No.SS2-613-010
(ISSUE 3)

Yamatake-Honeywell

SPECIFICATION

KF SERIES (FIELD TYPE) PRESSURE INDICATING CONTROLLER

MODEL:KFK(ADJUSTABLE RANGE TYPE)

General

Each of KF Series instruments consists of two major items: one is the measuring element which detects the process variable and the other is the indicating controller section which is common for all models of instruments. Simply by changing measuring elements, the same instrument can be used to measure and control such basic process variables as temperature, pressure, flow rate, and liquid level, with a standardized pneumatic signal of 0.2-1.0 kg/cm^2.

The KFK type pressure indicating controller has incorporated the force balance type measuring section of the NK type pressure transmitter, which has many variations (remote seal and button diaphragm or wafer).

Thus the controller can measure and control the process pressure ranged from the 0 ~ 10 to 0 ~ 500mmHg or from the 0 ~ 0.2 to 0 ~ 700kg/cm^2 to and the absolute pressure ranged from the 0.2 ~ 7kg/cm^2 abs. to 10 ~ 500 mmHg abs. range.

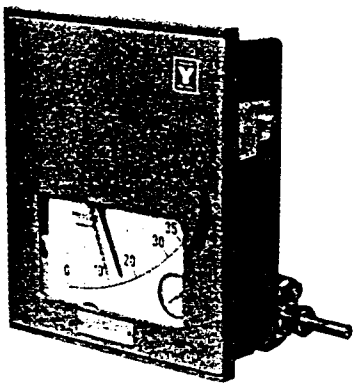


Figure 1

Features

- Various models and functions:

Simply by changing measuring elements, the instrument can also measure process variables (temperature, flow, and liquid level) other than pressure, and can perform receiving and controlling functions on the detected pneumatic signal. Various control actions are available, such as P, PI, PID, PD, and PI batch actions. Also, various provisions are incorporated for such operations as ON-OFF, differential gap, manual reset, and external reset operations.

- High reliability:

The KF Series instruments employ a pneumatic circuit block system, as the first of its kind for field type instruments. This system eliminates the use of air tubing which could often cause air leakage, thereby greatly enhancing instrument reliability. The case is made of non-flammable metal, providing sufficient sturdiness, heat resistance, and weather resistance. The instrument provides water resistant and dust resistant features equivalent to NEMA3, IP54, and JIS F8001, Class III splash-proof test.

- **Convenient expandability of functions and high flexibility of use:**

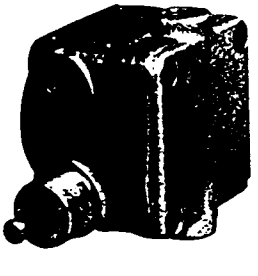
Various control functions are selectable and a number of optional features are available. These can be conveniently selected and coupled as the pneumatic circuit block system is employed, thereby making this field instruments as flexible in use as panel instruments.

- **High maintainability, interchangeability, and economy:**

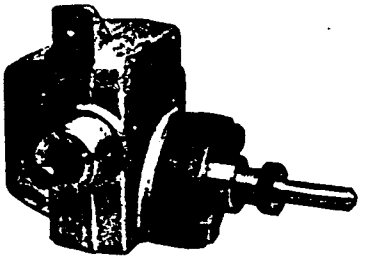
Measuring elements are interchangeable with those or other existing models of pneumatic instruments supplied by Yamatake-Honeywell. Components except the measuring elements are interchangeable, thereby greatly reducing the number of replacement spares to be kept in stock. Various expandable features and optional features are available, enhancing operability, maintainability, reduction in replacement spares, and economy.

- **Prevention of troubles:**

Screws are identified between those for clamping (Philips screws) and those for adjustments (plain screws). Provisions are made to prevent troubles caused by simple errors, such as prevention of erroneous assembling of parts.



