

**Applicable to the many  
diverse needs of chemical  
feeding**



# Applicable to the many diverse needs of chemical feeding



Iwaki's LK series metering pump consists of the worm gear type dual-cam driving section, which is compact yet rigid and reliable. With long and market-proven experience, Iwaki has employed state-of-the-art pump technologies in the development of an ideal type of chemical feeding pump which has advantages such as quality, performance, ease of operation and cost efficiency. The LK series is suitable for many chemical liquid feeding processes used in a wide range of fields, including water treatment, chemicals, fabrics, paper mill, food processing, and medicine.



LK-F57VCT



### Various types and materials

The LK series is available to suit each user's needs in accordance with feeding rate from small to large capacity. Also, material variation has been improved. Selection of the pump material most suitable for the applied liquid is possible with six different types available.



### High performance and application-oriented versatile design.

Discharge accuracy (stability) is within  $\pm 2\%$  FS. Reliability is considerably enhanced through efforts to improve the linearity of the stroke / discharge ratio as well as the dispersion between stroke.

Two types of joints flange and hose joints are standardized for the connections. (LK-F11 to LK-F47) The optimum piping system can be selected.

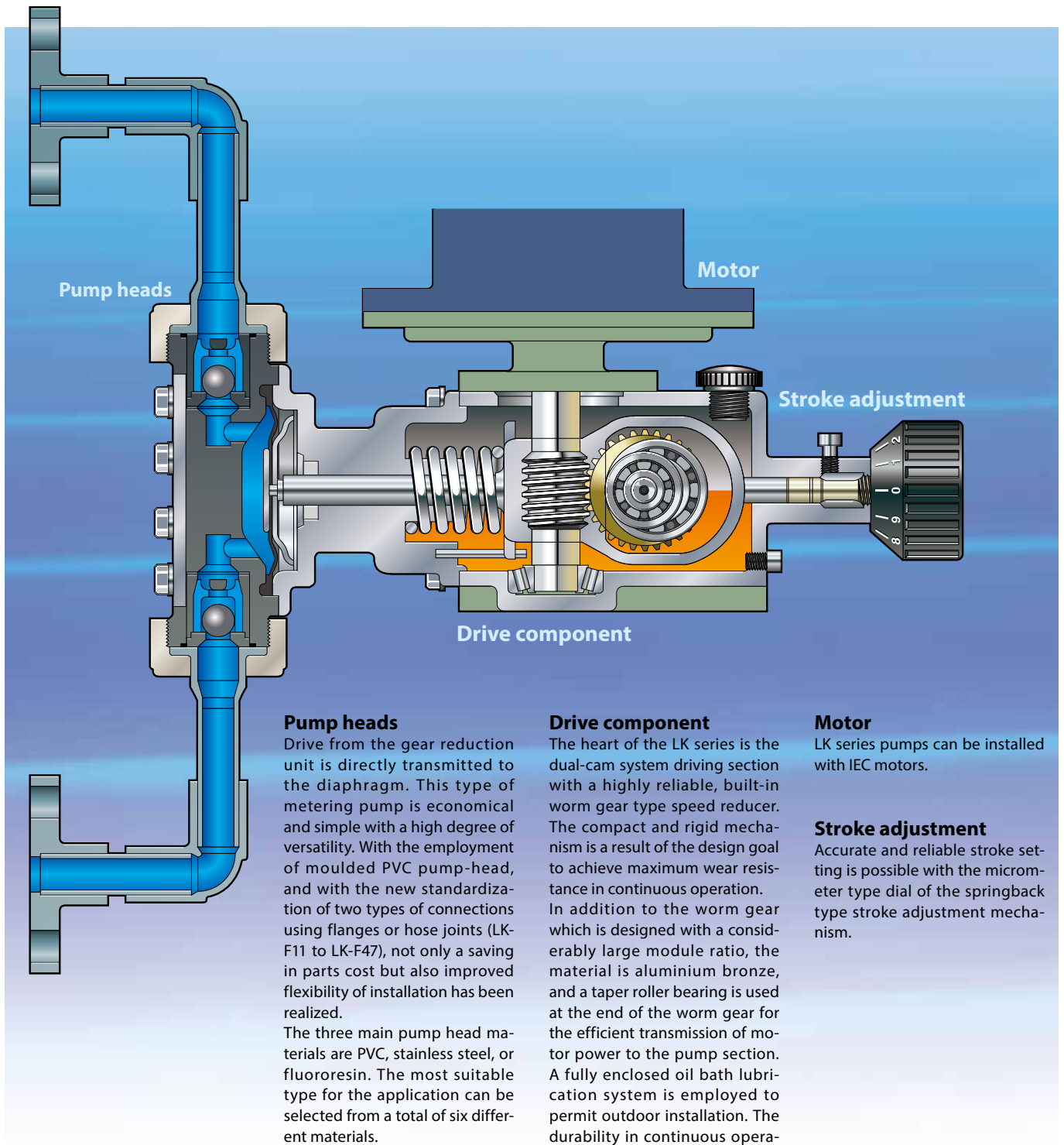


LK-F57S6T



LK-C86VCT

## Construction



### Pump heads

Drive from the gear reduction unit is directly transmitted to the diaphragm. This type of metering pump is economical and simple with a high degree of versatility. With the employment of moulded PVC pump-head, and with the new standardization of two types of connections using flanges or hose joints (LK-F11 to LK-F47), not only a saving in parts cost but also improved flexibility of installation has been realized.

The three main pump head materials are PVC, stainless steel, or fluoro-resin. The most suitable type for the application can be selected from a total of six different materials.

