IWAKI

Metering pumps

LK

Applicable to the many diverse needs of chemical feeding

The Heart of Industry

Applicable to the many diverse needs of chemical feeding

IWAKI's systematic LK series metering pump consists of the worm gear type dual-cam driving section, which is compact yet rigid and reliable, and wet-end materials of which there are seven types for various applications.
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-32VC LK-32VCH LK-32VCU LK-21S6

Various types and materials

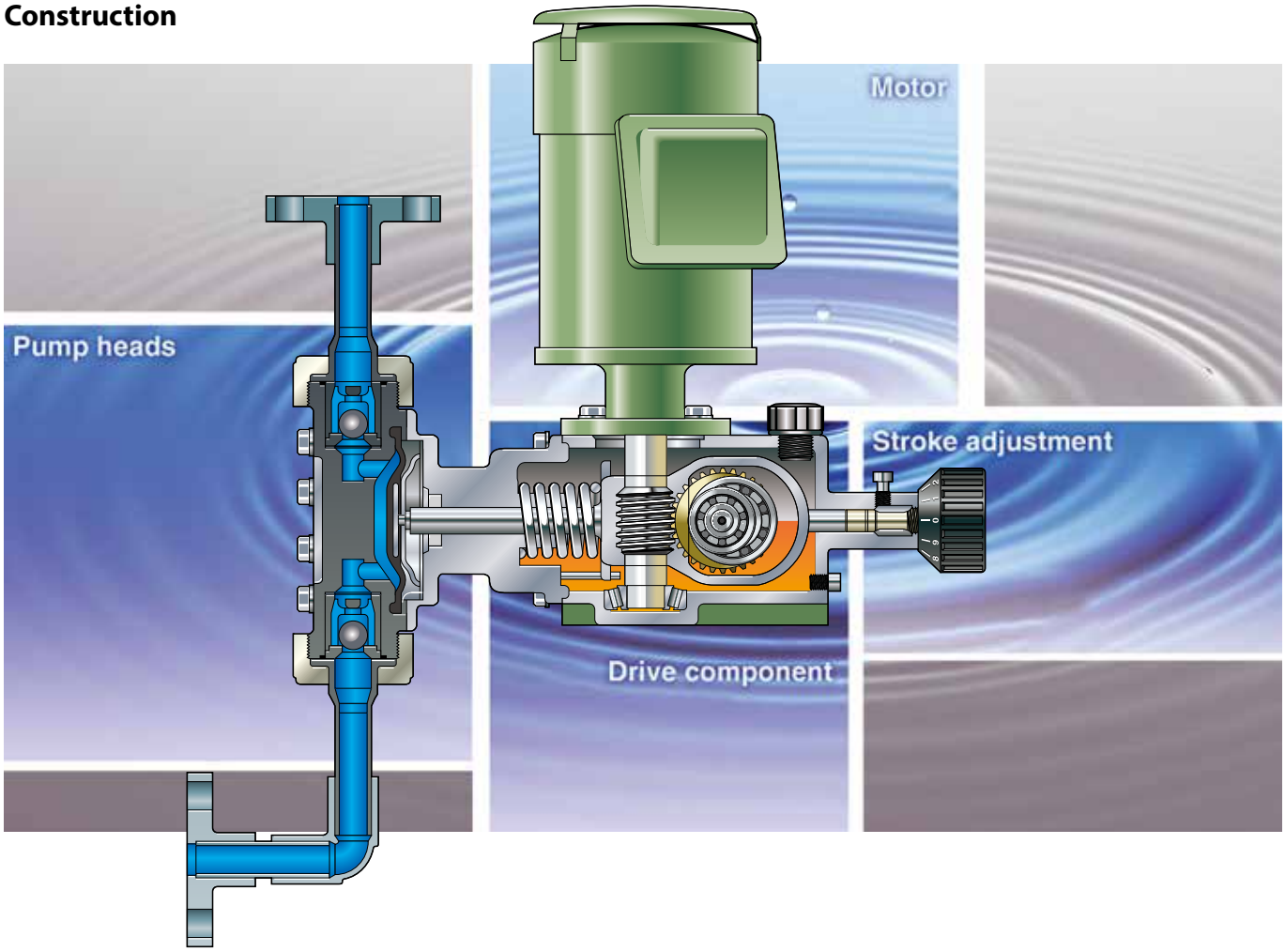
Nine types (IWAKI original motor) and eight general purpose motor types are available to suit each user's needs in accordance with feeding rate from small to large capacity. Also, material variation has been improved. Selection of the pump material most suitable for the applied liquid is possible with seven different types available.

