

KFLB - Liquid level indicating controller

Issued : Jan. 1, 2003	Page : 7-1-27
Effective : Mar. 1, 2003	UNIT : 1000YEN

Model KFLB00 - I II III IV V VI VII VIII IX - Options *6

Basic model number *4

(Unit: 1000 yen)

Model	Torque tube	KFL	Basic price	
Function	Indicating transmitter	No selection	B 0 0	
	Indicating controller (local type) □=1	P + Manual reset	B □ 1	
	Indicating transmitter and controller (local type) □=2	PI	B □ 2	
		PID	B □ 3	
		PD + Manual reset	B □ 4	
		PI + Batch	B □ 5	
		On-Off	B □ 6	
		Differential gap	B □ 7	
		P + External reset	B □ 8	
		PD + External reset	B □ 9	
	Indicating controller (cascade type) □=3	P + Manual reset	B □ 1	
		PI	B □ 2	
		Indicating transmitter and controller (cascade type) □=4	PID	B □ 3
			PD + Manual reset	B □ 4
			PI + Batch	B □ 5
			On-Off	B □ 6
		Differential gap	B □ 7	
		P + External reset	B □ 8	
	PD + External reset	B □ 9		

Selections

Additional price

I	Specific gravity	For medium specific gravity	6 1	Additional price
		For low specific gravity *1	6 2	0
II	Range of standard measuring setting range (mm)	0 - 300 (0.2 < low sp.gr. < 0.6, 0.6 < medium sp.gr. < 1.6)	0 3	Refer to table KF01.
		0 - 350 (0.2 < low sp.gr. < 0.6, 0.6 < medium sp.gr. < 1.6)	A 3	
		0 - 400 (0.2 < low sp.gr. < 0.6, 0.6 < medium sp.gr. < 1.6)	0 4	
		0 - 450 (0.2 < low sp.gr. < 0.6, 0.6 < medium sp.gr. < 1.6)	A 4	
		0 - 500 (0.15 < low sp.gr. < 0.4, 0.4 < medium sp.gr. < 1.6)	0 5	
		0 - 600 (0.15 < low sp.gr. < 0.4, 0.4 < medium sp.gr. < 1.6)	0 6	
		0 - 700 (0.1 < low sp.gr. < 0.4, 0.4 < medium sp.gr. < 1.6)	0 7	
		0 - 800 (0.1 < low sp.gr. < 0.4, 0.4 < medium sp.gr. < 1.6)	0 8	
		0 - 1000 (0.1 < low sp.gr. < 0.4, 0.4 < medium sp.gr. < 1.6)	1 0	
		0 - 1200 (0.1 < low sp.gr. < 0.4, 0.4 < medium sp.gr. < 1.6)	1 2	
		0 - 1500 (0.1 < low sp.gr. < 0.4, 0.4 < medium sp.gr. < 1.6)	1 5	
		0 - 2000 (0.1 < low sp.gr. < 0.4, 0.4 < medium sp.gr. < 1.6)	2 0	
	Other	X X	Consult with us	
III	Process connection	External chamber type, side-side flanged (S-S)	1	Refer to table KF01.
		External chamber type, side-bottom flanged (S-B)	2	
		External chamber type, top-bottom flanged (T-B)	3	
		External chamber type, top-side flanged (T-S)	4	
		Internal float type, top flanged (T) L1 dimensions must be specified.	5	
		Other	X	
IV	Element materials *2	Bonnet / Chamber (B & C)	Torque tube housing (TH)	Refer to table KF01.
		Carbon steel	Carbon steel	
		SUS304	SCS13A	
		SUS316	SCS14A	
		SUS316L	SCS16A	
		Other	X	
V	Other materials (Temperature range)	Torque tube: Inconel (350 to 400°C)	U	98
		Torque tube: Inconel (200 to 350°C)	M	95
		Torque tube: Inconel (0 to 200°C)	A	85
		Torque tube: SUS316L (0 to 200°C)	E	0
		Torque tube: SUS316L (-196 to 0°C)	D	18
		Other	X	Consult with us
VI	Working pressure range *3, *5	JIS 10K	1	Refer to table KF01.
		JIS 20K	2	
		JIS 30K	3	
		JIS 63K	4	
		ANSI 150 (RF smoothness)	A	
		ANSI 150 (RF serration)	B	
		ANSI 300 (RF smoothness)	C	
		ANSI 300 (RF serration)	D	
		ANSI 600 (RF smoothness)	E	
		ANSI 600 (RTJ)	F	
		JPI 150	G	
		JPI 300	H	
		JPI 600	J	
		JPI 600 (RTJ)	K	
Other	X	Consult with us		
VII	Flange size	1½ in. (40 mm) Applicable to external chamber type	1	0
		2 in. (50 mm) Applicable to external chamber type	2	0
		3 in. (80 mm) Applicable to internal chamber type (only medium specific gravity)	3	0
		4 in. (100 mm) Applicable to internal chamber type	4	0
		5 in. *1 (125 mm) Applicable to internal chamber type (only low specific gravity)	5	20
		Other	X	Consult with us
VIII	Air piping connections	Rc1/4 (PT1/4 internal thread) (Name plate: Japanese) *7	A	0
		1/4NPT internal thread (Name plate: English) *7	B	0
IX	Unit / pneumatic signal	kgf/cm2/ 02-1 kgf/cm2	1	0
		PSI/ 3-15 PSI	2	0
		bar/ 0.2-1.0 bar	3	20
		Pa/ 20-100 kPa	4	0
		Pa/ 19.6-98.1 kPa	8	0