### Drive component

The heart of the LK series is the dual-cam system driving section with a highly reliable, built-in worm gear type speed reducer. The compact and rigid mechanism is a result of the design goal to achieve maximum wear resistance in continuous operation. In addition to the worm gear which is designed with a considerably large module ratio, the material is aluminium bronze, and a taper roller bearing is used at the end of the worm gear for the efficient transmission of motor power to the pump section. A fully enclosed oil bath lubrication system is employed to permit outdoor installation. The durability in continuous operation over a long period of time is also excellent.

### Motor

LK series pumps can be installed with IEC motors.

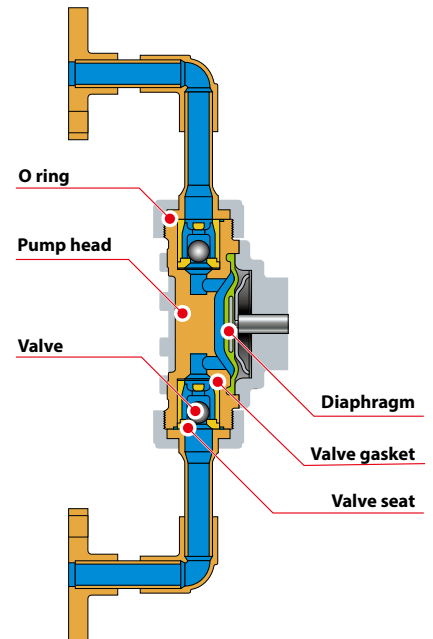
### Stroke adjustment

Accurate and reliable stroke setting is possible with the micrometer type dial of the springback type stroke adjustment mechanism.



# Materials

Type	VC	VCR	VH	VHR	VS4	S6	S4	
<b>Application</b>	Acids		Alkalines			Solvents		
<b>Applicable type</b>	LK-11 to 57 LK-A65 to C87	LK-A5	LK-11 to 57	LK-A5	LK-A65 to C87	11 to 57	65 to 87	
<b>Part</b>	<b>Pump head</b>	PVC				SUS316	SCS13	
	<b>Valve</b>	CE	HC		SUS304	HC	SUS304	
	<b>Valve seat</b>	Type 11 to 32	FKM	EPDM		-	SUS316	-
		Type 45 to 87	PVC				SUS316	SUS304
	<b>O ring</b>	FKM	EPDM		-	-	-	
	<b>Valve gasket</b>	PTFE						
<b>Diaphragm</b>	PTFE coated EPDM							
<b>Liquid temp. range *</b>	0 - 50 °C				0 - 80 °C			
* : Liquid temp. range is varied by handling chemical. Please contact us.								
<b>Typical chemicals</b>				<b>Material symbols</b>				
VC : Sulfuric acid, Hydrochloric acid, Sodium hypochlorite				SCS13 : Stainless-steel equivalent to SUS304				
VH, VS4 : Caustic soda, Coagulant, Calcium hydroxide (low density)				CE : Alumina Ceramic				
TC : Concentrated sulfuric acid, Hydrofluoric acid, Mixed acid				FKM : Fluoro rubber				
S6,S4 : Organic solvent, Paper making chemicals				HC : Hastelloy C276				



Note : VS type for viscosity and slurry is available on special request. Please contact us for details.  
For information of TC type, please contact IWAKI or nearest distributor.