High performance and application-oriented versatile design

Discharge accuracy (stability) is within ±2% FS. Reliability is considerably enhanced through efforts to improve the linearity of the stroke / discharge ratio as well as the dispersion between stroke.
Three types of joints flange, hose and union joints are standardized for the connections. The optimum piping system can be selected. (Only with 0.2kW IWAKI original motor type)

LK-B75S4 LK-B65VC LK-C86VC

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 standardisation of three types of connections using flanges, hose, or union joints (0.2kW type), 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 fluororesin. The most suitable type for the application can be selected from a total of seven different materials. A wide range of chemicals, such as acid, alkali, organic solvent, slurry, and high-temperature liquids, is covered by the series.

• Please contact us for Model PVDF.

Drive component

The head 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

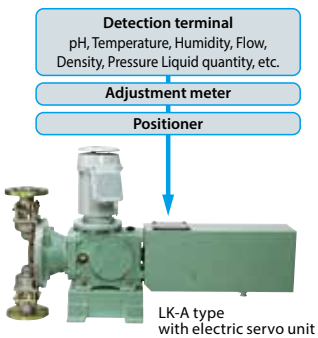
All of the standard models employ totally enclosed outdoor-use motors which are vertically mounted to save space. The 0.2kW type is an IWAKI original motor, which is installed in the small models of the LK series. Besides the standard 200V, other voltages are available. The LK series pumps of LK-F, LK-A, LK-B, and LK-C can be installed with general-purpose motors, including those for different voltage levels and explosion-proof specifications. Body configurations of the LK series are available in five types. They are an IWAKI original motor type frame and the general-purpose motor type frames, F, A, B and C.

Stroke adjustment

Accurate and reliable stroke setting is possible with the micrometer type dial of the springback type stroke adjustment mechanism. An electric servo unit for automatic process control, such as flow, pressure, pH, temperature, and concentration can be arranged according to the user's needs.

Electric servo system Specifications

• Input signal :
DC4 - 20mA (or 1 - 5V)
• Power source :
AC100V 50/60Hz; other voltage types available
Voltage fluctuation 10%
• Motor output :
LK (0.2kW) 15W
LK-A, B, C 40W



LK-A type
with electric servo unit

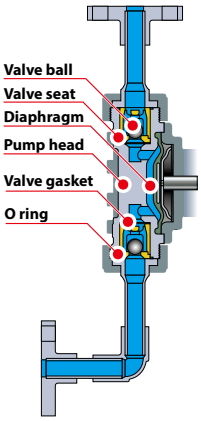
Specifications

Model	Capacity Note1 L/min		Max. Pressure Note2 MPa		Stroke speed spm		Effective diaphragm dia. ømm	Max. Stroke length mm	Connection Note3			Motor Note4 output kW	Approx. Note5 net weight kg	
									Flange (JIN10K)	Union	Hose ømm			
	50Hz	60Hz	PVC	SUS	50Hz	60Hz							PVC	SUS
LK-11	0.020	0.024	1.0	1.5	48	58	22	1.5	15A (PVC) JIS16K (SUS)	VP16 (PVC)	4 x 9 (PVC)	0.2 (Three phase) or 0.25 (Single phase)	12	14
21	0.050	0.060					30	2.0						
22	0.10	0.12			96	116								
31	0.25	0.30			48	58	60	2.5			12 x 18 (PVC)		12	17
32	0.50	0.60			96	116								
45	0.85	1.00			48	58	72	6.0					14	21
47	1.7	2.0	0.8		96	116								
55	2.8	3.3	0.5		48	58	100	10	25A	VP25 (PVC)	-		16	26
57	6.0	7.2	0.3		96	116								
LK-A55	2.8	3.3	1.0		48	58	100	10	25A	-	-	0.4	63	80
A57	6.0	7.2	0.7		96	116								
A65	9.0	10.8	0.3		48	58	138	17.5	40A				79	73
B65	9.0	10.8	0.5	0.7	48	58	138	17.5	40A	-	-	0.75	100	100
B75	13.3	16.0	0.5				150	20	50A				105	105
C76	20	24	0.5		72	86	150	20	50A	-	-	1.5	120	120
C86	33	40	0.3				205		65A				140	155
C87	45	54			96	116								

