

## VPF SERIES

# ELECTRONIC EXPANSION VALVE

VPF series electronic expansion valves are designed for commercial and industrial applications. Typical VPF applications are air conditioning and refrigeration systems or heat pumps. The valve controls the automatic adjustment of refrigerant flow rate and makes the system work under optimized conditions for the purpose of fast cooling or heating, precise temperature control and energy saving. The valve can also be used e.g. for suction line pressure controls. These valves provide bidirectional operation to control the refrigerant flow rate in heating or cooling mode.



## FEATURES

- ENERGY SAVING THANKS TO VERY PRECISE CAPACITY CONTROL: UP TO 3800 STEPS
- INTERNAL TIGHTNESS LIKE A SOLENOID VALVE
- OPTIMIZED FLOW PATH DESIGN FOR NOISE REDUCTION
- APPLICABLE FOR REVERSIBLE SYSTEMS LIKE HEAT PUMPS: BIDIRECTIONAL FLOW
- CORROSION RESISTANT DESIGN, LONG LIFETIME, HIGH RELIABILITY
- COMPACT DESIGN
- MODELS WITH INTEGRATED SIGHT GLASS ARE AVAILABLE

## GENERAL SPECIFICATION

- Applicable for all common HCFC, HFC, HFO and flammable refrigerants such as: R134a, R513A, R404A, R407A, R407C, R407F, R450A, R452A, R452B, R410A, R507A, R1234yf, R1234ze, R290, R32, R454C, R455A, ...
- Cooling capacity: 54 to 1495 kW (R134a nominal capacity)
- Up to 3800 steps (full stroke); Valve starts opening with
  - VPF12.5, VPF25: 110 steps
  - VPH50... VPF400: 165 steps
- Medium temperature TS min./max.: -40°C / +90°C
- Ambient temperature min./max.: -40°C / +60°C
- Relative humidity: : 0 to 100% RH
- Installation position:
  - Major flow direction from connection A to B
  - Installation in horizontal and vertical pipes possible
  - Installation position in horizontal lines with stepper motor preferably upwards
- Certifications: EAC, PED Declaration for fluids group 2 full range and fluid group 1 for VPF12.5 to 100.

# ELECTRONIC EXPANSION VALVE



## ELECTRICAL PARAMETERS

- Rated voltage: 12VDC, rectangular wave
- Actuating mode: 2-phase 4-step permanent magnet stepping motor
- Excitation mode: 2 phase excitation, bi-pole actuation
- Coil resistance:  $52 \pm 5,2\Omega$ /coil (20°C)
- Insulation coil class: E
- Protection class: IP 67

	Voltage drive	Current drive
Excitation rate	150 pps Max	300 pps Max
Motion time from completely open to completely closed	VPF12.5...VPF50: 17,3s VPF100: 23,3s VPF150...VPF400: 25,3s	VPF12.5...VPF50: 8,7s VPF100: 11,7s VPF150...VPF400: 12,7s
Nominal motor current*	124mA RMS per phase in control operation	100mA RMS per phase in control operation
Peak motor current*	238mA RMS per phase in control operation	140mA RMS per phase in control operation

\*Specified motor currents are based on max. excitation rates

## MODEL DESIGNATIONS

Position Number	Model Designation Legend	
1	<b>Product Code</b>	<b>Product Series</b>
	VPF	Electronic expansion valve with bi-pole stepper motor
2	<b>Capacity Size</b>	<b>Description</b>
	12.5	Digits for valve capacity size
	25	
	50	
	100	
	150	
	250	
400		
3	<b>Connections Type</b>	<b>Description</b>
	H	Solder
4	<b>Valve Body</b>	<b>Description</b>
	0...4	With sight glass
	5...9	Without sight glass
5	<b>Pipe Connection</b>	<b>Description</b>
	1...9	Digit for pipe connection diameter

## MODEL DESIGNATION EXAMPLE

Position Number					According to Model Designation Legend
1	2	3	4	5	
<b>VPF</b>	100	H	0	3	Electronic expansion valve
VPF	<b>100</b>	H	0	3	Digits for capacity size
VPF	100	<b>H</b>	0	3	Connection: Solder
VPF	100	H	<b>0</b>	3	Valve body: With sight glass
VPF	100	H	0	<b>3</b>	Digit for pipe connection diameter