# Identification

LK - F 32 VC T

1 2 3 4 5

**1 Series name**  
LK series : Mechanical driven diaphragm type

**2 Drive section**  
F : 0.25kW A : 0.37kW, B : 0.75kW, C : 1.5kW

**3 Type No.**  
First digit : Diaphragm (pump head size)  
Second digit : Speed-reducing gear ratio 1 : 1/30, 2 : 1/15, 5 : 1/30, 6 : 1/20, 7 : 1/15

**4 Material symbol**  
Refer to the material table (ex. VC, VH, VS4, TC, S6, S4)

**5 Connection**  
None : Flange ("JIS" or others), T : Flange ("DIN"), H : Hose

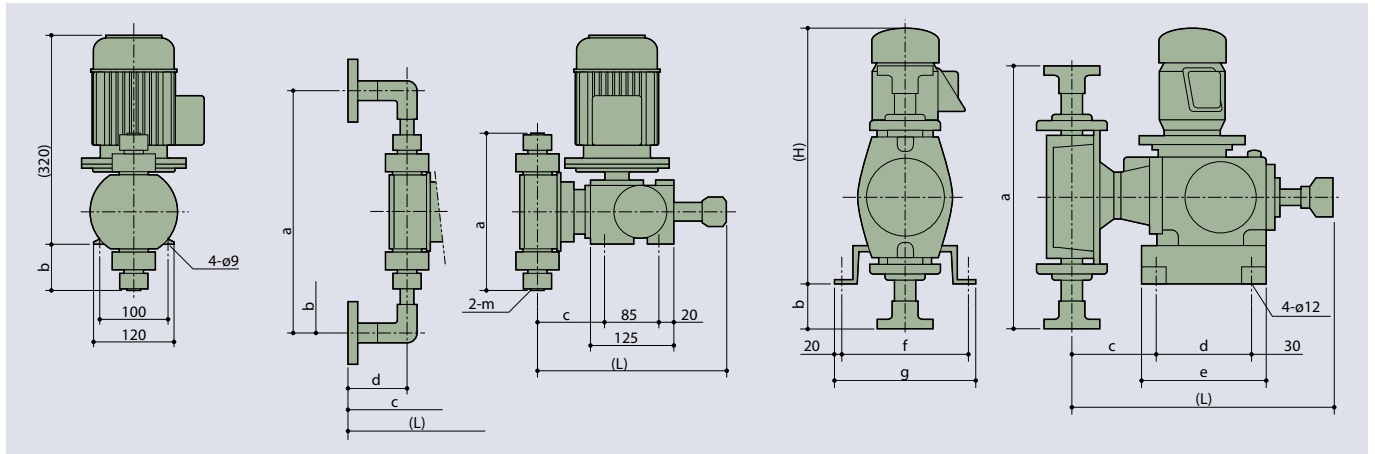
# Specifications

Model	Capacity L/min	Max. Pressure MPa		Stroke speed spm	Effective diaphragm dia. mm	Max. stroke length mm	Connection				Motor output (4 Pole)
							Flange		Hose		
							PVC, PVDF	SUS	PVC	PVDF	
LK-F11	0.02	1.0	1.5	48	22	1.5	DN15 (DIN PN10)	DN15 (DIN PN16)	ID4mm (or 5mm) OD9mm	-	0.25kW
F21	0.05	1.0	1.5	48	30	2.0					
F22	0.10	1.0	1.5	96	30	2.0					
F31	0.25	1.0	1.5	48	60	2.5					
F32	0.50	1.0	1.5	96	60	2.5					
F45	0.85	1.0	1.5	48	72	6.0					
F47	1.7	0.8	0.8	96	72	6.0					
F55	2.8	0.5	0.5	48	100	10					
F57	6.0	0.3	0.3	96	100	10	DN25 (DIN PN10)	-	-		
LK-A55	2.8	0.7	0.7	48	100	10	DN25 (DIN PN10)	-	-	0.37kW	
A57	6.0	0.5	0.5	96	100	10	DN40 (DIN PN10)	-	-		
A65	9.0	0.2	0.2	48	138	17.5	DN40 (DIN PN10)	-	-		
LK-B65	9.0	0.5	0.5	48	138	17.5	DN40 (DIN PN10)	-	-	0.75kW	
B75	13.3	0.5	0.5	48	150	20	DN50 (DIN PN10)	-	-		
LK-C76	20.0	0.5	0.5	72	150	20	DN50 (DIN PN10)	-	-	1.5kW	
C86	33.0	0.3	0.3	72	205	20	DN50 (DIN PN10)	-	-		
C87	45.0	0.3	0.3	96	205	20	DN65 (DIN PN10)	-	-		