Low Pressure Element



High Pressure Element

Figure 2

Issue 1 October, 1978
Issue 2 January, 1983

Standard Specifications

Item		Specifications			
Sensing element					
Model No.	Pressure element	Measuring range (Continuously adjustable)	Process connection	Pressure limit	Overload protection
11	Bourdon tube	0~100 to 0~700kg/cm²	PT ½ (ISO R7 ½") or ½" NPT, PT ½ (ISO R7 ¼") or ¼" NPT tap thread or welding nipple connection.	−1~+700kg/cm² G	Up to 750kg/cm² G
12		0~25 to 0~250kg/cm²		−1~+300kg/cm² G	Up to 320kg/cm² G
13		0~7 to 0~70kg/cm²		−1~+105kg/cm² G	Up to 140kg/cm² G
14		0~3.5 to 0~35kg/cm²		−1~+52.5kg/cm² G	Up to 70kg/cm² G
15	Bellows	0~0.7 to 0~7kg/cm²	PT ½ (ISO R7 ½") or ½" NPT, PT ¼ (ISO R7 ¼") or ¼" NPT tap thread.	−1~+10.5kg/cm² G	Up to 14kg/cm² G
16		0~0.2 to 0~2kg/cm²		−1~+3kg/cm² G	Up to 4kg/cm² G
17		0~50 to 0~500mmHg		−500~+500mmHg G	Up to 4kg/cm² G
18		0~10 to 0~100mmHg		−100~+100mmHg G	Up to 4kg/cm² G
25	Bellows (Absolute pressure)	0~0.7 to 0~7kg/cm² abs.	PT ½" (ISO R7 ½") or ½" NPT tap thread	0~7kg/cm² abs.	Up to 14kg/cm² abs.
26		0~0.2 to 0~2kg/cm² abs.		0~2kg/cm² abs.	Up to 6kg/cm² abs.
27		0~50 to 0~500mmHg abs.		0~500mmHg abs.	Up to 4kg/cm² abs.
28		0~10 to 0~100mmHg abs.		0~100mmHg abs.	Up to 4kg/cm² abs.
Specifications for wet-part material of 316 SS.					
31	Remote seal diaphragm	0~100 to 0~700kg/cm²	PF 1½ (ISO R228 1½") mall (34mmϕ button type diaphragm)	−1~+700kg/cm² G	Up to 750kg/cm² G
32		0~25 to 0~250kg/cm²	PF 1½ (ISO R228 1½") mall (34mmϕ button type diaphragm) 2"-ANSI wafer type	−1~+300kg/cm² G	Up to 320kg/cm² G
33		0~7 to 0~70kg/cm²	2"-ANSI wafer type	−1~+105kg/cm² G	Up to 140kg/cm² G
34		0~3.5 to 0~35kg/cm²	2"-ANSI wafer type	−1~+52.5kg/cm² G	Up to 70kg/cm² G
			80mm-JIS30K flush flange 100mm-JIS30K extended flange	−1~+48kg/cm² G	
			3"-ANSI300 flush flange 4"-ANSI300 extended flange		
35		0~0.7 to 0~7kg/cm²	80mm-JIS10K flush flange 100mm-JIS10K extended flange	−0.5~+10.5kg/cm² G	Up to 14kg/cm² G
			3"-ANSI150 flush flange 4"-ANSI150 extended flange		
36		0~0.2 to 0~2kg/cm²	80mm-JIS10K flush flange 100mm-JIS10K extended flange	−0.5~+3kg/cm² G	Up to 4kg/cm² G
			3"-ANSI150 flush flange 4"-ANSI150 extended flange		
Specifications for wet-part materials of Monel, Tantalum and Titanium*					
Model No.	Pressure element	Measuring range (continuously adjustable)	Process connection	Pressure limit	Overload protection
33	Remote seal diaphragm	0~7 to 0~70kg/cm²	3"-ANSI wafer type	−1~+105kg/cm² G	Up to 140kg/cm² G
34		0~3.5 to 0~35kg/cm²	3"-ANSI wafer type	−1~+52.5kg/cm² G	Up to 70kg/cm² G
			80mm-JIS30K flush flange 3"-ANSI300 flush flange	−1~+48kg/cm² G	
35		0~0.7 to 0~7kg/cm²	80mm-JIS10K flush flange 3"-ANSI150 flush flange	−0.5~+10.5kg/cm² G	Up to 14kg/cm² G
36		0~0.2 to 0~2kg/cm²	80mm-JIS 10K flush flange 3"-ANSI150 flush flange	−0.5~+2kg/cm² G	Up to 4kg/cm² G