*1) Pressure rating "4", "E", "F", "J", and "K" cannot be selected for 5 in. or the low density.
 *2) Bolt/nut material is as follows.

Other material code	Bolt/nut material
U, M, A, E	SNB7/S45C *
D	SUS304/SUS304

* If Y131 is specified, bolt/nut material of the sign * is changeable to SUS304/SUS304.

*3) Class900 is required consultation with our sales. Class1500 or more cannot be produced.
 *4) Please fill in "Z" on a basic model number end, and specified the range at the specific gravity measurement.
 *5) It is JIS and JPI (JPI 600 RTJ is excluded) is RF flange.
 *6) If included semi-standard specification (Y□)
 Please fill in the "Y" sign on a basic model number end, and put Y number other. Please consult to our sales if required the combination of two Y spec. or more.
 *7) If the name plate required the special character type (not std), please specify it at the remarks column of the ordering sheet.

KFLB - Liquid level indicating controller

Table KF01. Additional charges

Code : S-S, S-B, T-B, T-S (Chamber+Bonnet+Float+Torque tube housing)

Code : T (Bonnet+Float+Torque tube housing)

(1000 yen)

		Medium type JIS10K, 20K, 30K, ANSI/JPI150, 300								
		Code : S-S, S-B, T-B, T-S				Code : T				
		IV Main Materials				IV Mail Materials				
		Carbon steel	SUS304	SUS316	SUS316L	Carbon steel	SUS304	SUS316	SUS316L	
		1	2	3	4	1	2	3	4	
Measuring range	0-300	03	84	376	466	529	0	135	229	281
	0-350	A3	85	379	472	535	2	136	231	282
	0-400	04	86	382	478	541	4	137	233	283
	0-450	A4	88	385	484	547	6	139	235	285
	0-500	05	90	389	491	554	8	141	237	287
	0-600	06	93	395	503	567	11	144	239	290
	0-700	07	97	402	516	580	14	147	242	293
	0-800	08	99	408	526	590	17	150	245	296
	0-1000	10	102	414	541	605	20	154	249	300
	0-1200	12	108	424	561	625	26	159	254	306
	0-1500	15	115	439	593	656	33	166	262	312
0-2000	20	128	466	643	707	46	179	275	326	