## ELECTRONIC EXPANSION VALVE



## TECHNICAL PARAMETER

## VPF 12.5 to 150

MWP (Max Working Pressure) = 50 bar

MOPD (Max Operating Pressure Differential) A-&gt;B or B-&gt; A = 39 bar

Model	Part Number <sup>1)</sup>	Valve Shape	Sight Glass	Connections ød ODF Inlet A x Outlet B		Seat ø [mm]	Kv <sup>2)</sup> m <sup>3</sup> /h	PED Cat. Fluid	
				[inch]	[mm]			Group 1	Group 2
VPF12.5H52	10130349502	straight	without	5/8 x 5/8	16 x 16	7,5	0,8	Art. 4.3	Art. 4.3
VPF12.5H53	10130350202			7/8 x 7/8	22 x 22			Art. 4.3	Art. 4.3
VPF12.5H58	10130342102	L-shape	without	5/8 x 5/8	16 x 16			Art. 4.3	Art. 4.3
VPF12.5H59	10130349802			7/8 x 7/8	22 x 22			Art. 4.3	Art. 4.3
VPF25H52	10130349202	straight	without	5/8 x 5/8	16 x 16	7,5	1,4	Art. 4.3	Art. 4.3
VPF25H53	10130356202			7/8 x 7/8	22 x 22			Art. 4.3	Art. 4.3
VPF25H58	10130343202	L-shape	without	5/8 x 5/8	16 x 16			Art. 4.3	Art. 4.3
VPF25H59	10130356102			7/8 x 7/8	22 x 22			Art. 4.3	Art. 4.3
VPF50H51	10130337702	straight	without	7/8 x 7/8	22 x 22	11,4	2,3	Art. 4.3	Art. 4.3
VPF50H52	10130347002			7/8 x 1 1/8	-			Art. 4.3	Art. 4.3
VPF50H53	10130356502			1 1/8 x 1 1/8	-			Art. 4.3	Art. 4.3
VPF50H54	10130342302			1 1/8 x 1 3/8	-			O.R	Art. 4.3
VPF50H56	10130347102			-	22 x 28			Art. 4.3	Art. 4.3
VPF50H57	10130347202			-	28 x 28			Art. 4.3	Art. 4.3
VPF50H58	10130342402			-	28 x 35			O.R	Art. 4.3
VPF 50H01	10130341102			straight	with			7/8 x 7/8	22 x 22
VPF 50H02	10130346702	7/8 x 1 1/8	-			Art. 4.3	Art. 4.3		
VPF 50H03	10130344802	1 1/8 x 1 1/8	-			Art. 4.3	Art. 4.3		
VPF50H04	10130342802	1 1/8 x 1 3/8	-			O.R	Art. 4.3		
VPF50H06	10130346802	-	22 x 28			Art. 4.3	Art. 4.3		
VPF50H07	10130346902	-	28 x 28			Art. 4.3	Art. 4.3		
VPF50H08	10130342502	-	28 x 35			O.R	Art. 4.3		
VPF100H51	10130347502	straight	without			1 1/8 x 1 1/8	-	14,4	4,0
VPF100H52	10130347602			1 1/8 x 1 3/8	-	Cat. II	Art. 4.3		
VPF100H53	10130342602			1 3/8 x 1 3/8	35 x 35	Cat. II	Art. 4.3		
VPF100H54	10130347702			-	28 x 28	Cat. II	Art. 4.3		
VPF100H55	10130347802			-	28 x 35	Cat. II	Art. 4.3		
VPF100H01	10130356802	straight	with	1 1/8 x 1 1/8	-	Cat. II	Art. 4.3		
VPF100H02	10130347302			1 1/8 x 1 3/8	-	Cat. II	Art. 4.3		
VPF100H03	10130356602			1 3/8 x 1 3/8	35 x 35	Cat. II	Art. 4.3		
VPF100H05	10130347402			-	28 x 35	Cat. II	Art. 4.3		
VPF100H06	10130343102			-	28 x 28	Cat. II	Art. 4.3		
VPF150H01	10130357002			L-shape	with	1 1/8 x 1 3/8	-	14,8	7,7
VPF150H02	10130356702	1 5/8 x 1 5/8	-			O.R	Art. 4.3		

**Note:** 1) Extent of delivery: valve body (reference number for connection cable see in the following pages)

2) Kv values valid for the flow direction inlet A to outlet B

O.R =On Request

## ELECTRONIC EXPANSION VALVE



## VPF 250 &amp; 400

MWP (Max Working Pressure) = 45 bar / 34 bar for the VPF400H10 model

MOPD (Max Operating Pressure Differential) A->B or B -> A = 35 bar / 21 bar for the VPF400H10 model