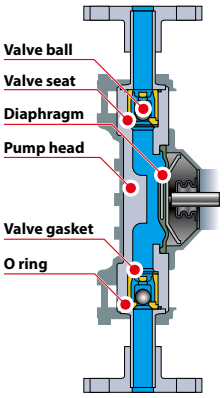
Note 1: The capacity is the value when maximum discharge pressure is applied (with pure water at room temperature). The value may be lager than indicated in the table if the discharge pressure is lower. As for the liquid conditions pumped and performance. Refer to the technical information of this catalogue.
Note 2: The maximum discharge pressure of LK-A models are restricted to 0.7MPa for A55, 0.5MPa for A57 and 0.2MPa for A65 when IEC standard 0.37kW motor is adopted.
Note 3: VS type connection is different in some models from standard.
Note 4: The LK type is equipped with IWAKI original flange motor. The standard is 200V 3-phase, totally enclosed fan-cooled outdoor type. Other motors for different voltages, explosion-proof motors, or single-phase motors are available. LK-F, LK-A, B and C are to be installed with general purpose flange motors.
Note 5: The weight is the value when installed with a totally enclosed fan-cooled outdoor motor.
• Standard accessory : A siphon preventing valve, strainer and 4m PVC tube are furnished to hose connection type of simplex LK-11 to LK-45 VH or VC A base is furnished to all LK-A, LK-B and LK-C models. For LK-(F) 11 to LK-(F) 57 models, the base may be supplied optionally.
• Coating color : F37-60D (JPMA) (However, the motors for LK-F/A/B/C use the maker's standard color.)
• Duplex type : LK-11 to 47 type include duplex types with a special-use integrated drive section.

Materials

LK-11 to LK-57 (Flange type)



LK-A55 to LK-C87 (Flange type)



Type	VC	VCR	V6	VH	VHR	VS4	VS	VSR	S6	S4
Application	Acid		Alkali				Viscosity and Slurry		Solvent	
Applicable type	11 to 57 A65 to C87	A5	31 to 47	11 to 22 55 and 57	A5	A65 to C87	11 to 57 A65 to C87	A5	11 to A57	A65 to C87
1: Pump head	PVC								SUS316	SCS13
2: Valve ball	CE		SUS316 equivalent	HC		SUS304 Note1		HC	HC Note2	SUS304
3: Valve seat Type11 to 32	FKM		EPDM			PVC	SUS304		SUS316	SUS304
3: Valve seat Type45 to 87	PVC						SUS304		SUS316	SUS304
4: O ring	FKM		EPDM						-	
5: Valve gasket	PTFE									
6: Diaphragm	PTFE + EPDM									

Typical chemical
VC : Sulfuric acid, Hydrochloric acid, Sodium hypochlorite
V6, VH, VS4 : Caustic soda, Coagulant. Calcium hydroxide (low density)
VS : Calcium hydroxide, High-molecular coagulant
S6, S4 : Organic solvent, Paper making chemicals

Material symbols
SCS13 : Stainless-cast steel equivalent to SUS304
CE : Alumina Ceramic
FKM : Fluoro rubber
EPDM : Ethylene propylene rubber
HC : HASTELLOY® C276 equivalent

Note 1: Materials of the VS type valve balls are HC for 11 to 22, 55 and 57 type, and SUS316 equivalent for 31 to 47 type. As for the connection, which is different in some models from standard.
Note 2: Materials of the S6 type valve balls are SUS316 equivalent for 31 to 47 type.
• A stainless steel pump SE type for latex emulsion is available (LK-31 to 57 type).
• Material PVDF is also available. Please contact us for details.

Pump identification

2	LK	-	A	65	VC	H	-	04	F	E	S
1	2		3	4	5	6		7	8	9	10

1 Simplex / Duplex
LK (IWAKI original motor type)
None : Simplex
2 : Duplex (special drive section:LK-11 to 47)
LK-F/A/B/C (JEM or IEC motor type)
None : Simplex

2 Series name
L series : Mechanical driven diaphragm type

3 Drive section
LK (IWAKI original motor type)
None : IWAKI original motor type 0.2kW / 0.25kW
LK-F/A/B/C (JEM or IEC motor type)
F : 0.25 or 0.37 kW (for IEC), 0.4kW
A : 0.4kW
B : 0.75kW
C : 1.5kW

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

5 Material symbol
Refer to the material table
(Ex. **VC, V6, VH, VS4, VS, S6, S4**)

6 Joint
None : Flange
U : union (LK-11 to LK-57)
H : hose (LK-11 to LK-47)

7 Motor output
LK (IWAKI original motor type)
02 : 0.2kW, **03** : 0.25kW (single phase)
LK-F/A/B/C (JEM or IEC motor type)
04 : 0.4kW, **07** : 0.75kW, **15** : 1.5kW

8 Special motor
LK-F/A/B/C (JEM or IEC motor type)
F : Inverter motor
(Note : General-purpose motors have no explosion-proof symbol.)

