

## IMMERSION TYPE PH (ORP) SENSORS

Model: HC-7

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Immersion type pH/ORP sensors suitable for measurement applications such as open waterways or open tanks. They consist of an electrode mounted in an electrode holder. Electrodes for this series are classified into two types; the KCl supply type and KCl no-supply type. Refer to separate specification sheets for flow-through type sensor and a cleaner equipped sensors.

### Sensors Combined with a KCl Supply Type Electrode

An immersion type pH/ ORP sensor is combined with a KCl supply type electrode. The electrode holder serves as an electrolyte tank and holds a large amount of KCl solution. Various materials for wetted parts and many types of applicable electrodes are available covering a wide range of applications from waste water treatment plants to industrial processes under harsh measurement conditions. In addition, DKK-TOA standardizes various pressurized type sensors capable of keeping stable reference potential over long periods thus enabling highly reliable measurement.

### COMMON SPECIFICATIONS

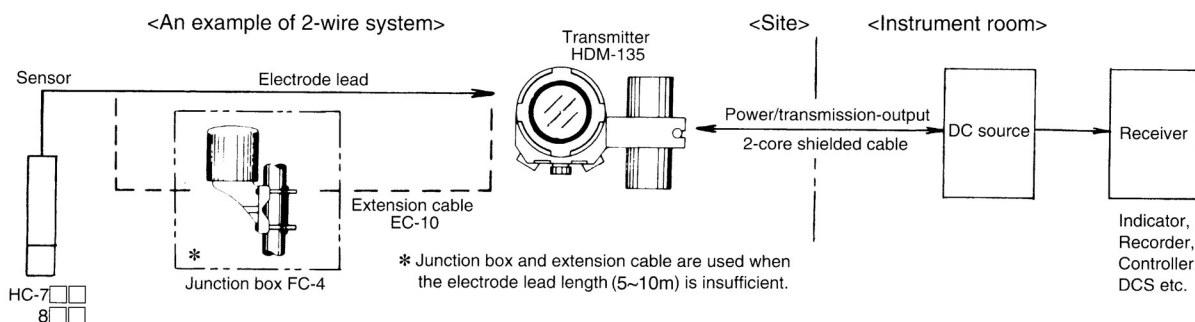
- Construction** : Spray proof construction (JIS C0920)
- Sample Conditions** : Pressure; Atmospheric pressure  
Flow speed; 2m/s or less
- Electrolyte Capacity** : Approx. 600mL (with 1.0m long holder)
- Mounting** : Bracket system; ZCD-1 or ZC-1 plus ZN-7 or ZC-2  
Flange system; ZFL-11 or ZFL-2



### MODEL CLASSIFICATION

	Non-pressurized type	Pressurized type	Feature, notes
Control and monitoring of effluent neutralization	HC-763	HC-753	Semi-clear polypropylene holder excellent in heat resistance and chemical resistance properties. Its length can be designed up to 3m in 0.5m steps. This standard production model is suitable for general use. Avoid its use under direct sun light.
	HC-703C	HC-753C	Clear PVC holder of less deflexion. Its length can be designed up to 4.0m in 0.5m steps. When a length over 3m is required, drop-in type HC-360 is recommended.
	HC-360		The drop-in type for a deep tank, equipped with a KCl reservoir made of PVC guide pipe. The length of guide pipe can be designed up to 8.0m.
Process online control	HC-703F	HC-753F	Semi-clear PVDF (polyvinylidene fluoride resin) resistant to high temperature, chemical agents, solvents and direct sun light under every condition. Its length can be designed up to 4.0m in 0.5m steps.
	HC-703T	HC-753T	Fluororesin (semi-clear PFA) holder resistant to organic solvents. Perfluor rubber excellent in solvent resistance is also used for seal for packing. The holder length can be designed up to 3.0m in 0.5m steps.

### SYSTEM CONFIGURATION



● Discrete Specifications

		General use		Drop-in type	High temperature and chemical resistant use	Organic solvent resistant use
Model	Non-pressurized type	HC-763	HC-703C	HC-360	HC-703F	HC-703T
	Pressurized type	HC-753	HC-753C	—	HC-753F	HC-753T
Material of wetted parts	Main body pipe	PP	PVC	PP, PVC	PVDF	PFA
	Protector	PP	PP	SUS316	PVDF	PFA
	Electrode packing	FPM	FPM	FPM	FPM	Perfluoro rubber
Limit length		3.0m	4.0m	Guide pipe 8.0m	4.0m	3.0m
Heat resistance (Note 1)		80°C	60°C	60°C	120°C	80°C
Weight (Note 2)		1 kg	1 kg	Holder 0.3kg	1 kg	1.5 kg

The sensors listed above may be combined with various types of cleaners.

Note 1: The max. temperature at which the material of wetted part endures. The service temperature range depends on specifications of the electrode to be combined.

Note 2: The weight of the holder filled with electrolyte (KCℓ) per meter.

● Applicable Electrode

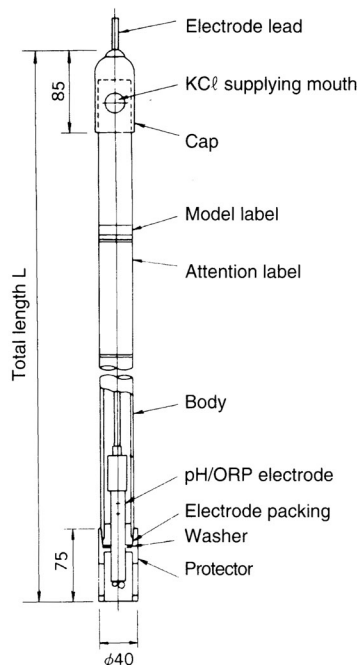
	Electrode holder	pH electrode					ORP electrode	
		General use (-5 ~ 70°C)	For high temperature use (-5 ~ 95°C)	For hydrofluoric acid resistant use (-5 ~ 50°C)	For solvent resistant use (-5 ~ 70°C)	For high temperature and solvent resistant use (-5 ~ 95°C)	Platinum type (-5 ~ 70°C)	Platinum type with temperature sensor (-5 ~ 70°C)
Non-pressurized type	HC-763	5600	5601	5605	5602	—	6491	2600
	HC-703C	5600	—	5605	—	—	6491	2600
	HC-360	5610	—	5615	—	—	6397	2610
	HC-703F	—	5601	—	5602	5603	—	2601
	HC-703T	—	—	—	5602	5603	—	—
Pressurized type	HC-753	5610	5611	5615	5612	—	6397	2610
	HC-753C	5610	—	5615	—	—	6397	2610
	HC-753F	—	5611	—	5612	5613	—	—
	HC-753T	—	—	—	5612	5613	—	—