Note: The capacity is the value when maximum discharge pressure is applied (with pure water at room temperature).  
The value may be larger than indicated in the table if the discharge pressure is lower.

- Standard accessory : A siphon preventing valve, strainer and 4m PVC tube are furnished to hose connection type of LK-F11 to LK-F45VCH or VHH. A base is furnished to all LK-A, LK-B and LK-C models.
- Frequency control is applicable. Please contact us for details.

# Dimensions in mm



Note: All illustrations above show "PVC" type. The suction flange made of SUS is straight.

## LK-F11 to LK-57

Model	Hose type					Flange type										
	PVC					PVC				SUS						
	L	a	b	c	m	L	a	b	c	d	L	a	b	c		
LK-1	275	146	23	95	Note	(363)	272	86	94	89	332	156	20	92		
2	164					(377)	290	95				337	166		25	
3	224	62	97			(370)	350	125	97			343	201		42	
4	243	72	99			(395)	369	135	99			399	270		80	101
5	-						350	125	114		97	399	368		110	111

Note: Connection size LK-1, LK-2  $\phi 4 \times \phi 9$  and LK-3, LK-4  $\phi 12 \times \phi 18$ .

For information of TC type, please contact IWAKI or nearest distributor.

Dimensions and configurations may be changed without prior notice for the purpose of product improvement. Be sure to carry out installation work with the most recent and detailed drawings which are available upon request. The dimensions may differ with the type of motor installed.

## LK-A55 to LK-C87

Model	PVC				SUS				Note				
	L	a	b	c	L	a	b	c	H	d	e	f	g
LK-A5	476	325	-29	111	473	320	-32	108	520	180	240	260	300
A6	523		108	154	533	431	24	164					
B6	595		164	605		6	174						
B7		90	167	610	465	23	178	548					
C7	599	600						615					
C8	605	647	114	173	609	633	107	177					

Note: These dimensions are common between PVC pump head and SUS pump head. For information of TC type, please contact IWAKI or nearest distributor.

## Points to be observed in pump installation and piping

Iwaki metering pump LK series are reciprocating pumps employing the eccentric cam system. Reciprocating pumps generate pulsation in the suction and discharge piping. Special consideration, (different from the ordinary centrifugal pumps), should be given to this point when planning the pump installation and piping.

### • Prevention of pipe vibration

**Discharge side inertial resistance  $P_{id} < 0.1 \text{ MPa}$**   
 •  $P_{id}$  : Inertial resistance on discharge side

Inertial resistance means the pulsated impact force generated by the flow just upon entering discharge stroke. It is a phenomenon particular to a reciprocating pump which is generated as a result of the sudden application of acceleration to the liquid in the discharge piping.

The condition " $P_{id} < 0.1 \text{ MPa}$ " is given above as an approximate standard. If  $P_{id}$  becomes  $0.1 \text{ MPa}$  or higher, vibration on the pipe is generated. So measures should be taken to cope with the influence of vibration on the pump, too.

#### Measures

1. Install pulsation prevention device (air chamber).
2. Enlarge the diameter and shorten the length of the discharge piping.

### • Prevention of overfeeding

**Pump differential pressure  $>$  Inertial resistance  $P_i$**   
 • The larger one of the suction side or the discharge side

Overfeeding means excessive flow of the liquid due to abnormal functioning of the check valve caused by pulsation of the liquid in the piping. Check carefully in case the differential pressure is low and in case the piping is too long even with the differential pressure value at  $0.03 \text{ MPa}$ .

