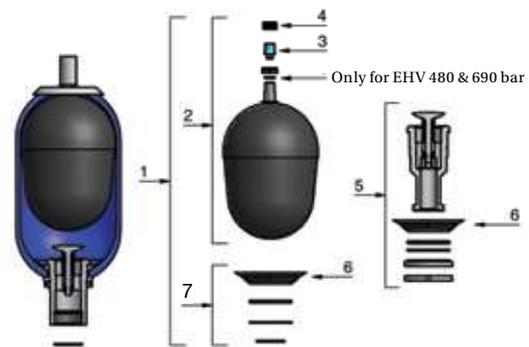
The temperature range (TS) is indicated on the accumulator. Check that the allowable temperature range covers the operating temperatures (environment and hydraulic fluid temperatures). For any other temperature, you will have to contact Parker Olaer.

**Maintenance**

Any intervention, maintenance, repair must be carried out by a qualified and trained personnel.

Item	Spare parts
1	Spare Parts Kit
2*	Bladder assembly
3*	Gas valve
4	Valve cap
5	Fluid port assembly
6*	Anti extrusion ring
7*	Seal kit

\* These parts are supplied as a kit with instructions.



# Regulations

## Codification Table

Destination	Regulation	Parker Olaer Regulation Code	Comments		
Europe	CE	90	-	Approval is based on the directive PED 97/23/CE rules. The CE marking will be apposed on the product for Pressure Vessel risk category >= I.	
USA	ASME	15	Based on ASME VIII div 1 without appendix 22	This regulation is based on the design code ASME VIII div 1. The Appendix 22 defines special requirements for the case of integrally forged pressure vessels.	
		48	Based on ASME VIII div 1 with appendix 22		
China	SELO	88	Based on CE	This regulation is only applicable for pressure vessels which maximum working pressure $\geq 0.1$ MPa and maximum working pressure (Mpa) X volume (L) $\leq 2.5$ MPa.L.	
Canada	CRN	92	Based on ASME VIII div 1 app 22	Approval is based on ASME VIII div 1 design code. Others countries as example Alaska require a CRN registration. Also, each province and territoire of Canada has its own CRN rules, So, thank you to indicate the concerned province for quotation.	
Australia	AS1210	83	Based on CE	Australian regulation is applicable for pressure vessels which maximum working pressure (MPa) X volume (internal volume in L) $\geq 30$ Mpa.L in size.	
		91	Based on ASME VIII div 1 app 22		
Japan	JIS	95	Based on ASME VIII div 1 app 22	Approval is based on ASME VIII div 1 design code (version 1998) and taking into account specific corrosion allowance value. JIS is applicable only for pressure vessels which internal diameter is higher than six inches.	
Brasil	NR13	AA	Based on CE (AD-2000)	NR13 regulation is only applicable for pressure vessels which maximum working pressure (KPa) x internal volume (m3) $\geq 8$ . Also, technical documentation packaging must be established and joined to the equipment. A special marking has to be done on the pressure vessel according to NR13 requirements.	
		AE	Based on ASME VIII div 1 app 22		
		AM	Based on CE (EN14359)		
Russia	GOST R	71	Based on CE	Certificate (CTR) must be established and joined to the equipment for delivery. Technical passport could be established if customer requires it.	
		AU	Based on ASME VIII div 1 app 22		
Marine-Offshore	DNV	24	Based on CE	The marine and offshore applications have to respect some kind of classifications associated to third party (Notified body). This classification is often decided by the owner of the installation. All classification companies give almost the same approval process (design and manufacturing assessment). So, to see in details if the scope of these several marine approvals are compatible with your application, please contact PARKER OLAER for accurate quotation.	
	BUREAU VERITAS MARINE	11			
	ABS	41			
	LLOYDS REGISTER SHIPPING	10			
	GERMANISHER LLOYDS	73			-
	RINA	26			Based on CE
	DRILLING SYSTEMS	-	-		
France	NUCLEAR	90	-	Approval is based on RCCM design code and dedicated only to France market. For other countries out of France, ASME III div 1 is more recognized for nuclear plant activities.	
Europe & Asia	NUCLEAR	AZ	Based on ASME III div 1	Approval is based on ASME III division 1, mainly on subsection NC for components class 2.	

\* For these specific regulations (and/or) if your destination is not mentioned in this table, please contact PARKER OLAER for further information.

## Multi-Regulations codification examples\*

Codification	Regulation
90 EX	CE+ATEX
94	CE+ASME
88	CE+SELO
86	CE+ASME+SELO

How to include the correct regulation in your order?