( ) Service temperature range      ■ Typical combination

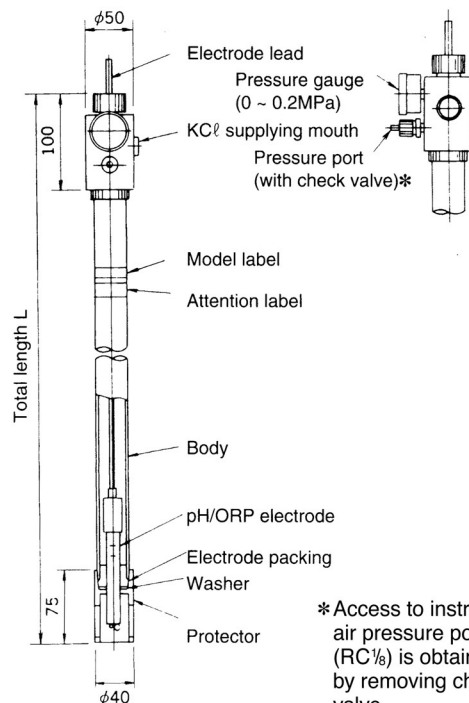
**DIMENSIONS**

unit: mm

< Non-pressurized type >



< Pressurized type >

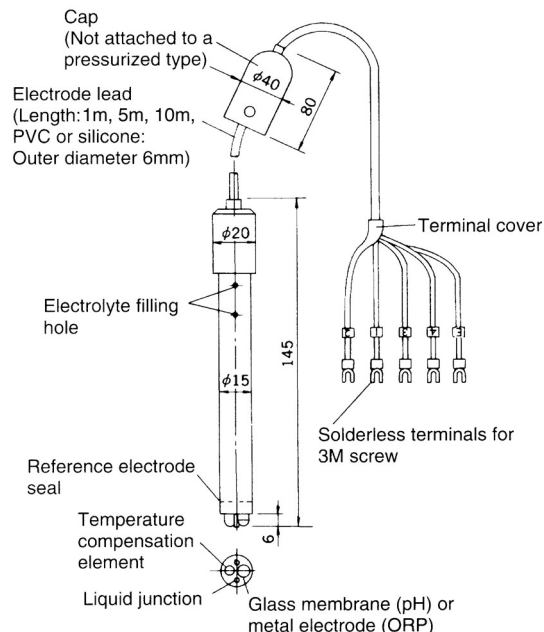


- L: 500  
1000  
1500  
2000  
2500  
3000  
(3500)  
(4000)

\* Access to instrument air pressure port (RC<sup>1</sup>/<sub>8</sub>) is obtained by removing check valve.

### KCl-supply Type pH Electrode

The latest electrodes, employing a newly developed glass membrane with an excellent linearity to suppress AgCl exudation from the liquid junction of the reference electrode (the non-leak AgCl inner electrode). They are capable of performing stable and continuous measurement under various measurement conditions such as high temperature, low concentration solution or solution containing reducing agents. The type that employs hydrofluoric acid solution, and the type resistant to organic solvents with the use of Perfluoro (fluoro-rubber, new material) are also available as standard options. In addition, the projected construction of the temperature compensation element (TC: 10k $\Omega$ at 25°C) from the main electrode body further improves the response of temperature compensation. The electrolyte for the electrodes listed in the following table is 3M-KCl solution.



Model	Electrolyte exudation method	Type of glass membrane	pH measurement range	Service temperature range	Seal material of reference electrode	Lead wire insulation	Applicable electrode holder
EL5600-□F	Non-pressurized type	Standard membrane	0 ~ 14pH	-5 ~ 70°C	FPM	Heat resistant PVC	HC-763
EL5601-□F	Non-pressurized type	Standard membrane	0 ~ 14pH	-5 ~ 95°C	FPM	Silicone	HC-703F
EL5602-□F	Non-pressurized type	Standard membrane	0 ~ 14pH	-5 ~ 70°C	Perfluoro rubber	Heat resistant PVC	HC-703T
EL5603-□F	Non-pressurized type	Standard membrane	0 ~ 14pH	-5 ~ 95°C	Perfluoro rubber	Silicone	HC-703T
EL5605-□F	Non-pressurized type	Hydrofluoric acid resistant membrane	2 ~ 11pH	-5 ~ 50°C	FPM	Heat resistant PVC	HC-703C
EL5610-□F	Pressurized type	Standard membrane	0 ~ 14pH	-5 ~ 70°C	FPM	Heat resistant PVC	HC-753
EL5611-□F	Pressurized type	Standard membrane	0 ~ 14pH	-5 ~ 95°C	FPM	Silicone	HC-753F
EL5612-□F	Pressurized type	Standard membrane	0 ~ 14pH	-5 ~ 70°C	Perfluoro rubber	Heat resistant PVC	HC-753T
EL5613-□F	Pressurized type	Standard membrane	0 ~ 14pH	-5 ~ 95°C	Perfluoro rubber	Silicone	HC-753T
EL5615-□F	Pressurized type	Hydrofluoric acid resistant membrane	2 ~ 11pH	-5 ~ 50°C	FPM	Heat resistant PVC	HC-753C

Electrode lead length

### KCl-supply Type ORP Electrode

The sensing tip of the ORP electrode is made of platinum (Pt) or gold alloy. The platinum electrode is used in ORP measurement and in most plants processes, while the alloy electrode is used in that of metal plating waste liquid processing.

Model 26□□ in the following table with a temperature sensor (T) automatically compensate the outputs to the temperature or the check with standard solution. The construction of each reference electrode is same as the abovementioned pH electrodes, and its electrolyte is 3M-KCl solution.

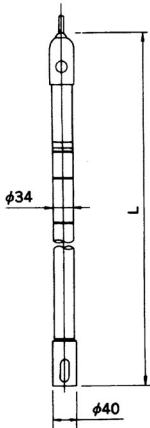
Model	Component electrodes	Electrolyte exudation method	Service temperature range	Seal material for reference electrode	Lead wire insulation	Applicable electrode holder
EL6491-□F	Pt + R	Non-pressurized type	-5 ~ 70°C	FPM	PVC	HC-763
EL6497-□F	M + R	Non-pressurized type	-5 ~ 70°C	FPM	PVC	HC-763
EL6397-□F	Pt + R	Pressurized type	-5 ~ 70°C	FPM	PVC	HC-753
EL2600-□F	Pt + R + T	Non-pressurized type	-5 ~ 70°C	FPM	Heat resistant PVC	HC-763
EL2601-□F	Pt + R + T	Non-pressurized type	-5 ~ 95°C	FPM	Silicone	HC-703F
EL2602-□F	Pt + R + T	Non-pressurized type	-5 ~ 70°C	Perfluoro rubber	Heat resistant PVC	HC-703T
EL2605-□F	M + R + T	Non-pressurized type	-5 ~ 70°C	FPM	Heat resistant PVC	HC-763
EL2610-□F	Pt + R + T	Pressurized type	-5 ~ 70°C	FPM	Heat resistant PVC	HC-753

Electrode lead length

**DIMENSIONS & PRODUCT CODE**

**HC-763 (PP, for General Use)**

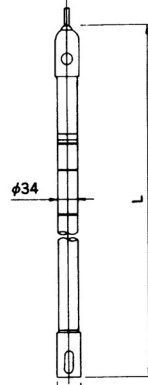
HC763-2



1	Holder length *1	0.5m
2	1.0m	
3	1.5m	
4	2.0m	
5	2.5m	
6	3.0m	
9	Custom spec.	
0	Electrode to be combined	
A	No electrode	
B	pH General use	5600
E	pH High temperature	5601
L	pH Hydrofluoric acid resistance use	5605
M	pH General use	5700★ For combination with differential amplifier
U	pH High temperature	5701★ For combination with differential amplifier
1	pH General use	6462★ TC=350Ω
3	ORP(Pt) General use	6491
7	ORP(Pt) General use	2600★ With a temperature sensor
8	ORP(M) General use	6497★
0	As designated	
0	Electrode lead length	
K	Electrode integration is not required	
M	5m (Holder length below 2.5m)	
Y	10m	
0	As designated.	
A	Holder guide assembly #2	
G	Nil	
Z	Attached (SUS316)	
1	Custom spec.	
2	Protector shape	
3	General use (UHC, JHC inclusive)	
9	For RHC	
0	For BHC, BJHC	
1	Custom spec.	
9	Markings	
0	Standard	
1	English	
9	Custom spec.	
0	Discrete certification	
1	Nil	
9	Applied (With certification tag)	
0	Applied (With certificate of inspection by measure expert)	