#### Measures

1. Install air chamber.
2. Install back pressure valve

### • Prevention of suction failure

**$NPSH_a > NPSH_r$**   
 **$NPSH_a = P_a - P_v \pm P_{fs} - P_{is} \text{ * MPa}$**   
 \*Or  $P_{fs}$  : whichever is the larger.  
 (NPSH : Net positive suction head)

If  $NPSH_a$  is not sufficient, the pump may be damaged by the flow-break or cavitation generated under such conditions.

- $NPSH_a$  : Absolute NPSH (MPa)
- $NPSH_r$  : Required NPSH (value particular to the pump) (MPa)
- $P_a$  : Absolute pressure onto the tank liquid surface (MPa)
- $P_v$  : Liquid vapour pressure (MPa)
- $P_{fs}$  : Pressure caused by the height of the suction side (MPa)  
 (Flooded suction : +, Negative suction : -)
- $P_{is}$  : Inertial resistance on the suction side (MPa)
- $P_{fs}$  : Piping resistance on the suction side (MPa)

# Optional accessories

## Siphon preventing valve



<b>Model</b>	<b>BVC-1P□L-□H</b>	<b>BVC-1P□-□H</b>
<b>Applicable capacity</b>	Up to 1L/min	
<b>Setting pressure</b>	0.05 - 0.2MPa	0.2 - 0.8MPa
<b>Material</b>	PVC, FKM (EPDM)	
<b>Connection mm (Applicable tube diameter)</b>	<b>Inlet</b>	4 x 9, 12 x 18
	<b>Outlet</b>	R3/8 and R1/2

□ : Symbol for material of O-ring ("V" for FKM, "E" for EPDM)

## Air chamber



PVC, A Type

PVC, N Type

SUS, A Type

SUS, A Type

Body	Model	Applicable capacity L	Setting pressure MPa	Connection Nominal size DIN PN 10 flange	Weight kg	
PVC	A-1V□-S	1.0	0.5	Common for 15A - 25A	2	
	A-2V□-S	2.0			2.5	
	A-5V□-S	5.0			4.5	
	N40A-10V(2)-FS*	10			40A	16
	N50A-20V(2)-FS*	20			50A	26
	N65A-30V(2)-FS*	30	65A	49		
SUS316	A-05S6-15S	0.5	0.9	15A	3	
	A-15S6(-)S	1.5		15A, 25A	5	
	A-5S6(-)S	5.0		25A, 40A	12	
	A-10S6(-)S	10		25A, 40A, 50A	15	
	A-20S6(-)S	20		40A, 50A, 65A	29	
	A-36S6(-)S	36	65A	55		

□ : Materials of O-rings: "CR" for 10V / 20V and "FKM" for 10V2 / 20V2

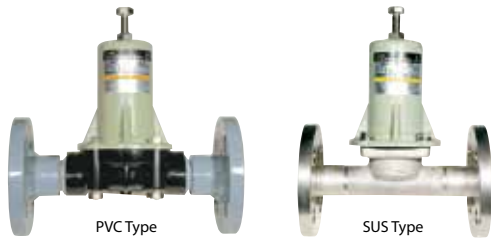
□ : Symbol for material of O-ring ("V" for FKM, "E" for EPDM)

( ) : Symbol for connection (10, 15, 20, 25, 40, 50 or 65)

Note1: The weight is the value of the product only. (The weight of liquid applied is not included.)

Note2: Rigid PVC chamber may deteriorate with ultraviolet ray or the applied chemical liquid over a long period of time. The chamber should be replaced every three years to guarantee safety.