*Titanium · · · Except wafer type

	Item	Specifications
Function	Accuracy	±1% FS (Indicating), ±0.5% FS (Transmission)
	Repeatability	Within 0.3% FS
	Dead band	Within 0.2% FS
Indication	Angle	44 degrees
	Scale length	150mm
	Pointer	Process variable . . . Red, Setpoint value . . . Green
	Output indicator	Scale range; 0 ~ 2kg/cm^2 Indicator accuracy; ±3% FS
Set-point section	Local setting	Internal or external setting by setting knob.
	Remote setting	Pneumatic pressure setting of 0.2~1.0 kg/cm^2.
	Setting range	0 ~ 100% FS
Controller	Control action	P + Manual reset, PI, PID, PD + Manual reset, PI + Batch, On-Off, Differential gap, P + External reset, PD + External reset
	Proportional band (P)	5 ~ 500% (Direct or reverse action)
	Integral (I)	0.05 ~ 30 min.
	Derivative (D)	0.05 ~ 30 min.
	Differential gap	1 ~ 100% FS, adjustable
	Batch setting pressure	0.6 ~ 1.1 kg/cm^2, adjustable
	External reset pressure	0.2 ~ 1.0 kg/cm^2
	Manual reset	0 ~ 100% FS, adjustable (By pneumatic pressure setting.)
General specifications	Output	0.2 ~ 1.0 kg/cm^2
	Minimum load	I.D. 4mm x 3m + 20cm^3
	Supply air pressure	1.4 ±0.14 kg/cm^2
	Air consumption (50% output balanced.)	Indicating and transmission ; 4 N ℓ/min. Indicating and control ; 8 N ℓ/min. Indicating and control and air pressure transmission ; 8 N ℓ/min.
	Saturated air supply capacity	Pneumatic transmission ; 40 N ℓ/min. Output ; 40 N ℓ/min. Manual pueumatic pressure ; 30 N ℓ/min.
	Air connection	PT ¼ (ISO R7 ¼") or ¼" NPT tap thread
	Ambient temperature limit	At meter body (process fluid); –40 ~ + 120°C At transmitter (ambient); –30 ~ + 80°C
	Relative humidity limit	10 ~ 90% RH
	Case, Door	Enclosure ; Rain-tight and dust-tight, meets JIS F 8001 class III splash-proof NEMA 3 IEC IP 54 Materials ; Case . . . . . Aluminum die-Cast Door . . . . . Polyester with fiberglass Door-glass . . Reinforced glass (3mm thick, JIS R3206 equivalent) Case finish ; Acryl baking finish (For corrosion-resistant and silver finish, refer to the optional specification.) Color of finish ; Dark beige
	Mounting	Wall or 2-inch pipe mounting.
	Net weight	Approx. 10kg (Pipe mounting type, local mode PI controller using 3.5~35kg/cm^2 element)

Note) For element materials, refer to the selection in the model number table.

Options (Accessories)

Item	Specifications
(1) External SP setting knob (For local setting)	A setting knob is mounted on the door. SP can be adjusted from outside.
(2) Built-in manual controller (With auto/manual transfer switch)	Consists of a manual control regulator, two position transfer swtich and balance check button.
(3) Elevation, Suppression	It is applied when head pressure is imposed on the sensor of a transmitter at liquid level zero. Elevation; The lower limit of input range is above zero. Suppression; The lower limit of input range is below zero.
(4) Air set	Adjustable combination regulator with 50mm gauge mounted and piped to controller, not available with panel mounted controller.

Semi-Standard Options

Item	Specifications	Applicable models
(1) Oil free (Y67)	Oil-free treatment	KFK□□□-11～18, 25～28
(2) Vacuum use (Y68)	Pressure limit; KFK□□□-31～34 Up to 0kg/cm^2 abs. KFK□□□-35 Up to 20mmHg abs. KFK□□□-36 Up to 40mmHg abs.	KFK□□□-31～36
(3) High temperature use (Y69)	Fluid temperature; −10～+200°C Ambient temperatute; −10～+80°C Sealing liquid; Special silicon oil	KFK□□□-31～36
(4) Low temperature use (Y70)	Fluid temperature; −80～+60° Ambient temperature; −10～+60°C (KFK□□□-31) −30～+60°C (KFK□□□-32～36)	KFK□□□-31～36
(5) Steam jacket (Y113)	Maximum working pressure; 50 kg/cm^2 Maximum working temperature; 200°C (Below 120°C at meter body)	All the KFK models
(6) Corrosion-resistant and silver finish (Y138)	Corrosion-resistant (Acryl baking) finish (Y138A); Resistance for corrosive gases. Corrosion-proof (Epoxy baking) finish (Y138B); Resistance for corrosive liquids. Silver-normal (Acryl baking) finish (Y138C); Protection for temperature rise of device caused by direct sun light, radiation heat, etc. Silver-corrosion-resistant (Acryl baking) finish (Y138D) Protection for above-mentioned temperature rise and resistance for corrosive gases. (Note: Silver finish is not applicable for alkaline gases.)	All the KFK models