**HC-703C (PVC, for General Use)**

HC703C-0



1	Holder length*1	0.5m
2	1.0m	
3	1.5m	
4	2.0m	
5	2.5m	
6	3.0m	
7	3.5m	
8	4.0m	
9	Custom spec.	
0	Electrode to be combined	
A	No electrode	
E	pH General use	5600
L	pH Hydrofluoric acid resistance use	5605
U	pH General use	5700★ For combination with differential amplifier
1	pH General use	6462
3	ORP(Pt) General use	6491★
7	ORP(Pt) General use	2600★ With a temperature sensor
8	ORP(M) General use	6497★
0	As designated	
0	Electrode lead length	
K	Electrode integration is not required	
M	5m (Holder length below 2.5m)	
Y	10m	
0	As designated.	
A	Holder guide assembly #2	
G	Nil	
Z	Attached (SUS316)	
1	Custom spec.	
2	Protector shape	
3	General use (UHC, JHC inclusive)	
9	For RHC	
0	For BHC, BJHC	
1	Custom spec.	
9	Markings	
0	Standard	
1	English	
9	Custom spec.	
0	Discrete certification	
1	Nil	
2	Applied (With certification tag)	
0	Applied (With certificate of inspection by measure expert)	

★: Not subjected to certification

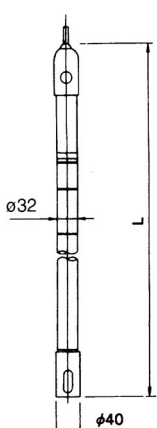
\*1 Holder length: Up to 3m (because of too large deflexion)  
\*2 Required when combined with cleaner or ZN-7 support.

★: Not subjected to certification

\*1 Holder length: Up to 4m  
\*2 Required when combined with cleaner or ZN-7 support.

**HC-703F (PVDF, resistant to high temperature and chemicals)**

HC703F-1



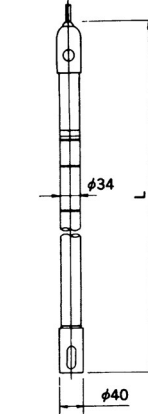
1	Holder length *1	0.5m
2	1.0m	
3	1.5m	
4	2.0m	
5	2.5m	
6	3.0m	
7	3.5m	
8	4.0m	
9	Custom spec.	
0	Electrode to be combined	
B	No electrode	
C	pH High temperature	5601
D	pH Chemical resistant	5602★
M	pH High temperature and chemical resistant	5603★
N	pH High temperature	5701★ For combination with differential amplifier
4	pH Chemical resistant	5702★ For combination with differential amplifier
8	ORP(Pt) High temperature	2601★ With temperature sensor
0	As designated	
0	Electrode lead length	
K	Electrode integration is not required	
M	5m (Holder length below 2.5m)	
Y	10m	
0	As designated.	
A	Holder guide assembly #2	
G	Nil	
Z	Attached (for ø32mm, SUS316)	
0	Custom spec.	
0	Markings	
1	Standard	
9	English	
0	Custom spec.	
1	Discrete certification	
2	Nil	
0	Applied (With certification tag)	
2	Applied (With certificate of inspection by measure expert)	

★: Not subjected to certification

\*1 Holder length: Up to 5m  
\*2 Required when combined with cleaner or ZN-7 support. (Dedicated to this model of 32mm outer diameter.)

**HC-703T (PFA, resistant to organic solvents)**

HC703T-0



1	Holder length *1	0.5m
2	1.0m	
3	1.5m	
4	2.0m	
5	2.5m	
6	3.0m	
9	Custom spec.	
0	Electrode to be combined	
C	No electrode	
D	pH Chemical resistant	5602★
N	pH High temperature and chemical resistant	5603★
8	pH Chemical resistant	5702★ For combination with differential amplifier
0	As designated	
0	Electrode lead length	
K	Electrode integration is not required	
M	5m (Holder length below 2.5m)	
Y	10m	
0	As designated.	
A	Holder guide assembly #2	
G	Nil	
Z	Attached (SUS316)	
0	Custom spec.	
0	Markings	
1	Standard	
9	English	
0	Custom spec.	
1	Discrete certification	
2	Nil	
0	Applied (With certification tag)	
2	Applied (With certificate of inspection by measure expert)	

★: Not subjected to certification

\*1 Holder length: Up to 3m  
\*2 Required when combined with ZN-7 support.

**HC-753 (Pressurized type, PP)**

**HC753-1**

1	Holder length *1	0.5m
2		1.0m
3		1.5m
4		2.0m
5		2.5m
6		3.0m
9		Custom spec.
A	Electrolyte pressurization	
B	Instrument air: Joint Rc1/8 (PT1/8)	
Z	Manual pressure pump (supplied); The body contains a check valve.	
	Custom spec.	
	Electrode to be combined	
0		Not required
F		pH General use 5610
G		pH High temperature 5611★
K		pH Hydrofluoric acid resistant 5615
Q		pH General use 5710★
R		pH High temperature 5711★
V		pH General use 6395
1		ORP (Pt) General use 6397★
3		ORP (Pt) General use 2610★
7		ORP (M) General use 6398★
8		Custom spec.
	Electrode lead length	
0		Electrode integration is not required
K		5m (Holder length below 2.5m)
M		10m
Y		As designated
	Holder guide assembly *2	
A		Nil
G		Attached (SUS316)
Z		Custom spec.
	Protector shape	
1		General use (UHC, JHC inclusive)
2		For RHC
3		For BHC, BJHC
9		Custom spec.
	Markings	
0		Standard
1		English
9		Custom spec.
	Discrete certification	
0		Nil
1		Applied (With certification tag)
2		Applied (With certificate of inspection by measure expert)

**HC-753C (Pressurized type, PVC)**

**HC753C-0**

1	Holder length *1	0.5m
2		1.0m
3		1.5m
4		2.0m
5		2.5m
6		3.0m
7		3.5m
8		4.0m
9		Custom spec.
A	Electrolyte pressurization	
B	Instrument air: Joint Rc1/8 (PT1/8)	
Z	Manual pressure pump (supplied); The body contains a check valve.	
	Custom spec.	
	Electrode to be combined	
0		Not required
F		pH General use 5610
K		pH Hydrofluoric acid resistant 5615
Q		pH General use 5710★
V		pH General use 6395
1		ORP (Pt) General use 6397★
3		ORP (Pt) General use 2610★
7		ORP (M) General use 6398★
8		Custom spec.
	Electrode lead length	
0		Electrode integration is not required
K		5m (Holder length below 2.5m)
M		10m
Y		As designated
	Holder guide assembly *2	
A		Nil
G		Attached (SUS316)
Z		Custom spec.
	Protector shape	
1		General use (UHC, JHC inclusive)
2		For RHC
3		For BHC, RJHC
9		Custom spec.
	Markings	
0		Standard
1		English
9		Custom spec.
	Discrete certification	
0		Nil
1		Applied (With certification tag)
2		Applied (With certificate of inspection by measure expert)

★: Not subjected to certification

\*1 Holder length: Up to 3m (because of too large deflexion)  
 \*2 Required when combined with cleaner or ZN-7 support.