		Medium type JIS63K, ANSI/JPI600								
		Code : S-S, S-B, T-B, T-S				Code : T				
		IV Main Materials				IV Main Materials				
		Carbon steel	SUS304	SUS316	SUS316L	Carbon steel	SUS304	SUS316	SUS316L	
		1	2	3	4	1	2	3	4	
Measuring range	0-300	03	783	1202	1278	1278	414	668	732	758
	0-350	A3	786	1208	1287	1303	415	669	733	759
	0-400	04	789	1214	1296	1328	416	671	734	760
	0-450	A4	792	1221	1306	1354	418	673	736	761
	0-500	05	795	1228	1316	1380	420	675	738	763
	0-600	06	801	1240	1335	1399	423	678	741	766
	0-700	07	808	1253	1355	1418	427	681	745	770
	0-800	08	814	1265	1373	1436	430	684	747	773
	0-1000	10	821	1278	1393	1456	433	687	750	776
	0-1200	12	827	1308	1423	1491	438	692	755	781
	0-1500	15	834	1342	1469	1532	446	700	763	789
0-2000	20	859	1405	1545	1609	458	712	776	802	

		For Low type JIS10K, 20K, 30K, ANSI/JPI150, 300								
		Code : S-S, S-B, T-B, T-S				Code : T				
		IV Main Materials				IV Main Materials				
		Carbon steel	SUS304	SUS316	SUS316L	Carbon steel	SUS304	SUS316	SUS316L	
		1	2	3	4	1	2	3	4	
Measuring range	0-300	03	237	649	776	839	0	185	255	293
	0-350	A3	238	658	785	848	3	186	256	294
	0-400	04	239	667	794	857	5	188	258	296
	0-450	A4	240	677	804	867	7	190	260	298
	0-500	05	242	687	814	877	9	192	262	300
	0-600	06	245	706	833	896	12	195	265	303
	0-700	07	249	725	852	916	15	199	268	306
	0-800	08	252	743	870	934	18	201	271	309
	0-1000	10	255	763	890	954	22	204	275	312
	0-1200	12	260	799	926	991	28	210	281	316
	0-1500	15	268	839	966	1031	36	217	287	326
0-2000	20	281	916	1043	1106	49	229	300	339	

When ordering, specify the following operating conditions.

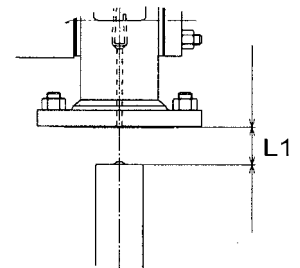
Fluid name

Type of Gas

Specific gravity	For liquid level measurement	
	For boundary surface measurement:	Upper fluid Lower fluid
	For specific gravity measurement:	measured gravity range

← Must be specified

Note) Specify triple digits after the decimal points



Temperature

Normal °C
Minimum °C
Maximum °C

Pressure

Normal kPa
Maximum kPa

The L1 length (Refer to the fig. 1)

↑ Must be specified when the connection type "5", internal float model top is selected.
note) Round up after the decimal points, and use "mm" unit.

Fig.1

If the bonnet flange size/ pressure rating/ model are not the standard specifications, write down the specifications and consult with sales.

Options

(1000 yen)

No options		X		0
Integral manual loader (with A/M switch)		M		67
With external manual SP setting knob		K		8
Water and oil free treatment (only the SUS material)	External type, range max. 300 to 500 mm	4		149
	External type, range max. 600 to 1000 mm			191
	Internal type, range max. 1000 mm or less			84
Oil free treatment (only the SUS materials)	External type, range max. 300 to 500 mm	5		99
	External type, range max. 600 to 1000 mm			127
	Internal type, range max. 1000 mm or less			56
Test report *3		6		2
Five point check *3		7		6
Mil sheet		8		21
With air set		9		31
Dye check		B		20
Without float *1	Measuring range 0-300	C		-42
	0-350			-43
	0-400			-44
	0-450			-45
	0-500			-46
	0-600			-47
	0-700			-48
	0-800			-50
	0-1000			-52
	0-1200			-54
	0-1500			-56
0-2000		-61		
Without chamber *2		D		Refer to Note 1

Note 1. Apply the additional charge of connection type "T" <bonnet + float + torque tube housing>.