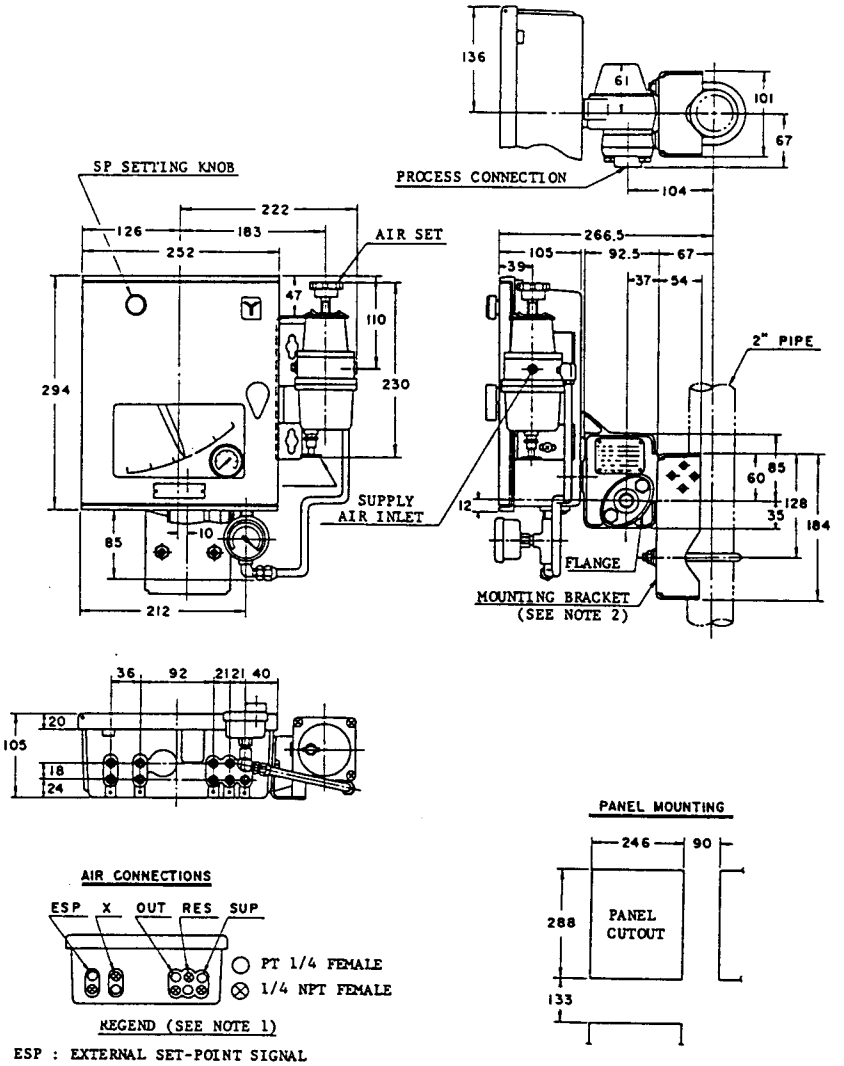
Model Number Table

Basic Model No.			Selections						Options	Description
Type	Function	Control action	Type of sensing element	Cover, Flange or Mounting screw mat'ls	Element materials	Flange or Mounting screw rating	Air connection	Mounting method		
KFK										Pressure indicating controller
	0									Indicating transmitter
	1									Indicating controller (Local type)
	2									Indicating transmitting controller (Local type)
	3									Indicating controller (Cascade type)
	4									Indicating transmitting controller (Cascade type)
		00								No selection
		01								P + Manual reset
		02								PI
		03								PID
		04								PD + Manual reset
		52								PI + Batch
		65								On-Off
		66								Differential gap
		71								P + External reset
		74								PD + External reset
			−11							Bourdon tube type 0 ~ 100 to 0 ~ 700kg/cm²
			−12							" 0 ~ 25 to 0 ~ 250kg/cm²
			−13							" 0 ~ 7 to 0 ~ 70kg/cm²
			−14							" 0 ~ 3.5 to 0 ~ 35kg/cm²
			−15							Bellows type 0 ~ 0.7 to 0 ~ 7kg/cm²
			−16							" 0 ~ 0.2 to 0 ~ 2kg/cm²
			−17							" 0 ~ 50 to 0 ~ 500mmHg
			−18							" 0 ~ 10 to 0 ~ 100mmHg
			−25							" 0 ~ 0.7 to 0 ~ 7kg/cm² abs. (Absolute pressure)
			−26							" 0 ~ 0.2 to 0 ~ 2kg/cm² abs. (")
			−27							" 0 ~ 50 to 0 ~ 500mmHg abs. (")
			−28							" 0 ~ 10 to 0 ~ 100mmHg abs. (")
			−31							Remote seal diaphragm type 0 ~ 100 to 0 ~ 700kg/cm²
			−32							" 0 ~ 25 to 0 ~ 250kg/cm²
			−33							" 0 ~ 7 to 0 ~ 70kg/cm²
			−34							" 0 ~ 3.5 to 0 ~ 35kg/cm²
			−35							" 0 ~ 0.7 to 0 ~ 7kg/cm²
			−36							" 0 ~ 0.2 to 0 ~ 2kg/cm²
				1						Carbon steel (SF45) (applicable for type 17/18/2α, 3α excluding button diaphragm type)
				2						316SS
					2					316SS
					3					Monel } (Excluding element type 11 ~ 28, extended diaphragm type, 2"-wafer type and button diaphragm type.)
					4					Tantalum }
					6					Titanium }
										Blank (Excluding element type 31 ~ 36)
						01				Flush diaphragm type 80mm-JIS 10K (RF) equiv. flange
						02				" 80mm-JIS 30K (RF) equiv. flange
						03				" 3"-ANSI 150 (RF) equiv. flange
						04				" 3"-ANSI 300 (RF) equiv. flange
						05				Extended diaphragm type 100mm-JIS 10K (RF) equiv. flange