★: Not subjected to certification

\*1 Holder length: Up to 4m  
 \*2 Required when combined with cleaner or ZN-7 support.

**HC-753F (Pressurized type, PVDF)**

**HC753F-0**

1	Holder length *1	0.5m
2		1.0m
3		1.5m
4		2.0m
5		2.5m
6		3.0m
7		3.5m
8		4.0m
9		Custom spec.
A	Electrolyte pressurization	
B	Instrument air: Joint Rc1/8 (PT1/8)	
Z	Manual pressure pump (supplied); The body contains a check valve.	
	Custom spec.	
	Electrode to be combined	
0		Not required
G		pH High temperature 5611★
H		pH Chemical resistant 5612★
J		pH High temperature and chemical resistant 5613★
R		pH High temperature 5711★
S		pH Chemical resistant 5712★
8		Custom spec.
	Electrode lead length	
0		Electrode integration is not required
K		5m (Holder length below 2.5m)
M		10m
Y		As designated
	Holder guide assembly *2	
A		Nil
G		Attached (For ø32, SUS316)
Z		Custom spec.
	Markings	
0		Standard
1		English
9		Custom spec.
	Discrete certification	
0		Nil
1		Applied (With certification tag)
2		Applied (With certificate of inspection by measure expert)

★: Not subjected to certification

\*1 Holder length: Up to 5m  
 \*2 Required when combined with cleaner or ZN-7 support.  
 (Dedicated to this model of 32mm outer diameter.)

**HC-753T (Pressurized type, PFA)**

**HC753T-0**

1	Holder length *1	0.5m
2		1.0m
3		1.5m
4		2.0m
5		2.5m
6		3.0m
9		Custom spec.
A	Electrolyte pressurization	
B	Instrument air: Joint Rc1/8 (PT1/8)	
Z	Manual pressure pump (supplied); The body contains a check valve.	
	Custom spec.	
	Electrode to be combined	
0		Not required
H		pH Chemical resistant 5612★
J		pH High temperature and chemical resistant 5613★
S		pH Chemical resistant 5712★
T		pH High temperature, chemical resistant 5713★
8		Custom spec.
	Electrode lead length	
0		Electrode integration is not required
K		5m (Holder length below 2.5m)
M		10m
Y		As designated
	Holder guide assembly *2	
A		Nil
G		Attached (SUS316)
Z		Custom spec.
	Markings	
0		Standard
1		English
9		Custom spec.
	Discrete certification	
0		Nil
1		Applied (With certification tag)
2		Applied (With certificate of inspection by measure expert)

★: Not subjected to certification

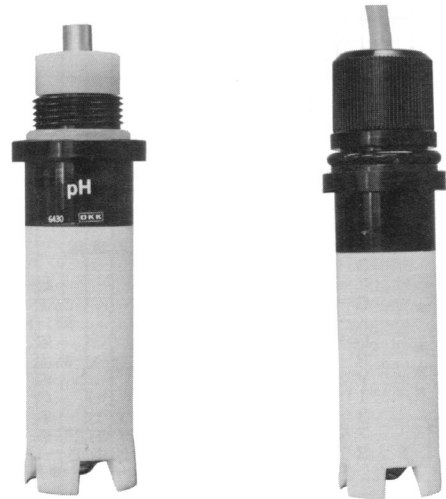
\*1 Holder length: Up to 3m  
 \*2 Required when combined with ZN-7 support.

### Sensors Combined with KCl No-supply (NOS) Electrode

The KCl no-supply (NOS) type pH/ORP electrode seals in the electrolyte KCl at the Teflon Junction and eliminates the need to replenish electrolyte solution. In addition, this electrode is immune to external pressure. Thus the immersion type holders combined with a NOS electrode are convenient for drop-in or submerged (measurement is possible down to 50m of water depth) use.

However it is not suitable for a sample temperature above 50°C, low ion water (below city water level), heavily contaminated water (mixed with oil, etc.) nor monitoring in tightly sealed tanks under sub-atmospheric pressure. When any of the conditions described above are present, use of "KCl supply type" electrode is recommended. Two types; the leadless and lead types are available.

The former contains a preamplifier and a replaceable battery. It converts the output impedance and provides an output signal compensated at the temperature of 25°C by 2-wire system. This provides excellent noise resistance..



Leadless Type 6430L

Lead Type 5910

### STANDARD SPECIFICATIONS

**Sample conditions:** Pressure ... 0~0.5MPa, Temperature; Refer to the table below, Flow speed; Not more than 2m/s

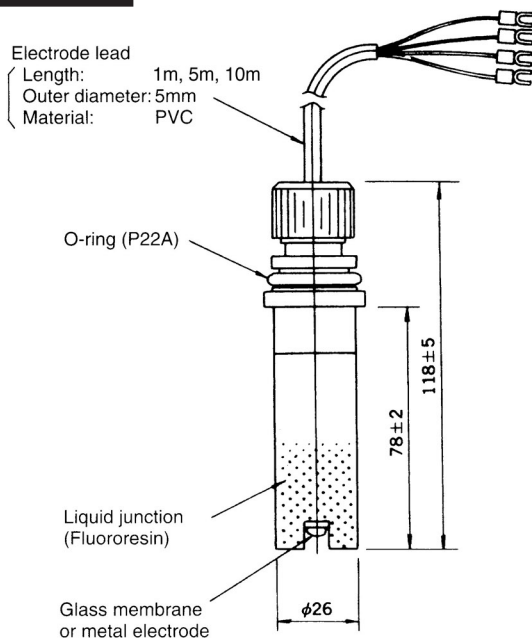
**Wetted parts materials:** Epoxy resin, fluororesin

**Inner electrode:** Ag-AgCl

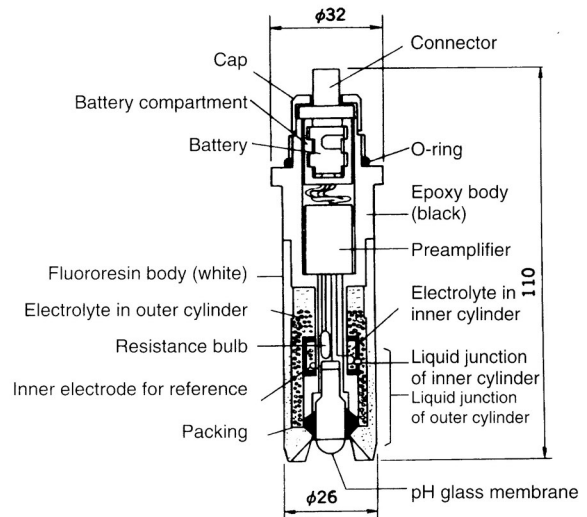
Classification	pH electrode				ORP electrode	
	Lead type		Leadless type with amplifier and battery		Lead type	Leadless type
Electrode model	5910	5915	6430L	6431L	2910	6407L
Measurement range	2 ~ 12pH	2 ~ 10pH	2 ~ 12pH	2 ~ 12pH	±2000mV	±2000mV
Sample temperature range	-5 ~ 50°C	-5 ~ 50°C	-5 ~ 50°C	40 ~ 70°C	-5 ~ 50°C	-5 ~ 50°C
Sensing tip	General use glass membrane	Hydrofluoric acid resistant glass membrane	General use glass membrane	General use glass membrane	Platinum (Pt)	Platinum (Pt)
Temperature compensation resistor	10KΩ at 25°C	10KΩ at 25°C	*		10kΩ at 25°C	—
Applicable holder	Immersion type: HC-N76 (PP) HC-N72 (SUS) Drop-in type: HC-N90, N95		Immersion type: HC-976 (PP) HC-972 (SUS)		HC-N76 HC-N72 HC-N90 HC-N95	HC-976 HC-972

\* Output signal is compensated at temperature 25°C by built-in resistance bulb and preamplifier.