9 Servo unit
E : With electric servo unit

10 Special symbol
S : Special specification other than standard.

• This table dose not introduce the standard combination. Please contact us for details.
• In case of pump without motor installation, the above item 7 and 8 are not indicated.

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 Pid < 0.1MPa
• Pid : 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 "Pid < 0.1MPa is given above as an approximate standard. If Pid becomes 0.1MPa 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 Pi
• 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 0.03MPa.

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

• Prevention of suction failure

NPSHa > NPSHr
NPSHa = Pa - Pv ± Phs - Pis * MPa
***Or Pfs : whichever is the larger.**
(NPSH : Net positive suction head)

If NPSHa is insufficient, caution should be exercised because draining or cavitation occurs, which may result in poor performance or pump damage.

- NPSHa : Absolute NPSH (MPa)
- NPSHr : Required NPSH (value particular to the pump) (MPa)
- Pa : Absolute pressure onto the tank liquid surface (MPa)
- PV : Liquid vapour pressure (MPa)
- Phs : Pressure caused by the height of the suction side (MPa)
  (Flooded suction : +, Negative suction : –)
- Pis Inertial resistance on the suction side (MPa)
- Pfs Piping resistance on the suction side (MPa)

LK series performance

Model		Viscosity Note3 mPa·s		Slurry(Calcium hydroxide) Note3 wt%		NPSHr MPaA	Inertial resistance Note1 MPa/1m		Applicable chambers Note2 (0.3MPa)	
		PVC	SUS	PVC	SUS		50Hz	60Hz	PVC	SUS
LK-	11	VC:300 VH:500	500	—		0.07	0.001	0.001	1L	0.5L
	21									
	22									
	31		1000	5	15					
	32					0.08	0.003	0.004		
	45			15		0.07	0.002	0.003	2L	1.5L
	47						0.010	0.013		
	55					0.08	0.003	0.004	5L	5L
	57						0.010	0.015		
LK-A	55	500	1000	15		0.08	0.003	0.004	5L	5L
	57						0.010	0.015		
	65						0.004	0.005	10L	10L
LK-B	65	500	1000	15		0.08	0.004	0.005	10L	10L
	75						0.003		20L	20L
LK-C	76	500	1000	15		0.08	0.007	0.009	20L	20L
	86							0.010	20L	20L
	87						0.013	0.020	20L	36L

• Discharge capacity may reduce when sending viscous/slurry liquid. • Dosing flow fluctuation: ±2%FS • Linearity deviation: ±3%FS
• Permissible liquid temperature PVC: 0 - 50˚C, SUS: 0 - 80˚C• Maximum suction lift: 1m at full stroke length • Permissible ambient temperature: 0 - 40˚C • Paint color: H37-60D(JPMA)
Note 1 : Inertial resistance Pi is calculated per 1m on condition that the pipeline has the same bore as the pump(by pumping clean water at full stroke length).
Determine the actual Pi by the following formula.
Inertial resistance Pid(Pis)=Applicable Pi on the table×specific gravity×actual pipe length(m).....(MPa) (Pid:Discharge side Pi, Pis=Suction side Pi)
If pipe bore is different from the pump bore: Inertial resistance Pid(Pis)=Applicable Pi on the table×specific gravity×actual pipe length×(Pump bore÷pipe bore)2.....(MPa)
Note 2 : Applicable chamber: Chamber volume is based on IWAKI's standard chambers
Note 3 : Use this as a guideline for transferring viscous liquids and slurry liquids. If the viscosity exceeds 300 mPa · s, please contact us.

LK-VS type (Viscosity/slurry)

Model		Connection		Viscosity mPa·s	Slurry wt%	Materials	
		flange	hose			valve seat	valve guide
LK-	11VS	15A	*ø12 x ø18	1000	5	*SUS304	*PVC (For VS)
	2□VS		Normal		15		
	3□VS						
	45VS						PVC (Normal)
	45VS	*25A	*Hose cannot be used				
	5□VS	25A (Normal)	-				

Model		Connection	Viscosity	Slurry	Materials	
		flange	mPa·s	wt%	valve seat	valve guide
LK-	A□VS	See the standard flange connection	1000	15	*SUS304	PVC (Normal)
	B□VS					
	C□VS					

• The information marked with * are for the VS type only.
• Suction-side piping should be flooded suction system.

