KFLB - Liquid level indicating controller

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		1,514
		Indicating controller (local type) □=1 Indicating transmitter and controller (local type) □=2	P + Manual reset	B	□	1		1,554
			PI	B	□	2		1,565
			PID	B	□	3		1,642
			PD + Manual reset	B	□	4		1,636
			PI + Batch	B	□	5		1,696
			On-Off	B	□	6		1,559
			Differential gap	B	□	7		1,545
			P + External reset	B	□	8		1,565
			PD + External reset	B	□	9		1,642
		Indicating controller (cascade type) □=3 Indicating transmitter and controller (cascade type) □ =4	P + Manual reset	B	□	1		1,733
			PI	B	□	2		1,741
			PID	B	□	3		1,819
			PD + Manual reset	B	□	4		1,808
			PI + Batch	B	□	5		1,872
			On-Off	B	□	6		1,731
			Differential gap	B	□	7		1,724
			P + External reset	B	□	8		1,741
			PD + External reset	B	□	9		1,819

Selections

							Additional price
I	Specific gravity	For medium specific gravity	6	1			0
		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		Consult with us
IV	Element materials *2	Bonnet / Chamber (B & C)	Torque tube housing (TH)				Refer to table KF01.
		Carbon steel	Carbon steel			1	
		SUS304	SCS13A			2	
		SUS316	SCS14A			3	
		SUS316L	SCS16A			4	
		Other				X	Consult with us
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)	The element material "1" cannnot be selected. Even 0-200°C can be used.			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.

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		110	489	606	688	0	176	298	366
	0-350	A3		111	493	614	696	3	177	301	367
	0-400	04		112	497	622	704	6	179	303	368
	0-450	A4		115	501	630	712	8	181	306	371
	0-500	05		117	506	639	721	11	184	308	374
	0-600	06		121	514	654	738	15	188	311	377
	0-700	07		127	523	671	754	19	192	315	381
	0-800	08		129	531	684	767	23	195	319	385
	0-1000	10		133	539	704	787	26	201	324	390
	0-1200	12		141	552	730	813	34	207	331	398
	0-1500	15		150	571	771	853	43	216	341	406
	0-2000	20		167	606	836	920	60	233	358	424

				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		1018	1563	1662	1662	539	869	952	986
	0-350	A3		1022	1571	1674	1694	540	870	953	987
	0-400	04		1026	1579	1685	1727	541	873	955	988
	0-450	A4		1030	1588	1698	1761	544	875	957	990
	0-500	05		1034	1697	1711	1794	546	878	960	992
	0-600	06		1042	1612	1736	1819	550	882	964	996
	0-700	07		1051	1629	1762	1844	556	886	969	1001
	0-800	08		1059	1645	1785	1867	559	890	972	1005
	0-1000	10		1068	1662	1811	1893	563	894	975	1009
	0-1200	12		1076	1701	1850	1939	570	900	982	1016
	0-1500	15		1085	1745	1910	1992	580	910	992	1026
	0-2000	20		1117	1827	2009	2092	596	926	1009	1043

				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		309	844	1,009	1,091	0	241	332	381
	0-350	A3		310	856	1,021	1,103	4	242	333	383
	0-400	04		311	868	1,033	1,115	7	245	336	385
	0-450	A4		312	881	1,046	1,128	10	247	338	388
	0-500	05		315	894	1,059	1,141	12	250	341	390
	0-600	06		319	918	1,083	1,165	16	254	345	394
	0-700	07		324	943	1,108	1,191	20	259	349	398
	0-800	08		328	966	1,131	1,215	24	262	353	402
	0-1000	10		332	992	1,157	1,241	29	266	358	406
	0-1200	12		338	1,039	1,204	1,289	37	273	366	411
	0-1500	15		349	1,091	1,256	1,341	47	283	374	424
	0-2000	20		366	1,191	1,356	1,438	64	298	390	441

When ordering, specify the following operating conditions.

Fluid name

Type of Gas

Specific gravity	For liquid level mesurement	
	For boundary surface measurment:	Upper fluid
		Lower fluid
	For specific gravity measurment:	measured gravity range
Temperature	Normal	℃
	Minimum	℃
	Maximum	℃
Pressure	Normal	kPa
	Maximum	kPa

← Must be specified.
Note)
Specify triple digits after the dicimal points

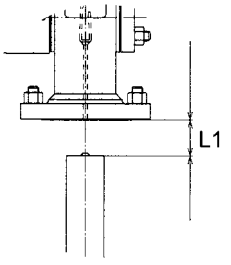

Fig.1

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 dicimal points, and use "mm" unit.

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.

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 safey 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