### DIMENSIONS

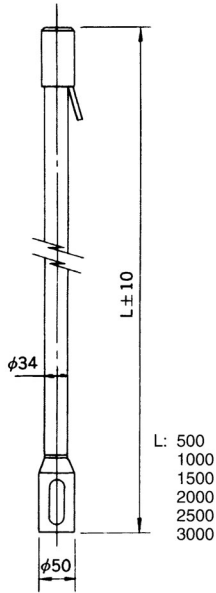


Lead Type Electrode



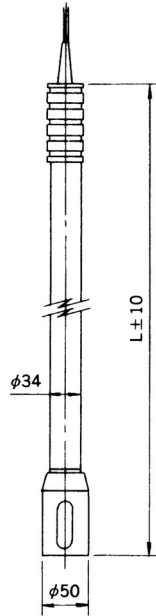
Construction of Leadless Type Electrode with Built-in Amplifier

● Immersion Type Electrode Holder for Lead Type Electrode



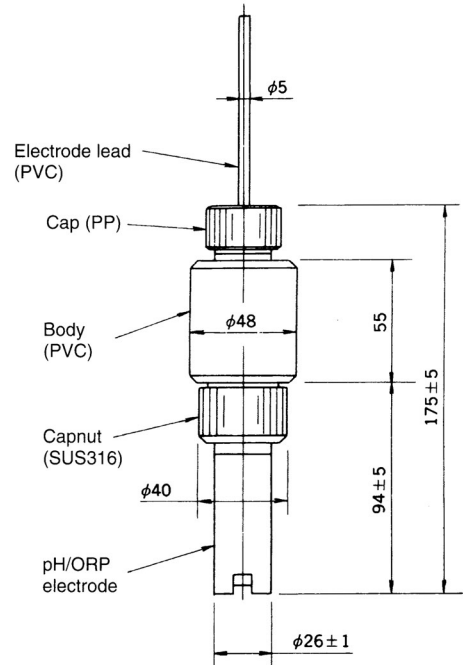
HC-N76 (PP)  
HC-N72 (SUS)

● Immersion Type Electrode Holder for Leadless Type Electrode with Built-in Amplifier

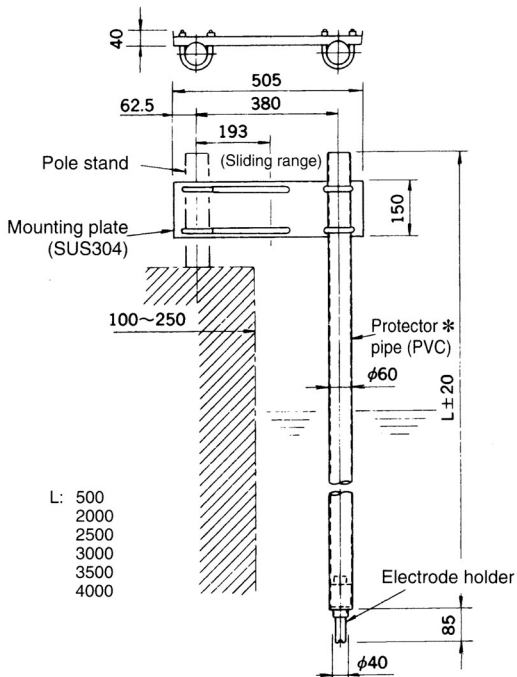


HC-976 (PP)  
HC-972 (SUS)

● Drop-in, and Submerged Electrode Holder HC-N90 (for Lead Type Electrode)

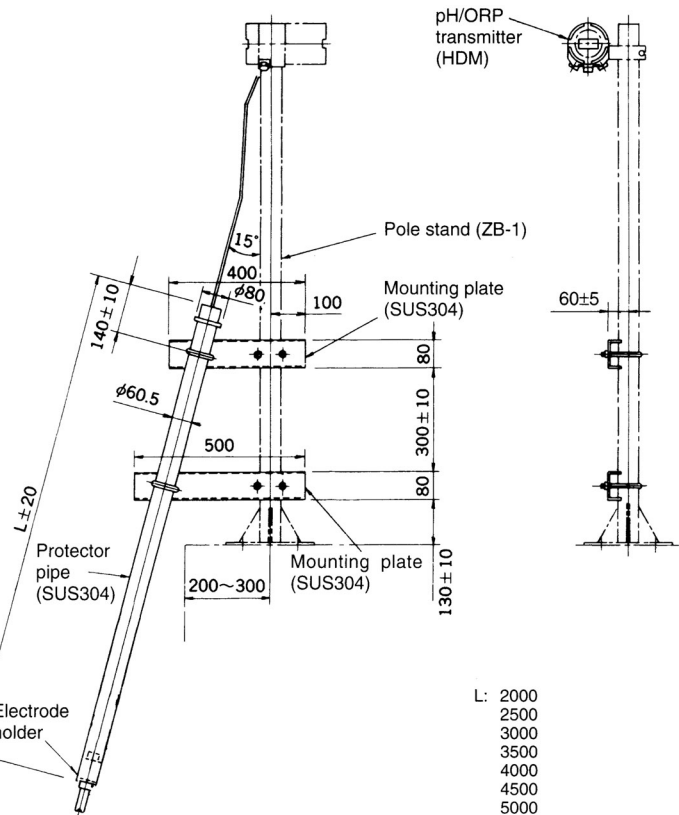


● General Use Drop-in Type Holder HC-N90



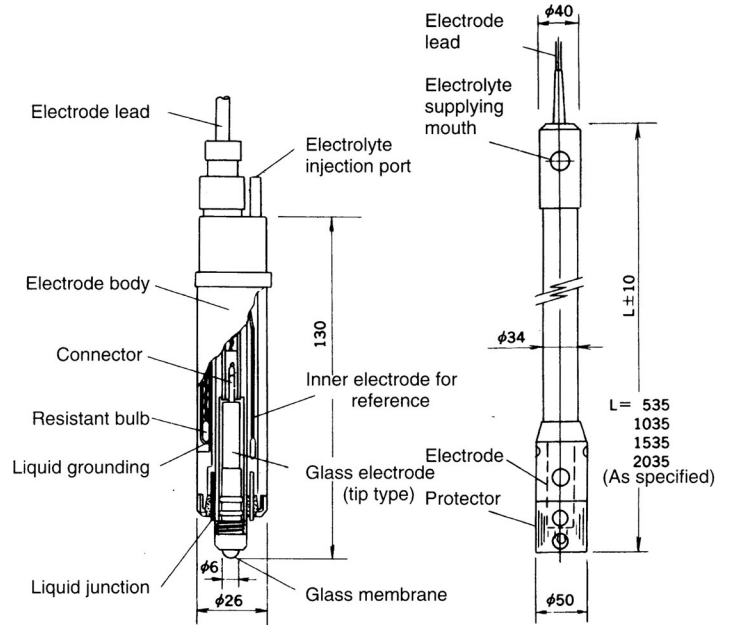
\* The pipe may be mounted on the sealed tank by means of the sliding flange.