Inverter control of LK series

In case of inverter-applied control of the discharge, the control range may be different according to the types or the pressure employed.

List of the specifications for the selection of LK series inverter control system

Model		Capacity Note1 Full stroke length L/min	Max. Pressure MPa		Control range Note2	Stroke speed spm	Inverter frequency Hz	Motor Note3	Description
			PVC, PVDF	SUS					
LK-	11	0.008 - 0.032	1.0	1.5	1 : 4	19 - 78	20 - 80	0.2kW Standard motor (IWAKI original flange motor)	1. The frequency less than the lowest in the table cannot be used as unstable rotation of motor is expected. 2. Drive over the max. frequency cannot be made. 3. Inverter motor cannot be installed.
	21	0.02 - 0.08	1.0	1.5	1 : 4	19 - 78	20 - 80		
	22	0.04 - 0.12	1.0	1.5	1 : 3	38-116	20 - 60		
	31	0.10 - 0.40	1.0	1.5	1 : 4	19 - 78	20 - 80		
	32	0.20 - 0.60	1.0	1.5	1 : 3	38-116	20 - 60		
	45	0.33 - 1.3	0.8	0.8	1 : 4	19 - 78	20 - 80		
	47	0.66 - 2.0	0.8	0.8	1 : 3	38-116	20 - 60		
	55	1.37 - 4.4	0.3	0.3	1 : 3.2	24 - 78	25 - 80		
	57	3.6 - 7.2	0.3	0.3	1 : 2	58 - 116	30 - 60		
LK-F	11	0.002 - 0.024	1.0	1.5	1 : 10	5 - 58	6 - 60 Note4	0.4kW Inverter motor (VF motor)	1. The frequency less than the lowest should not cause trouble in operation. However, such a level may affect the stability of the pump's performance.
	21	0.006 - 0.06	1.0	1.5	1 : 10	5 - 58	6 - 60 Note4		
	22	0.012 - 0.12	1.0	1.5	1 : 10	11 - 116	6 - 60		
	31	0.03 - 0.3	1.0	1.5	1 : 10	5 - 58	6 - 60 Note4		
	32	0.06- - 0.6	1.0	1.5	1 : 10	11 - 116	6 - 60		
	45	0.1 - 1.0	1.0	1.0	1 : 10	5 - 58	6 - 60		
		0.2 - 1.0	-	1.5	1 : 5	11 - 68	12 - 60		
	47	0.2 - 2.0	0.8	0.8	1 : 10	11 - 116	6 - 60		
	55	0.33 - 3.3	0.3	0.3	1 : 10	5 - 58	6 - 60 Note4		
		0.66 - 3.3	0.5	0.5	1 : 5	11 - 68	12 - 60		
	57	0.72 - 7.2	0.2	0.2	1 : 10	11 - 116	6 - 60		
		1.2 - 7.2	0.3	0.3	1 : 6	19 - 116	10 -60		
LK-A	55	1.1 - 4.4	0.3	0.3	1 : 4	20 - 78	20- 80	0.4kW Inverter motor (VF motor)	1. The frequency less than the lowest cannot be used as unstable motor rotation of motor is expected. 2. Drive over the max. frequency cannot be used.
		1.4 - 4.4	0.5	0.5	1 : 3.2	25 - 78	25 - 80		
	57	1.8 - 7.2	0.3	0.3	1 : 4	29 - 116	15 - 60		
		3.6 - 7.2	0.5	0.5	1 : 2	58 - 116	30 - 60		
	65	4.5 - 14.4	0.2	0.2	1 : 3.2	25 - 78	25 - 80		
LK-B	65	3.7 - 14.5	0.3	0.3	1 : 4	20 - 78	20 - 80	0.75kW Inverter motor (VF motor)	
		4.6- 14.5	0.5	0.5	1 : 3.2	24 - 78	25 - 80		
	75	6.7 - 21.5	0.3	0.3	1 : 3.2	24 - 78	25 - 80		
LK-C	76	8 - 24	0.5	0.5	1 : 3	28 - 86	20 - 60	1.5kW Inverter motor (VF motor)	
	86	13 - 40	0.3	0.3	1 : 3	28 - 86	20 - 60		
	87	18 - 54	0.3	0.3	1 : 3	38 - 116	20 - 60		

Note 1: The capacity is the value when the maximum discharge pressure is applied in each type (with pure water at room temperature)
Note 2: With the LK-F type, a larger control range than 1 : 10 is available. In this case, however, the discharge accuracy and the linearity may be affected due to a stroke speed as low as 15 spm.
Note 3: The standard inverter is the Toshiba VF motor. In case of another motor used, most of the date in this list can still be used. To be sure, please contact your distributor in advance.
An inverter control with an ordinary general-purpose motor should not be employed, because it may result in trouble in trouble in the low speed range.
Note 4: When combining the following materials, the inverter frequency is "10 to 60 Hz". LK-F11VS, LK-F21VS, LK-F31VS
• Two-value control by invertor and electric servo can not be done.
• This table is applied to 200V range invertor. Ask us for the invertor of other voltage.
• It may be necessary to adjust the output torque of the motor with the inverter.