Model	Part Number <sup>1)</sup>	Valve Shape	Sight Glass	Connections ød ODF Inlet A x Outlet B		Seat ø [mm]	Kv <sup>2)</sup> m <sup>3</sup> /h	PED Cat. Fluid	
				[inch]	[mm]			Group 1	Group 2
VPF250H01	10130348002	straight	with	1 1/8 x 1 1/8	-	25	11,9	O.R	Art. 4.3
VPF250H02	10130342902			1 3/8 x 1 3/8	35 x 35			O.R	Art. 4.3
VPF250H03	10130356402			1 5/8 x 1 5/8	-			O.R	Art. 4.3
VPF250H04	10130348102			-	28 x 28			O.R	Art. 4.3
VPF250H05	10130341202			-	42 x 42			O.R	Art. 4.3
VPF400H01	10130344902	straight	with	1 5/8 x 1 5/8	-	33	17,0	O.R	Cat. I
VPF400H02	10130349002			-	42 x 42			O.R	Cat. I
VPF400H03	10130343302			2 1/8 x 2 1/8	54 x 54			O.R	Cat. I
VPF400H10	10130426002	angle	with	2 1/8 x 2 5/8	54 x 67	28,5	14,5	O.R	Cat. I

**Note:** 1) Extent of delivery: valve body (reference number for connection cable see in the following pages)

2) Kv values valid for the flow direction inlet A to outlet B

O.R = On Request

## COOLING CAPACITIES

Model	Steps Completely Open	Nominal Cooling Capacity <sup>1)</sup> [kW]												
		R134a	R407A	R407C	R407F	R404A R507A	R410A	R32	R290	R454B	R454C	R455A	R1234yf	R1234ze
VPF12.5	2600	54	67	71	76	50	82	126	77.4	101.2	66.1	72.8	41.9	43
VPF25	2600	116	144	152	162	108	176	262	160.8	210.1	137.2	151.1	87	92
VPF50	2600	221	275	290	310	206	336	527	323.1	422.3	275.7	303.6	173	175
VPF100	3500	319	397	418	447	297	484	748	458.9	599.7	391.6	431.3	248	253
VPF150	3800	574	714	752	804	534	871	N.C	N.C	N.C	N.C	N.C	N.C	455
VPF250	3800	892	1108	1168	1249	830	1353	N.C	N.C	N.C	N.C	N.C	N.C	706
VPF400	3800	1495	1857	1958	2094	1392	2269	N.C	N.C	N.C	N.C	N.C	N.C	1183
VPF400	2700	1301	1616	1703	1822	1211	N.C	N.C	N.C	N.C	N.C	N.C	N.C	1029

**Note:** 1) Nominal conditions : Condensing temperature = 38°C / Evaporating temperature = +4,4°C / liquid temperature = 37°C