● Drop-in Holder for Aeration Tank HC-N95



**Sensors Combined with Replaceable-tip Electrodes**

pH electrode with replaceable glass electrode and liquid junction. The electrode body consists of the temperature compensation element, grounding, inner electrode for reference, and connector for glass electrode. The immersion holder to be combined is HC-160 (PP), which can hold a large amount of electrolyte (KCl solution).



Electrode Construction

HC-160 Electrode Holder

**STANDARD SPECIFICATIONS**

Item	Model	5900	5905
Application		General use	Hydrofluoric acid resistance
pH measurement range		2 ~ 12	0 ~ 10
Service temperature range		-5 ~ 70°C	-5 ~ 40°C
Service pressure range		Atmospheric pressure	
Material of wetted parts		Viton and synthetic resin etc.	
Inner electrode		Ag-AgCl	
Liquid junction		ø1.5mm ceramic	
Temperature compensation element		Platinum resistance bulb 10kΩ (at 25°C)	
Glass electrode tip to be replaced		5070L	5072L

Electrode holder mounting: With bracket ZC-1, ZN-7 or with loose flange ZFL-3

**pH Analyser Combined with Antimony Electrode**

The field installed type pH measurement system suitable for hydrofluoric acid solutions (that are difficult to measure with glass electrodes) and high viscosity solutions. The antimony pH sensing ring is always kept clean by continuous rotary polishing with a ceramic grind-tip.

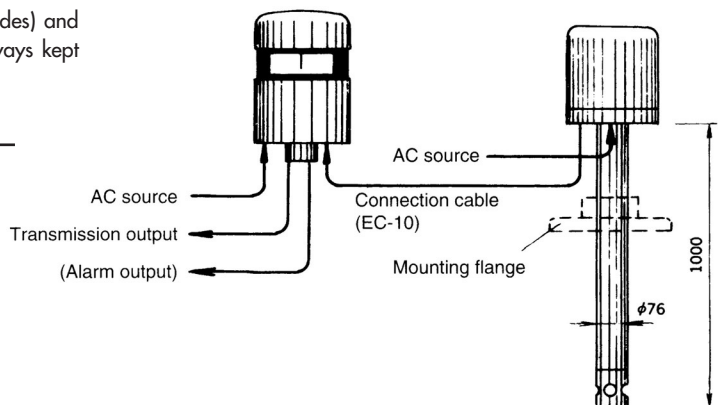
**SYSTEM CONFIGURATION**

- pH indicator/transmitter : AHB-31
- Antimony electrode : 2125
- Reference electrode : 4200
- Immersion type electrode holder : AHC-70
- Connection cable : EC-10

Note: Holder mounting flange is optional.

AHB-31 Transmitter

AHC-70 Immersion Type Sensor



**STANDARD SPECIFICATIONS**

Measurement condition	Function, construction	Performance
Sample: Temperature ... -5 ~ 60°C	Measurement range: 2 ~ 12pH	Accuracy: Within ±0.2pH
Pressure ..... Atmospheric pressure	Power requirements: 100VAC 50/60Hz	Repeatability: Within ±0.15pH
Flow rate ..... 1m/s or less	Output: 4 ~ 20mA DC	Response rate: Within 10s at 90% response
Ambient temperature: -10 ~ 55°C	Alarm: Optional, high and low limits	
Ambient humidity: 95%RH or less	Material of wetted parts: PVC, Hastelloy C	(Each item; In standard solution at 20°C)



**Additional Equipment**

• Brackets for Immersion Type Holder

Model	Application	Installation example	
ZN-7 (Support)	Used in combination with bracket ZC-1 to firmly support the holder. The holder can be detached/attached in a single action. The length L is shorter than the holder length by 50cm.	<p>Support length (L1)                      500 (L: 1000)                      1000 (L: 1500, 2000)                      1500 (L: 2000, 2500)                      2000 (L: 2500, 3000)                      2500 (L: 3000, 3500)                      3000 (L: 3500, 4000)</p> <p>Material: SUS316                      Weight: Approx. 3kg/1m</p>	
ZC-1 Type A	Fastened with anchor bolts. When the holder has no cleaner, ZC-1 type A is used in combination with ZN-7. Total length: 600mm, Material: SPCC	Max. applicable holder length: 1.5m	<p>* Anchor bolts and nuts are not supplied.</p>
ZC-1 Type B	Mounted on a pole (50A). When the holder has no cleaner, ZC-1 type B is used in combination with ZN-7. Total length: 600mm, Material: SPCC	Max. applicable holder length: 1.5m	<p>* 50A pipe is not supplied.</p>
ZC-1 Type C	Mounted on a pole (50A). When the holder has no cleaner, ZC-1 type C is used in combination with ZN-7. Total length: 600mm, Material: SPCC	Max. applicable holder length: 2.0 ~ 4.0m	<p>* 50A pipe is not supplied.</p>
ZCD-1	Fastened with anchor bolts. Used for holders without cleaner.	Max. applicable holder length: 0.5 ~ 1.5m	<p>Material: Carbon steel                      Paint color: Munsell 7.5BG 4/1.5</p>
ZC-2	Fastened with the anchor bolts or on a 50A pole. Up to 2 holders (pH and ORP or DO) can be mounted. Holders are detachable/attachable by a single action. Bracket length: 500mm, Material: SUS304, Length of holder to be combined: max. 2m, Mounting of holders with cleaner is also possible.	<p>&lt;Mounting with anchor bolts&gt;</p>	<p>&lt;Mounting on a pole stanchion&gt;</p>

• Immersion Type Holder Mounting Flange

	Model	Application	Material	Flange standard*	Construction, Example of installation
Loose flange	ZFL-1	For mounting KCl-supply electrode holder	PVC or PP	50A JIS 10K FF	
	ZFL-2		SUS316	50A JIS 10K RF	
	ZFL-3	For mounting KCl no-supply electrode holder	PVC or PP	100A JIS 10K FF	
	ZFL-4		SUS316	100A JIS 10K RF	

\* Allowable nominal size: Up to 200A  
DKK copes with JIS, 5K, ANSI and JPI standards.