Optional accessories

Siphon preventing valve

Model		BVC-1P□L-□H	BVC-1P□-□H
Applicable capacity		Up to 1L/min	
Setting pressure		0.05 - 0.2MPa	0.2 - 0.8MPa
Material		PVC, FKM (EPDM)	
Connection mm (Applicable tube diameter)	Inlet	4 x 9, 12 x 18	
	Outlet	R3/8 and PT1/2	

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

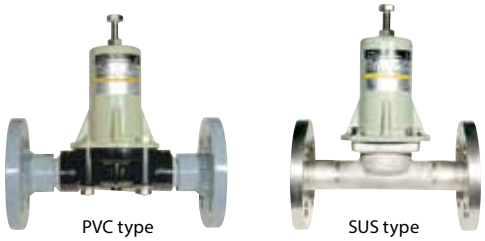
Air chamber

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□	1.0	0.5	Common for 15A - 25A	2
	A-2V□	2.0			2.5
	A-5V□	5.0			4.5
	N40A-10V(2)-F*	10		40A	16
	N50A-20V(2)-F*	20		50A	26
	N65A-30V(2)-F*	30		65A	49
SUS316	A-05S6-( )	0.5	0.9	10, 15, 20A	3
	A-1S6-( )	1.5		15, 20, 25A	5
	A-5S6-( )	5.0		25, 40A	12
	A-10S6-( )	10		40, 50A	15
	A-20S6-( )	20		50, 65A	29
	A-36S6-( )	36		65A	55

* : Material for O-ring 10V / 20V / 30V for CR, 10V2 / 20V2 / 30V2 for FKM
□: Symbol for material of O-ring ("V" for FKM, "E" for EPDM)
( ) : Symbol for connection (10, 15, 20, 25, 40, 50 or 65)
• The weight is the value of the product only. (The weight of liquid applied is not included.)
• 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□-15	1.0	0.3 - 0.8	15A	0.5
	RV-1P□-20	1.0	0.3 - 0.8	20A	0.5
	RV-1P□B -15	1.0	0.8 - 1.0	15A	0.5
	RV-3P-15	3.0	0.3 - 1.0	15A	0.6
	RV-3P 20	3.0	0.3 - 1.0	20A	0.6
	RV-3P-25	3.0	0.3 - 1.0	25A	0.9
	RV-3P□-12H	3.0	0.3 - 1.0	ø12 x ø18 PVC Hose	0.4
	RV-7V-20	7.5	0.3 - 0.8	20A	3.5
	RV-7V-25	7.5	0.3 - 0.8	25A	3.5
	RV-7V-20	7.5	0.8 - 1.0	20A	3.5
	RV-7VB-25	7.5	0.8 - 1.0	25A	3.5
	RV-25V-25	25	0.3 - 0.8	25A	4.0
	RV-25V-40	25	0.3 - 0.8	40A	4.0
	RV-25V-50	25	0.3 - 0.8	50A	4.5
	N50RV-5V-F	45	0.15 - 0.5	50A	18
	N50RV-5V2-F	45	0.15 - 0.5	50A	18
	N65•50RV-5V-F	65	0.15 - 0.5	65A	18
	N65•50RV-5V2-F	65	0.15 - 0.5	65A	18
SUS	RV-2S6-15	2.0	0.3 - 0.8	JIS10 · 16K 15A	3.5
	RV-2S6B-15	2.0	0.8 - 1.5	JIS10 · 16K 15A	3.5
	RV-7S6-25	7.5	0.3 - 0.8	JIS10 · 16K 15A	6
	RV-7S6B-25	7.5	0.8 - 1.5	JIS10 · 16K 15A	6
	RV-25S6-25	25	0.3 - 0.8	25A	7.0
	RV-25S6B-25	25	0.8 - 1.0	25A	7.0
	RV-25S6-40	25	0.3 - 0.8	40A	7.5
	RV-25S6-50	25	0.3 - 0.8	50A	8.7
	RV-25S6B-40	25	0.8 - 1.0	40A	7.5
	N50RV-5S6-F	80	0.15 - 0.5	50A	29
	N65RV-5S6-F	120	0.15 - 0.5	65A	42