Accu denomination example:

EHV 20-330 /XX

\* For other regulations, please contact directly PARKER OLAER.

# Approvals

This table is giving an indication of approval availability for the range of products. Availability is to be confirmed for each approval, in particular the pressure rating and the allowable working temperatures. Other options can be offered on request.

Designation	EUROPE				USA		CHINA		CANADA		AUSTRALIA	
	/90	/90	/90	Max. Working Pressure (PS) bar	/15 /48	Max. Working Pressure (PS) Psi (bar)	/88	Max. Working Pressure (PS) bar	/92	Max. Working Pressure (PS) Psi (bar)	/83 /91	Max. Working Pressure (PS) bar
Approvals	CE Fluid Group 2	CE Fluid Group 1	ATEX EX		ASME VIII div 1		SELO		CRN		ASI210	
Models												
EHV 0,5 L	x	x	x	350			x	350				
EHV 1 to 5 L	x	x	x	300			x	300				
EHV 1 to 5 L	x	x	x	350			x	350			On request	350
EHV 1 to 5 L	x	x	x	690			x	690				
EHV 2.5 to 5 L	x	x	x	120			x	120				
EHV 4 - 6 - 10 L	x	x	x	210			x	210				
EHV 4 - 6 - 10 L	x	x	x	350	On request	4000 (276 Bar)	x	350			On request	320
EHV 4 to 60 L					On request	5000 (345 Bar)						
EHV 4 to 60 L					On request	6000 (413 Bar)						
EHV 10 to 42 L					On request	3000 (207 Bar)			x	3000 (207 Bar)		
EHV 10 to 42 L					On request	3600 (248 Bar)			x	3600 (248 Bar)		
EHV 10 to 42 L					On request	4000 (276 Bar)			x	4000 (276 Bar)		
EHV 10 to 50 L	x	x	x	690			x	690				
EHV 10 to 57 L					On request	3600 (248 Bar)					On request	248
EHV 10 to 57 L					On request	4000 (276 Bar)					On request	276
EHV 10 to 57 L	x	x		480			x	480			On request	400
EHV 10 to 60 L	x	x	x	300	On request	3000 (207 Bar)	x	300				
EHV 10 to 60 L	x	x	x	330	On request	3600 (248 Bar)	x	330				
EHV 10 to 60 L	x	x	x	480			x	480				
EHV 50 to 57L					On request	3000 (207 Bar)			x	3000 (207 Bar)		
EHV 50 to 57 L					On request	3600 (248 Bar)			x	3600 (248 Bar)		
EHV 50 to 57 L					On request	4000 (276 Bar)			x	4000 (276 Bar)		
EHV 100 to 200 L	x	x		300			x	300				
EHVF 2.5 to 10 L	x	x		350			x	350				
EHVF 10 to 50 L	x	x		250			x	250				
EHVF 10 to 50 L	x	x		330			x	330				

BRASIL		RUSSIA		MARINE - OFFSHORE			Designation	
/AA /AE /AM	Max. Working Pressure (PS) bar	/71 /AU	Max. Working Pressure (PS) bar	/24	/11	/41	Max. Working Pressure (PS) bar	Approvals  Models
NRI3		GOST R		DNV Mobile ships	Bureau Veritas Marine	ABS American Bureau of Shipping		
x	350	on request	350	x		x	350	EHV 0,5L
			300					EHV 1 to 5 L
x	350		350	x	x	x	350	EHV 1 to 5 L
x	690		690					EHV 1 to 5 L
x	120		120					EHV 2.5L to 5 L
x	210		210					EHV 4 - 6 - 10 L
x	350		350	x	x	x	350	EHV 4 - 6 - 10 L
x	345		345					EHV 4 to 60 L
x	413		413					EHV 4 to 60 L
x	207		207					EHV 10 to 42 L
x	248		248					EHV 10 to 42 L
x	276		276					EHV 10 to 42 L
x	690		690					EHV 10 to 50 L
x	248		248					EHV 10 to 57 L
x	276		276					EHV 10 to 57 L
x	480		480					EHV 10 to 57 L
x	300		300					EHV 10 to 60 L
x	330		330	x	x	x	330	EHV 10 to 60 L
x	480		480					EHV 10 to 60 L
x	207		207					EHV 50 to 57L
x	248		248					EHV 50 to 57 L
x	276		276					EHV 50 to 57 L
x	300		300					EHV 100 to 200 L
x	350	on request	350					EHVF 2.5 to 10 L
x	250		250					EHVF 10 to 50 L
x	330		330					EHVF 10 to 50 L