• Junction Box

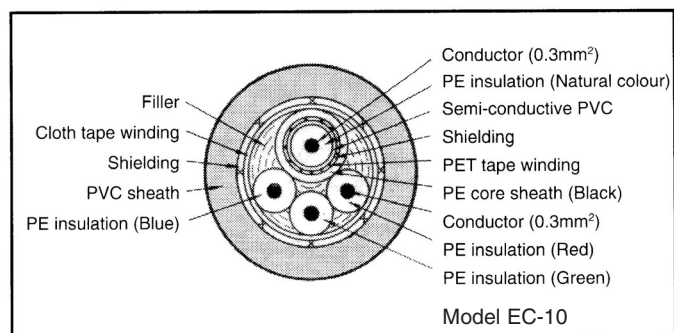
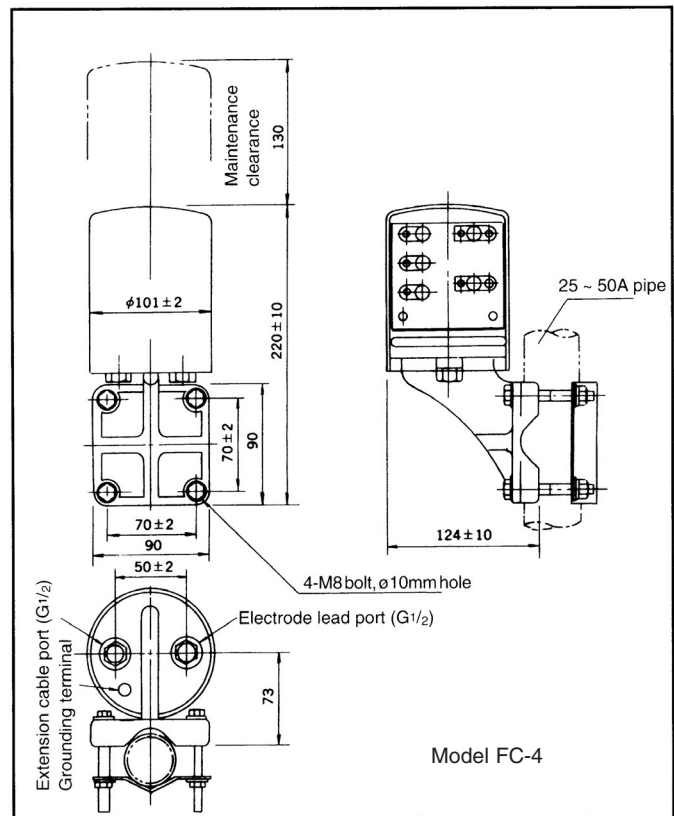
When the transmitter is installed remotely to the sensor (mainly for panel mounted transmitters) and the standard electrode lead length is too short, a junction box is required.

- Model** : FC-4
- Construction** : Field installation, spray proof (JISC0920)
- Mounting** : 25~50A Pipe, wall or panelmount
- Material** : ABS resin
- Finish** : Matted chromium plating, metallic silver
- Weight** : Approx. 0.9kg
- Applicable extension cable** : EC-10

• Extension Cable

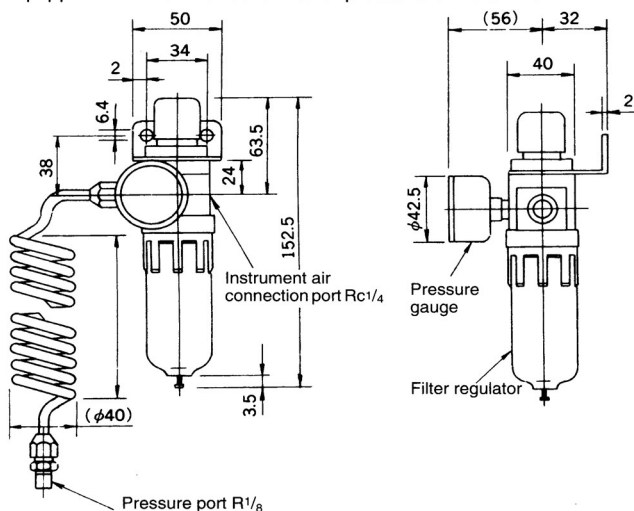
The extension cable is a special cable specifically manufactured for use with pH analysers. It is used for connection between transmitter and junction box. Maximum cable length is 100m. The cable must not be spliced.

Model	EC-10
Overall diameter	8mm
Insulation	Polyethylene and PVC
Sheath	PVC
Insulation resistance between core conductors	At least 10 <sup>5</sup> Ω/100m
Standard length	5m, 10 ~ 100m
Weight	Approx. 0.5kg/5m



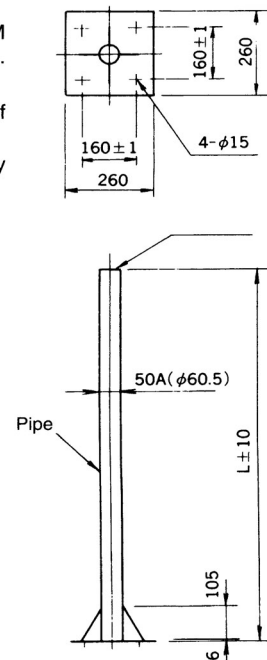
• Air Set PAS-10

The air set, used when the KCl-supply type pressurized holder is pressurized with instrument air. A spiral tube convenient for holder attaching/detaching is connected to the pressure regulator valve equipped with the filter set at outlet pressure 0 ~ 0.3MPa.



• Pole Stand ZB-1

The pole stanchion on which the HDM transmitter and the sensor can be fixed. L: 1600 or 1000mm Material: SPCC coated with acidproof metallic silver paint. (Stainless steel is also available by custom order.)



pH / ORP calibration (check) kit

	Use	Key	Code No.	Product name
KCl non-supply	'pH standard	N	6170120K	'pH calibration 4-7 kit (N)
Immersion type	'pH Alkali	P	6170130K	'pH calibration 7-9 kit (P)
Flow-through type	ORP	Q	6170140K	ORP check kit (Q)

1. Select pH standard kit (pH calibration 4-7 kit) when measurement range of the transmitter covers 0~14pH, where pH 4 and pH7 are included. 'pH alkali kit (pH calibration 7-9 kit) to be selected accordingly.
2. Select pH alkali kit (pH calibration 7-9 kit) when measurement range of the transmitter covers 6~12pH, where pH 4 is not included.
3. Separately order pump to apply pressure to inner solution as required. Code No; 125B971

Model	Applicable kit			Main accessories (excluding fuse)				
	Standard pH	Alkali	ORP					
BHC-7B	N	P	Q	KCl powder 1m/ 1 pack				
BHC-7E								
BJHC-7B								
BRHC-7A								
HC-360								
HC-703C								
HC-703F								
HC-703T								
HC-753								
HC-753C								
HC-753F	N	P	Q	KCl powder 1m/ 1 pack				
HC-753T								
HC-763								
HC-976								
HC-990								
HC-N72								
HC-N76								
HC-N90								
HC-N95								
JHC-7B					N	P	Q	KCl powder 1m/ 1 pack
JHC-7E								
JHC-95A								
RHC-7A								
RHC-7E	N	P	Q	KCl powder 1m/ 1 pack				
UHC-7B								
SBJH-7A					Determined by combined holder			PVC beaker: 136C052 2P
SHC-763					N	P	Q	Same as HC-763
SHC-703	Same as HC-703							
SJH-7A	Determined by combined holder							
SRH-7A	Determined by combined holder							
SUHC-70	Determined by combined holder			Hexagonal wrench 140B055, 140B057: one of each				

\*Inner solution; 500mL/bottle, KCl powder; 500mL

• Detailed list for kit

	Code No.	Amount
'pH calibration 4-7 kit (N) (Code No. 6170120K)		
Polyethylene beaker (500mL)	(136C035)	2
'pH 4 powder for standard solution (500mL with container)	(143F254)	1
'pH 7 powder for standard solution (500mL with container)	(143F255)	1
'pH 4 powder for standard solution (for 500mL, 5 packs/set)	(143F060)	1
'pH 7 powder for standard solution (for 500mL, 5 packs/set)	(143F061)	1
Polyethylene cleaning bottle (500mL)	(136C019)	1
Thermometer (0~100°C)	(127C002)	1
'pH calibration 7-9 kit (P) (Code No. 6170130K)		
Polyethylene beaker (500mL)	(136C035)	2
'pH 7 powder for standard solution (500mL with container)	(143F255)	1
'pH 9 powder for standard solution (500mL with container)	(143F256)	
'pH 7 powder for standard solution (for 500mL, 5 packs/set)	(143F061)	1
'pH 9 powder for standard solution (for 500mL, 5 packs/set)	(143F062)	1
Polyethylene cleaning bottle (500mL)	(136C019)	1
Thermometer (0~100°C)	(127C002)	1
ORP check kit (Q) (Code No. 6170140K)		
Polyethylene beaker (500mL)	(136C035)	1
ORP powder for standard solution (500mL with container)	(143F259)	1
ORP powder for standard solution (for 500mL, 5 packs/set)	(143F089)	1
Polyethylene cleaning bottle (500mL)	(136C019)	1

• Standard Solutions

DKK-TOA offers various pH standard solutions (500mL) and powder reagents (for 500mL). DKK-TOA's class 2 pH standard solutions (Mfr: Kanto Chemical Co., Inc.) are traceable to national standards and have been accepted by public authorities.