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

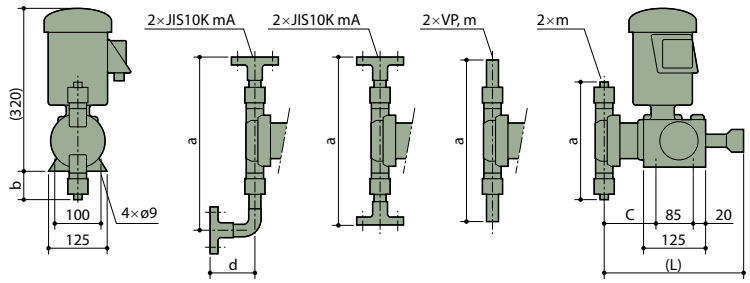
Body	Model	Flow range L/min	Setting pressure MPa	Connection Nominal size DIN PN 10 flange, unless otherwise specified	Weight kg
PVC	BV-1P□-4H	0.005 - 1.0	0.2 - 0.8	ø4 x ø9 PVC Hose	0.2
	BV-1P□-12H	0.005 - 1.0	0.2 - 0.8	ø12 x ø18 PVC Hose	0.2
	BV-1P□-15	0.005 - 1.0	0.2 - 0.8	15A	0.5
	BV-1P□-20	0.005 - 1.0	0.2 - 0.8	20A	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-15	0.005 - 1.0	0.05 - 0.2	15A	0.5
	BV-1P□L-20	0.005 - 1.0	0.05 - 0.2	20A	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-3N□-15	0.005 - 3.0	0.1 - 0.3	15A	0.6
	BV-3N□-20	0.005 - 3.0	0.1 - 0.3	20A	0.6
	BV-3N□-25	0.005 - 3.0	0.1 - 0.3	25A	0.9
	BV-7V-20	0.2 - 7.5	0.05 - 0.8	20A	3.5
	BV-7V-25	0.2 - 7.5	0.05 - 0.8	25A	3.5
	BV-25V-25	2 - 25	0.1 - 0.8	25A	4
	BV-25V-40	2 - 25	0.1 - 0.8	40A	4
	BV-25V-50	2 - 25	0.1 - 0.8	50A	4.5
	N50BV-5V-F	2.5 - 50	0.15 - 0.5	50A	18
	N50BV-5V2-F	2.5 - 50	0.15 - 0.5	50A	18
	N65•50BV-5V-F	5 - 70	0.15 - 0.5	65A	20
	N65•50BV-5V2-F	5 - 70	0.15 - 0.5	65	20
SUS	BV-2S6-15	0.02 - 2.0	0.05 - 0.8	JIS10 · 16K 15A	3.5
	BV-7S6-25	0.2 - 7.5	0.05 - 0.8	JIS10 · 16K 25A	6.0
	BV-25S6-25	2 - 25	0.1 - 0.8	25A	7.0
	BV-25S6-40	2 - 25	0.1 - 0.8	40A	7.5
	BV-25S6-50	2 - 25	0.1 - 0.8	50A	8.5
	N50BV-5S6-F	2.5 - 80	0.15 - 0.5	50A	29
	N65BV-5S6-F	5 - 120	0.15 - 0.5	65A	42

□: Symbol for material of O-ring ("V" for FKM, "E" for EPDM)
O-ring material or N type is "5V" for CR, or "5V2" for FKM.
• Material for diaphragm is PTFE except BV-1P and N type.
Material of diaphragm is same as O-ring material at BV-1P and N type.
• The back pressure valve can not curb the residual flow completely when the pump stops.
Use the solenoid valve in order to shut out the residual flow.

Dimensions in mm

Dimensions 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.

LK-11 to LK-57 (Original motor type)