*1) Please specify the float model number if reusing an existing Yamatake float, model NQI, KFLB, KQP, or NQP.

Please note the following:

① The selectable precondition as optional specification "C" for the existing product, "liquid level measurement specification: medium specific gravity". Model number shall be NQI31□, NQI21□, KQP□1□, KFL□00-□1, NQP31□ or NQP21□ without Z.

Characteristics of the standard model KFLB

	Weight "Mf" of the measured fluid which is displaced by the float		
	Mf > 400	400 > Mf > 200	200 > Mf
Accuracy (%FS)	±0.5	±1.0	Accuracy is not guaranteed

*This accuracy table is common for all KFLB models regardless of liquid level measurement, interface measurement or gravity measurement specifications.

Formula for checking accuracy

$$Mf = \frac{\pi / 4 \times D^2 \times H \times \gamma \times \rho_{std} \times 10^{-3}}{1 + 5.76 \times 10^{-7} \times \pi \times D^2 \times \gamma \times \rho_{std}}$$

Where

- D: Float diameter (mm)
- H: Measuring range (float length, mm)
- γ: Specific gravity
- ρstd: Standard density, rstd = 1 (g/cm³)
- π: Circular constant

Reference: Formula generated buoyancy by float.

$$F = \rho \times V \times G = Mf \times G$$

Where

- ρ: Density of the ambient fluid (measuring fluid)
- V: Volume of the ambient fluid (measuring fluid) which the float displaced
- G: Gravitational acceleration
- Mf: Weight of the measuring fluid, which is displaced by the float

*2) Please specify the existing chamber model number. However, the following attention is needed.

① The replaced model number must be without "Z" of our model KQP□1□, KFL□00-□1, and NQP31□ and NQP21□. If "Z" included in the model number, the connection standard of the chamber and the bonnet are required ANSI / JPI 50, 300, 600 RF and the flange size (normal size) is 3 in. respectively.

② Special inquiry is necessary if the external float model T-B or T-S is being used and the length from the top of the top flange to the bottom of the bonnet flange is 290 mm.

③ If reusing the chamber of external float model S-S or S-B, or Yamatake model 782, specify "internal float model" when ordering.

*3) Specify option code "7", if change the measuring point of input output characteristics described to the test report from 3 points (0,50,100%) to 5 points (0,25,50,75,100%). Option code "7" cannot be specified alone.

KFLB - Liquid level indicating controller

Issued : Jan. 1, 2003	Page : 7-1-30
Effective : Jan. 1, 2003	UNIT : 1000YEN

Standard specification (Y-SPEC)

Y-SPEC	Product name	Delivery time	Description	Additional price (1,000 yen)
Y-131	Stainless steel bolt Note) The product may not be used for JIS 10K or ANSI/JPI 150 connections nor with those products approved by the Japanese high-pressure gas safety law.	STD	SUS304 is used for bolts and nuts to mount the main body.	* See the list below
Y138□	Silver anti-corrosive coat	STD+0.5 month	See common item for level meter	5 *3)
Y-2054	Complies to Japanese high-pressure gas safety regulations	Consult with us	See common items for analog products	Consult with us

*3) Select anti-corrosive coat type "A" as an additional option in addition to selecting Y138□ when ordering the silver anti-corrosive coating.

Additional price for Y-131

Additional price (1,000 yen)

Connection type S-S, S-B, T-B, T-S for middle gravity, pressure rating (JIS 10K, 20K, 30K, ANSI/JPI 150, 300)	20
Connection type S-S, S-B, T-B, T-S for low gravity, pressure rating (JIS 10K, 20K, 30K, ANSI/JPI 150, 300)	27
Connection type S-S, S-B, T-B, T-S for middle gravity, pressure rating (JIS 63K, ANSI/JPI 600)	54
Connection type T	10