2) For refrigerants with glide, performances are given in dew point

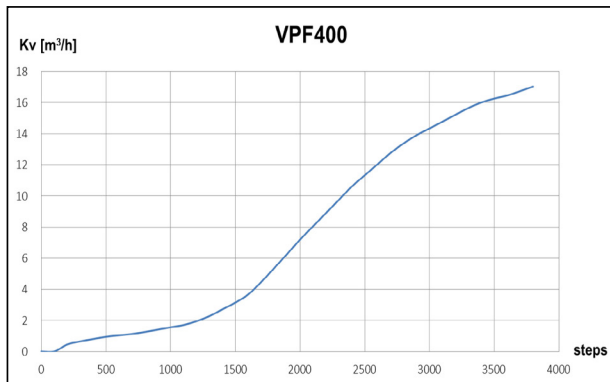
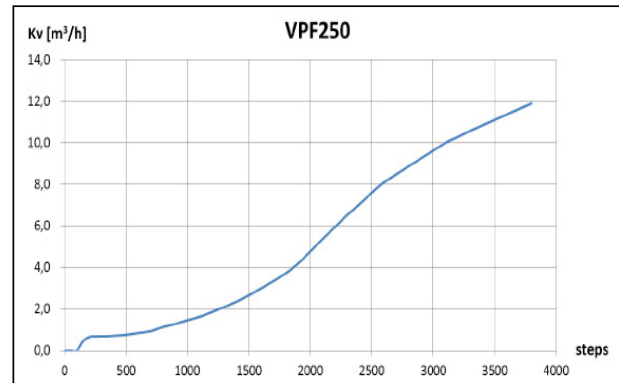
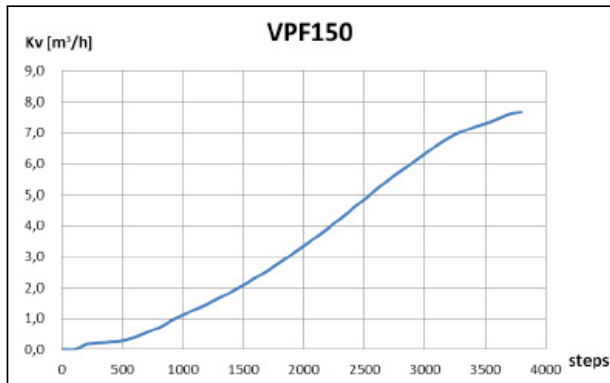
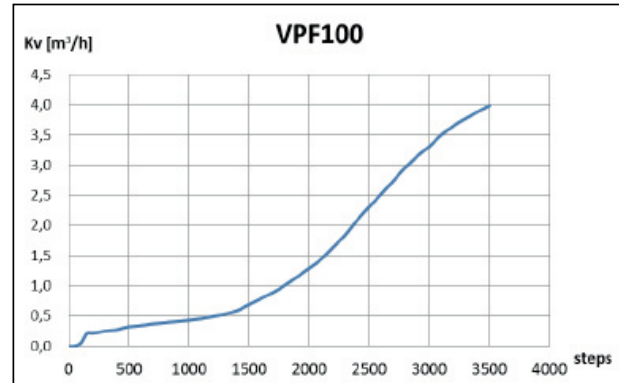
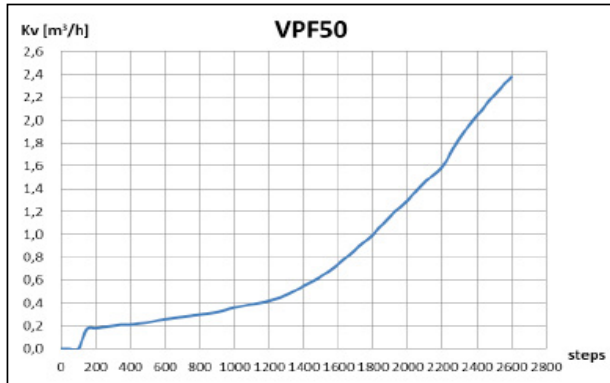
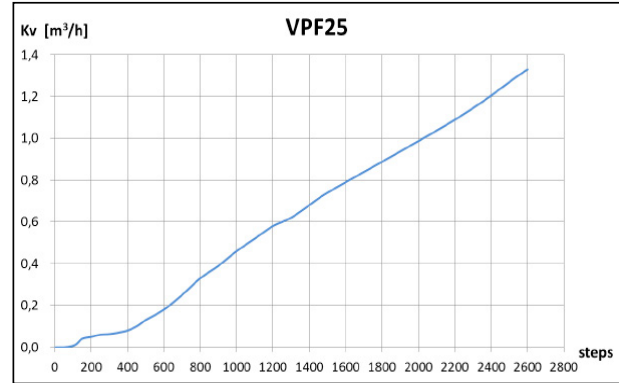
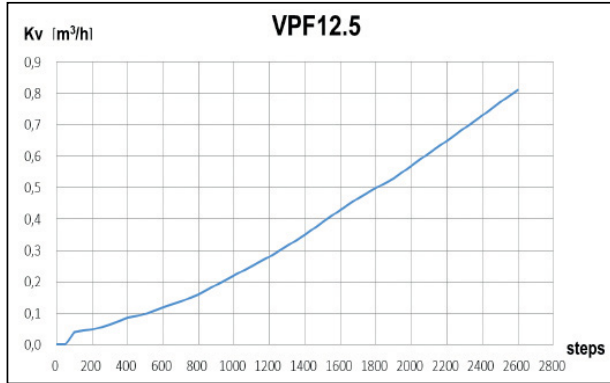
N.C = Not Certified