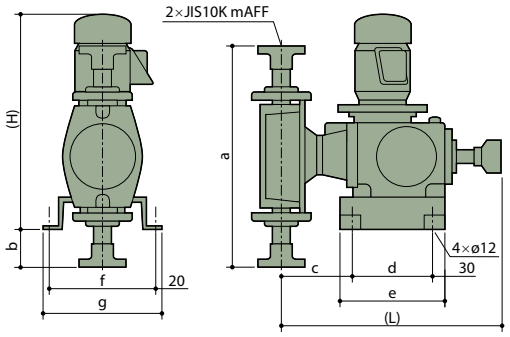


Flange type PVC | Flange type SUS | Union type PVC | Hose type PVC

Model	Hose type PVC					Union type PVC					Flange type PVC						Flange type SUS				
	L	a	b	c	m	L	a	b	c	m	L	a	b	c	d	m	L	a	b	c	m
LK-1	274	146	23	95	Note 1	274	244	72	95	16	275	264	86	95	89	15	272	141	20	92	15
2		164	32				262	81				282	95					151	25		
3	277	224	62	97		277	318	109	97		277	342	125	97			277	184	42		
4	281	249	75	99		281	342	120	99		281	361	135	99			283	261	80	101	
5	-					298	314	107	114	25	298	338	125	114	97	25	295	320	111	111	25
47VS	-					281	272	86	99		281	313	106	99			-				

Note1 : Connection size LK-1 and LK-2 ø4mm x ø9mm, LK-3, LK-4 and LK-1 to LK-45 VS type ø12mm x ø18mm.
For information of TC type, please contact IWAKI or nearest distributor.

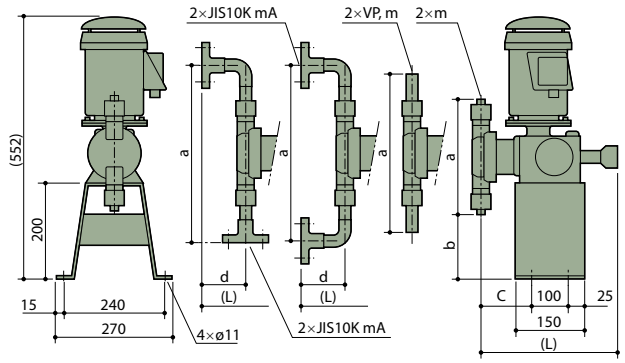
LK-A55 to LK-C87 (General purpose motor type)



Model	PVC				SUS				Note2					
	L	a	b	c	L	a	b	c	H	d	e	f	g	m
LK-A5	476	325	-29	119	473	320	-32	108	520	180	240	260	300	25
A6	523	599	108	154	533	431	24	164						40
B6	595		90	164	605		6	174	548	240	300	310	350	
B7	599	600		167	610	465	23	178						50
C7									615					
C8	605	647	114	173	609	633	107	177						65

Note2: These dimensions are common between PVC pump head and SUS pump head.
For information of TC type, please contact IWAKI or nearest distributor.

LK-F1 to F5 (General purpose motor type)



Flange type SUS | Flange type PVC | Union type PVC | Hose type PVC

Model	Hose type PVC					Union type PVC					Flange type PVC						Flange type SUS					
	L	a	b	c	m	L	a	b	c	m	L	a	b	c	d	m	L	a	b	c	d	m
LK-F1	274	146	177	87	Note 1	274	244	128	87	16	363	272	114	87	89	15	332	156	180	85	60	15
2		164	168				262	119				290	105					166	175			
3	277	224	138	89		277	318	91	89		366	350	75	89			337	201	158	90		
4	281	249	128	92		281	342	79	92		370	369	65	92			343	270	120	94		
5	-					298	314	93	107	25	395	350	75	107	97	25	399	368	90	104	104	25
47VS	-					281	272	114	92		378	313	94	92			-					

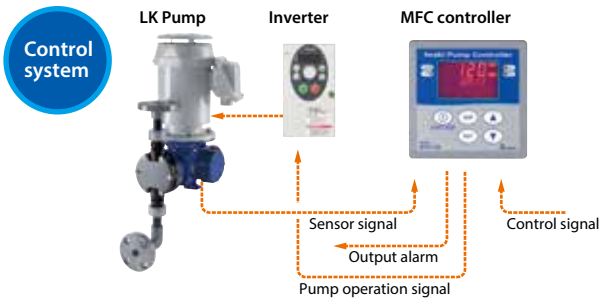
Note1 : Connection size LK-1 and LK-2 ø4mm x ø9mm, LK-3, LK-4 and LK-1 to LK-45 VS type ø12mm x ø18mm.
For information of TC type, please contact IWAKI or nearest distributor.

Pump controller

MFC

Multifunction pump controller for LK-F series metering pumps

- Capable of analogue input (4~20mA) and pulse input (Dividing/Multiply) operation
- Operating functions of the pump can be monitored via external output signal.
- Easy key touch operation and a large LCD display give good control legibility.
- Display preference of flow rate (L/min) or stroke rate (SPM) is user-selectable.
- Combination of stroke length adjustment with stroke rate enables flow volume control over a wide range of 1:480.



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( )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.

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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.