## Relief valve and back pressure valve



PVC Type

SUS Type

### List of relief valve

Body	Model	Max. capacity L/min	Setting pressure MPa	Connection Nominal size DIN PN 10 flange, unless otherwise specified	Weight kg
PVC	RV-1P□-4H	1.0	0.3 - 0.8	ø4 x ø9 PVC Hose	0.2
	RV-1P□-12H	1.0	0.3 - 0.8	ø12 x ø18 PVC Hose	0.2
	RV-1P□-15S	1.0	0.3 - 0.8	15	0.5
	RV-1P□B-15S	1.0	0.8 - 1.0	15	0.5
	RV-3P-15S	3.0	0.3 - 1.0	15	0.6
	RV-3P-25S	3.0	0.3 - 1.0	25	0.9
	RV-3P□-12H	3.0	0.3 - 1.0	ø12 x ø18 PVC Hose	0.4
	RV-7V-25S	7.5	0.3 - 0.8	25	3.5
	RV-7VB-25S	7.5	0.8 - 1.0	25	3.5
	RV-25V-25S	25	0.3 - 0.8	25	4.0
	RV-25V-40S	25	0.3 - 0.8	40	4.0
	N50RV-5V-F5	45	0.15 - 0.5	50	18
	N50RV-5V2-F5	45	0.15 - 0.5	50	18
	N65-50RV-5V-F5	65	0.15 - 0.5	65	18
N65-50RV-5V2-F5	65	0.15 - 0.5	65	18	
SUS	RV-2S6-15S	2.0	0.3 - 0.8	15	3.5
	RV-2S6B-15S	2.0	0.8 - 1.5	15	3.5
	RV-7S6-25S	7.5	0.3 - 0.8	25	6
	RV-7S6B-25S	7.5	0.8 - 1.5	25	6
	RV-25S6-25S	25	0.3 - 0.8	25	7.0
	RV-25S6B-25S	25	0.8 - 1.0	25	7.0
	RV-25S6-40S	25	0.3 - 0.8	40	7.5
	RV-25S6B-40S	25	0.8 - 1.0	40	7.5
	N50RV-5S6-F5	75	0.15 - 0.5	50	29
	N65RV-5S6-F5	120	0.15 - 0.5	65	42

□ : Symbol for material of O-ring ("V" for FKM, "E" for EPDM)

O-ring material of N type is FKM for "5V2".

Note : Material for diaphragm is PTFE except RV-1P and N type.

O-ring material for "RV-1P" and "N" type is same as diaphragm material.

### List of back pressure valve

Body	Model	Flow range L/min	Setting pressure MPa	Connection Nominal size DIN PN 10 flange, unless otherwise specified	Weight kg
PVC	BV-1P□-4H	0.005 - 1.0	0.2 - 0.8	ø4 x ø9 PVC Hose	0.2
	BV-1P□-12H	0.005 - 1.0	0.2 - 0.8	ø12 x ø18 PVC Hose	0.2
	BV-1P□-15S	0.005 - 1.0	0.2 - 0.8	15	0.5
	BV-1P□L-4H	0.005 - 1.0	0.05 - 0.2	ø4 x ø9 PVC Hose	0.2
	BV-1P□L-12H	0.005 - 1.0	0.05 - 0.2	ø12 x ø18 PVC Hose	0.2
	BV-1P□L-15S	0.005 - 1.0	0.05 - 0.2	15	0.5
	BV-3P□-12H	0.03 - 3.0	0.1 - 0.8	ø12 x ø18 PVC Hose	0.4
	BV-3N□-12H	0.005 - 3.0	0.1 - 0.3	ø12 x ø18 PVC Hose	0.4
	BV-3P-15S	0.03 - 3.0	0.1 - 0.8	15	0.6
	BV-3P-25S	0.03 - 3.0	0.1 - 0.8	25	0.9
	BV-7V-25S	0.2 - 7.5	0.05 - 0.8	25	3.5
	BV-25V-25S	2 - 25	0.1 - 0.8	25	4.0
	BV-25V-40S	2 - 25	0.1 - 0.8	40	4.0
	N50BV-5V-F5	2.5 - 50	0.15 - 0.5	50	20
	N50BV-5V2-F5	2.5 - 50	0.15 - 0.5	50	20
	N65-50BV-5V-F5	5 - 70	0.15 - 0.5	65	20
	N65-50BV-5V2-F5	5 - 70	0.15 - 0.5	65	20
	SUS	BV-2S6-15S	0.02 - 2.0	0.05 - 0.8	15
BV-7S6-25S		0.2 - 7.5	0.05 - 0.8	25	6
BV-25S6-25S		2 - 25	0.1 - 0.8	25	7.0
BV-25S6-40S		2 - 25	0.1 - 0.8	40	7.5
N50BV-5S6-F5		2.5 - 80	0.15 - 0.5	50	29
N65BV-5S6-F5		5 - 120	0.15 - 0.5	65	42

□ : Symbol for material of O-ring ("V" for FKM, "E" for EPDM)

O-ring material of N type is CR for "5V" and FKM for "5V2".