**ELECTRONIC EXPANSION VALVE**



**FLOW CHARACTERISTIC**

Add drawing for VPF12.5 + VPF 400 into catalogue

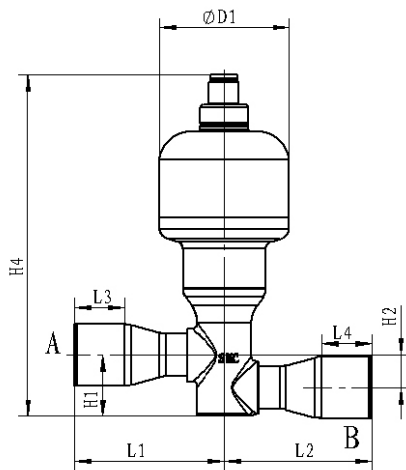


# ELECTRONIC EXPANSION VALVE

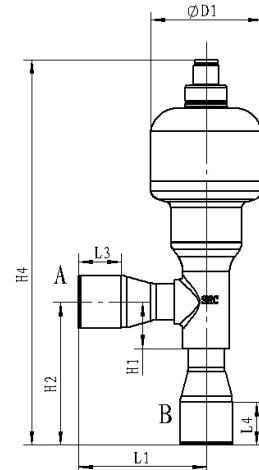


## DIMENSIONS

Model	Part Number	Dimensions [ mm ]									Weight (kg)
		L	L1	L2	L3	L4	H1	H2	H4	øD1	
VPF12.5H52	10130349502	120	60	60	13	13	25,6	13	136	52	0.5
VPF12.5H53	10130350202	120	60	60	20	20	25,6	13	136	52	
VPF12.5H58	10130342102	-	60	-	13	13	22,5	66,5	178	52	
VPF12.5H59	10130349802	-	60	-	20	20	22,5	66,5	178	52	
VPF25H52	10130349202	120	60	60	13	13	25,6	13	136	52	
VPF25H53	10130356202	120	60	60	20	20	25,6	13	136	52	
VPF25H58	10130343202	-	60	-	13	13	22,5	66,5	178	52	
VPF25H59	10130356102	-	60	-	20	20	22,5	66,5	178	52	



VPF12.5, VPF25, Straight version

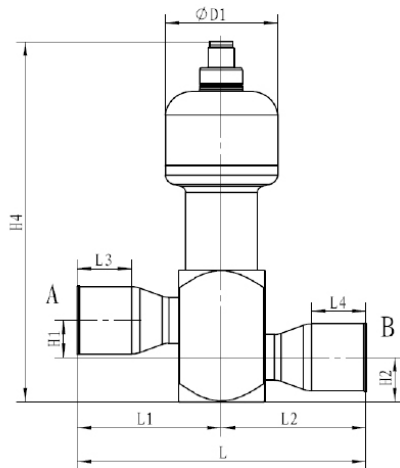


VPF12.5, VPF25, L-Shape version

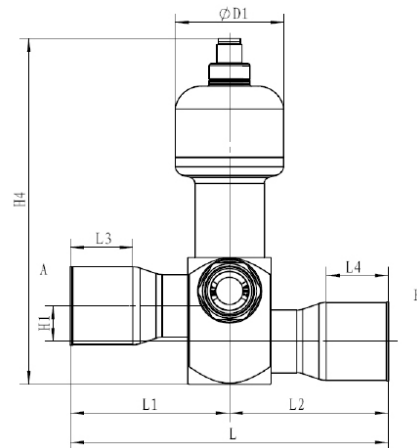
**ELECTRONIC EXPANSION VALVE**



Model	Part Number	Dimensions [ mm ]									Weight (kg)
		L	L1	L2	L3	L4	H1	H2	H4	øD1	
VPF50H51	10130337702	112	56	56	20	20	17	20,5	166	52	1.1
VPF50H52	10130347002	122	56	66	20	25	17	20,5	166	52	
VPF50H53	10130356502	132	66	66	25	25	17	20,5	166	52	
VPF50H54	10130342302	142	66	76	25	30	17	20,5	166	52	
VPF50H56	10130347102	122	56	66	20	25	17	20,5	166	52	
VPF50H57	10130347202	132	66	66	25	25	17	20,5	166	52	
VPF50H58	10130342402	142	66	76	25	30	17	20,5	166	52	
VPF50H01	10130341102	112	56	56	20	20	17	20,5	166	52	
VPF50H02	10130346702	122	56	66	20	25	17	20,5	166	52	
VPF50H03	10130344802	132	66	66	25	25	17	20,5	166	52	
VPF50H04	10130342802	142	66	76	25	30	17	20,5	166	52	
VPF50H06	10130346802	122	56	66	20	25	17	20,5	166	52	
VPF50H07	10130346902	132	66	66	25	25	17	20,5	166	52	
VPF50H08	10130342502	142	66	76	25	30	17	20,5	166	52	
VPF100H51	10130347502	132	66	66	25	25	17	20,5	166	52	
VPF100H52	10130347602	142	66	76	25	30	17	20,5	166	52	
VPF100H53	10130342602	152	76	76	30	30	17	20,5	166	52	
VPF100H54	10130347702	132	66	66	25	25	17	20,5	166	52	
VPF100H55	10130347802	142	66	76	25	30	17	20,5	166	52	
VPF100H01	10130356802	132	66	66	25	25	17	20,5	166	52	
VPF100H02	10130347302	142	66	76	25	30	17	20,5	166	52	
VPF100H03	10130356602	152	76	76	30	30	17	20,5	166	52	
VPF100H05	10130347402	142	66	76	25	30	17	20,5	166	52	
VPF100H06	10130343102	132	66	66	25	25	17	20,5	166	52	