**Class 2 pH Standard Solution**

Name	pH value at 25°C, and criteria	Capacity	Parts code
Phthalate pH standard solution, class 2	4.01 ± 0.015	500mL	143F501
Phosphate pH standard equimolar solution, class 2	6.86 ± 0.015	500mL	143F502
Tetraborate pH standard solution, class 2	9.18 ± 0.015	500mL	143F503

**pH Standard Solution**

Name	pH value (25°C)	Accuracy	Capacity	Parts code
Oxalate pH standard solution	1.68	±0.02	500mL	143F063
0.01M oxalate pH standard solution	2.15	±0.02	500mL	143F091
Phthalate pH standard solution	4.01	±0.02	500mL	143F055
Phosphate pH standard equimolar solution	6.86	±0.02	500mL	143F56
Tetraborate pH standard solution	9.18	±0.02	500mL	143F057
Carbonate pH standard solution	10.01	±0.02	500mL	143F064

**Powder Reagent for pH Standard Solution**

Name	pH value (25°C)	Capacity	Parts code
Powder reagent for oxalate pH standard solution	1.68	5 bags, each for 500mL	143F065
Powder reagent for 0.01M oxalate pH standard solution	2.15	5 bags, each for 500mL	143F090
Powder reagent for phthalate pH standard solution	4.01	5 bags, each for 500mL	143F060
Powder reagent for phosphate pH standard equimolar solution	6.86	5 bags, each for 500mL	143F061
Powder reagent for tetraborate pH standard solution	9.18	5 bags, each for 500mL	143F062
Powder reagent for carbonate pH standard solution	10.01	5 bags, each for 500mL	143F066

• ORP Standard Solutions

The ORP standard solution is a mixture of phthalate pH standard solution and Quinhydrone. The phthalate pH standard solution is saturated with Quinhydrone immediately before use.

Name	Capacity	Parts code
ORP standard solution (pH4.01 solution plus quinhydrone)	For 500mL	143F058
Powder reagent for ORP standard solution (pH4.01 powder plus quinhydrone)	5 sets, each for 500mL solution	143F089
Quinhydrone powder reagent for ORP standard solution (quinhydrone only)	5 bags, each for 500mL solution	143F059

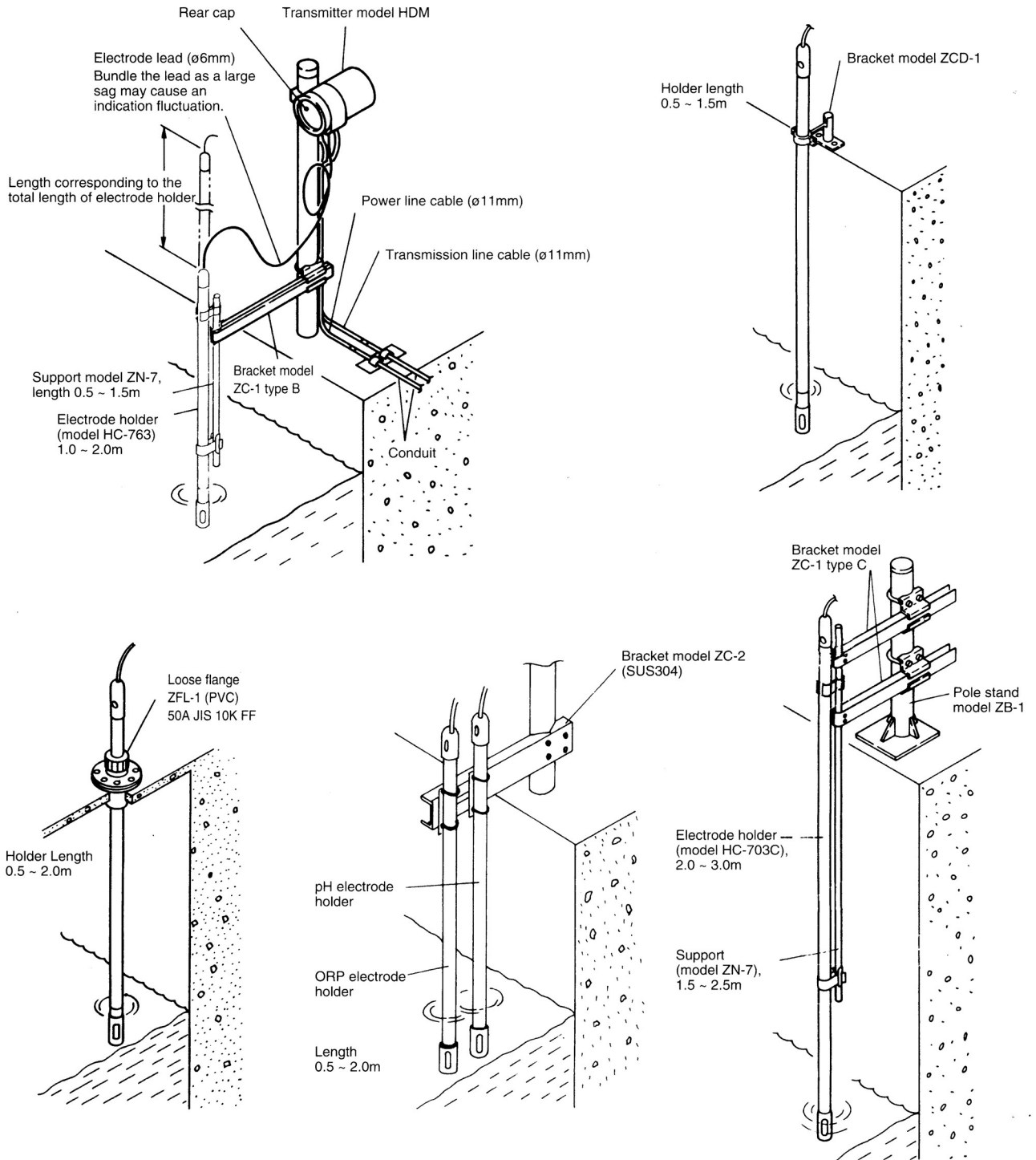
• Electrolyte for Electrode

The electrolyte for KCl-supply type electrode. Liquid electrolyte is supplied in a polyethylene bottle with a nozzle.

Name	Object electrode	Capacity	Parts code
3M KCl solution	Non-leak AgCl inner electrode type	500mL	143A252
KCl for non-leak AgCl electrode inner solution	Non-leak AgCl inner electrode type	1 bag, for 500mL solution	143A253

**Typical Installation of Immersion Type Sensor**

**For Immersion Type pH/ORP Measurement System**



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## CAUTION

Do not operate products before consulting instruction manual.

<http://www.toadkk.co.jp>

Information and specifications are for a typical system and are subject to change without notice.