						06				" 100mm-JIS 30K (RF) equiv. flange
						07				" 4"-ANSI 150 (RF) equiv. flange
						08				" 4"-ANSI 300 (RF) equiv. flange
						09				2"-ANSI (RF) equiv. wafer
						10				3"-ANSI (RF) equiv. wafer
						11				PF 1⅓ (ISO R228 1⅓") mall (Button diaphragm type)
							A			PT¼ tap thread (Signal range and unit: 0.2 ~ 1.0 kg/cm²)
							B			NPT¼ tap thread (Signal range and unit: 3 ~ 15 lb/in²)
							C			NPT¼ tap thread (Signal range and unit: 0.2 ~ 1.0 kg/cm²)
							D			PT¼ tap thread (Signal range and unit: 0.2 ~ 1.0 kg/cm²)
								P		Panel mounting
								T		2-inch pipe mounting
									−X	No selection
									−M	Built-in manual controller (with auto/manual transfer switch)
									−K	With external SP setting knob
									−5	Elevation or high elevation
									−6	Suppression
									−7	Air-Set

[Note]

1) *1 . . . . .
   - Cover materials denote for element type 1☐ and 2☐.
   - Flange or screw materials denote for element type 3☐.
2) As for ratings of flange or mounting screw, refer to tables on page 2 because of their operating limits.
3) When specifying semi-standard option (Y☐) not listed in model no table, please write as: KFK 102Y-1122 AT-M, K, 6, 7 (Y67, Y138)
   (Please consult with factory in case of a multiple of "Y" spec. are required.)

Overall Dimensions



Notes:
1. The holes not to be used for air connection are plugged
2. These holes in the bracket enable the controller to be mounted in various position.
3. This dimensions are of bourdon type element. (Element model nos 11 ~ 14). Caution must be taken to dimensions which depend on the shape of elements. (Refer to the reference spec. sheets at the rear of this sheet.)

Figure 3

Ordering Information

When ordering, please specify:

1) Model no.
2) Pressure range
3) Options

Reference Specification Sheets

- Bourdon type sensing element . . . . . No. SS2-514-110
- Bellows type sensing element . . . . . No. SS2-514-150/250
- Remote seal diaphragm type sensing element . . . . . No. SS2-514-310

Reference Instruction Manuals

- Instrument . . . . . No. OM2-613-000
- Meter body . . . . . No. OM1-613-110

* Specifications are subject to change without notice.

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