VPF50, VPF100 without sight glass

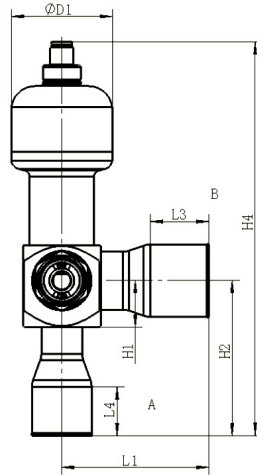


VPF50, VPF100 with sight glass

**ELECTRONIC EXPANSION VALVE**

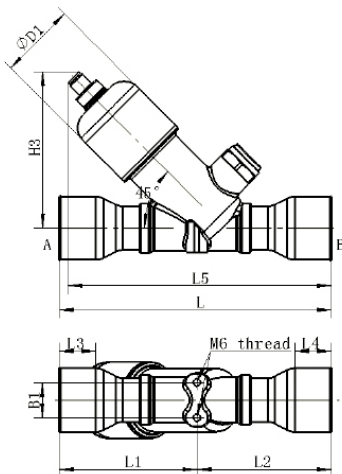


Model	Part Number	Dimensions [ mm ]									Weight (kg)
		L	L1	L2	L3	L4	H1	H2	H4	øD1	
VPF150H01	10130357002	-	76	-	30	25	24	70	195	52	1.0
VPF150H02	10130356702	-	76	-	25	25	33,5	89	212	52	

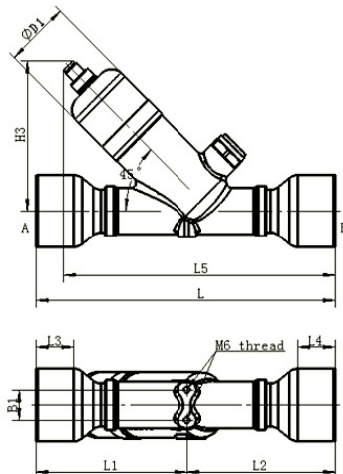


VPF150 with sight glass

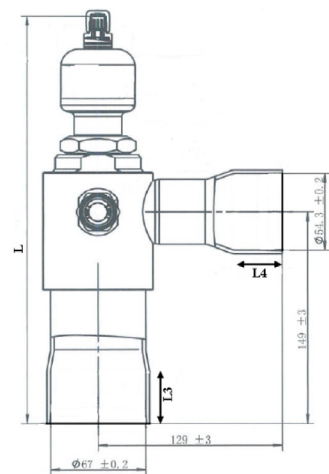
Model	Part Number	Dimensions [ mm ]									Weight (kg)
		L	L1	L2	L3	L4	H1	H2	H4	øD1	
VPF100H53	10130342602	166	84	82	25	25	170	107	24	52	1.1
VPF100H54	10130347702	186	94	92	30	30	180	107	24	52	
VPF100H55	10130347802	186	94	92	25	25	180	107	24	52	
VPF100H01	10130356802	166	84	82	25	25	170	107	24	52	
VPF100H02	10130347302	186	94	92	25	25	180	107	24	52	
VPF100H03	10130356602	203	104	99	30	30	198	118	24	52	
VPF100H05	10130347402	203	104	99	30	30	198	118	24	52	1.7
VPF100H06	10130343102	240	121	119	30	30	218	118	24	52	3.7
VPF400H10	10130426002	286	-	-	36	32	-	-	-	-	



VPF250 with sight glass



VPF400 with sight glass



VPF400H10