Note : Material for diaphragm is PTFE except BV-1P and N type.


O-ring material for "BV-1P" and "N" type is same as diaphragm material.

**IWAKI CO., LTD.** 6-6 Kanda-Sudacho 2-chome Chiyoda-ku Tokyo 101-8558 Japan TEL : (81)3 3254 2935 FAX : 3 3252 8892 IWAKI has global net work. Please find your distributor location at [www.iwakipumps.jp](http://www.iwakipumps.jp)

European Headquarter	<b>IWAKI Europe GmbH</b>	TEL: (49)2154 9254 0	FAX: (49)2154 9254 48	U.S.A.	<b>IWAKI America Inc.</b>	TEL: (1)508 429 1440	FAX: (1)508 429 1386
Germany	<b>IWAKI Europe GmbH</b>	TEL: (49)2154 9254 50	FAX: (49)2154 9254 55	Brazil	<b>IWAKI Do Brazil Comercio De Bombas Hidraulicas LTDA.</b>	TEL: (55)19 3244 5900	FAX: (55)19 3244 5900
The Netherlands (Netherlands Branch)	<b>IWAKI Europe GmbH</b>	TEL: (31)74 2420011	FAX: (49)2154 9254 48	China (Shanghai)	<b>IWAKI Pumps (Shanghai) Co., Ltd.</b>	TEL: (86)21 6272 7502	FAX: (86)21 6272 6929
Italy (Italy Branch)	<b>IWAKI Europe GmbH</b>	TEL: (39)0445 561219	FAX: (39)0445 569088	China (Hong Kong)	<b>IWAKI Pumps Co., Ltd.</b>	TEL: (852)2607 1168	FAX: (852)2607 1000
Spain (Spain Branch)	<b>IWAKI Europe GmbH</b>	TEL: (34)934 741 638	FAX: (34)934 741 638	China (Guangzhou)	<b>GFTZ IWAKI Engineering &amp; Trading Co., Ltd.</b>	TEL: (86)20 84350603	FAX: (86)20 84359181
Poland (East Europe Branch)	<b>IWAKI Europe GmbH</b>	TEL: (48)12 347 0755	FAX: (48)12 347 0900	Singapore	<b>IWAKI Singapore Pte Ltd.</b>	TEL: (65)6316 2028	FAX: (65)6316 3221
Denmark	<b>IWAKI Nordic A/S</b>	TEL: (45)48 242345		Indonesia (Indonesia Office)	<b>IWAKI Singapore Pte Ltd.</b>	TEL: (62)21 6906606	FAX: (62) 21 6906612
Finland	<b>IWAKI Suomi Oy</b>	TEL: (358)10 201 0490		Malaysia	<b>IWAKim SDN. BHD.</b>	TEL: (60)3 7803 8807	FAX: (60)3 7803 4800
Norway	<b>IWAKI Norge AS</b>	TEL: (47)23 38 49 00		Korea	<b>IWAKI Korea Co.,Ltd.</b>	TEL: (82)2 6238 4800	FAX: (82)2 6238 4801
Sweden	<b>IWAKI Sverige AB</b>	TEL: (46)8 511 72900		Taiwan	<b>IWAKI Pumps Taiwan Co., Ltd.</b>	TEL: (886)2 8227 6900	FAX: (886)2 8227 6818
Belgium	<b>IWAKI Belgium N.V.</b>	TEL: (32)13 670200	FAX: (32)13 672030	Thailand	<b>IWAKI (Thailand) Co.,Ltd.</b>	TEL: (66)2 322 2471	FAX: (66)2 322 2477
France	<b>IWAKI France S.A.</b>	TEL: (33)1 69 63 33 70	FAX: (33)1 64 49 92 73	Australia	<b>IWAKI Pumps Australia Pty Ltd.</b>	TEL: (61)2 9899 2411	FAX: (61)2 9899 2421

( ) Country codes

 **Caution for safety use:** Before use of pump, read instruction manual carefully to use the product correctly. Actual pumps may differ from the photos. Specifications and dimensions are subject to change without prior notice. For further details please contact us.

 **Legal attention related to export.** Our products and/or parts of products fall in the category of goods contained in control list of international regime for export control. Please be reminded that export license could be required when products are exported due to export control regulations of countries. The posting and copying from this catalogue without permission is not accepted firmly.