



By-Pass Level Transmitter



INTRODUCTION

INTRODUCTION

The By-Pass Level Indicator is installed outside of a vessel or tank. The liquid level in the tank can easily be observed from the change of the flag color.

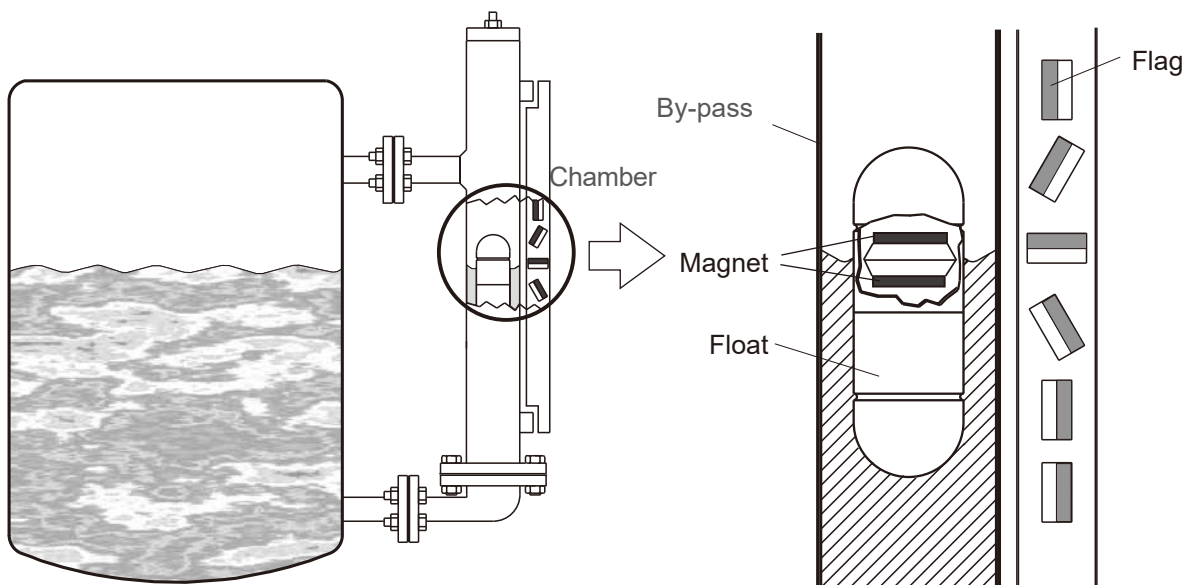
Optional devices of magnetic switch and level transducer can be added for electrical signal output and level transmitting.

PRINCIPLE

Fine-Tek's By-Pass indicator utilizes hydrostatic principle to show the liquid level in the tank. A float with a magnet inside rises and drops according to the liquid level change. Magnetic flags will flip as float passes through to indicate liquid level based on magnetic attraction method.

APPLICATIONS AND FEATURES

- Applicable in environment with high temp., high pressure, strong acid, strong alkaline and hazardous locations. The structure is simple but durable and reliable. It is also available with various options for upgrade.
- A level transducer or magnetic switch can be installed and adjusted during operation.
- It is not operated by electricity thus it will not be affected by power failure.
- Add different color of hag per 10cm that can he recognized easily.
- Multiple applications for textile dyeing, sewage water processing, power generating, boiler and petrochemical industries.



PRODUCT WITH PATENT RECOMMENDATION

1.) Magnetic Switch (Fig.1)

- * The plastic miniature magnetic switch is anti-corrosive and with IP67 rating. It is the smallest magnetic switch in the current market.
- * The magnetic switch is easy to set up and has real time adjustment.

2.) Innovative Design For Bottom End flange and the Connecting flange (Fig.2)

- * The lower center duct is at the bottom end of the chamber. When the liquid drains in the tank, there will be no residue in the chamber unit.
- * This is suitable for production that requires frequent liquid change and mixture is not allowed during the process.

3.) Removable Duct and Connecting flange (Fig.3)

- * The flanges setting is close to the two ends of the chamber, therefore the "C-C" distance is maximized.
- * It is strengthened in the structure by a large phase weld.
- * During the installation, adjust the flanges to the fitting mounting holes.

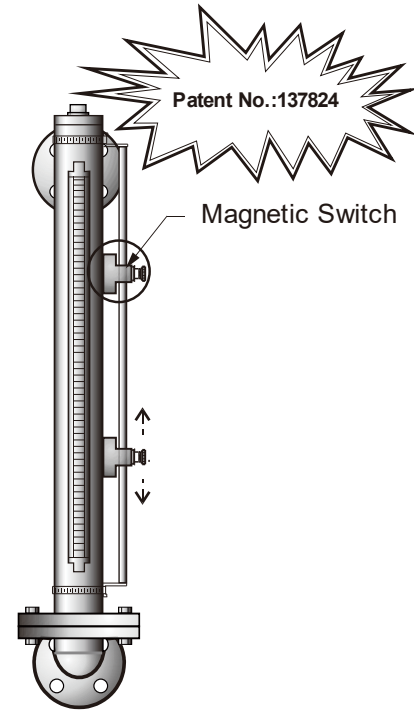


Fig.1

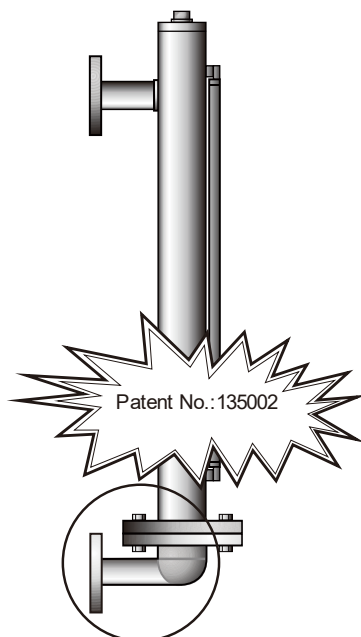


Fig.2

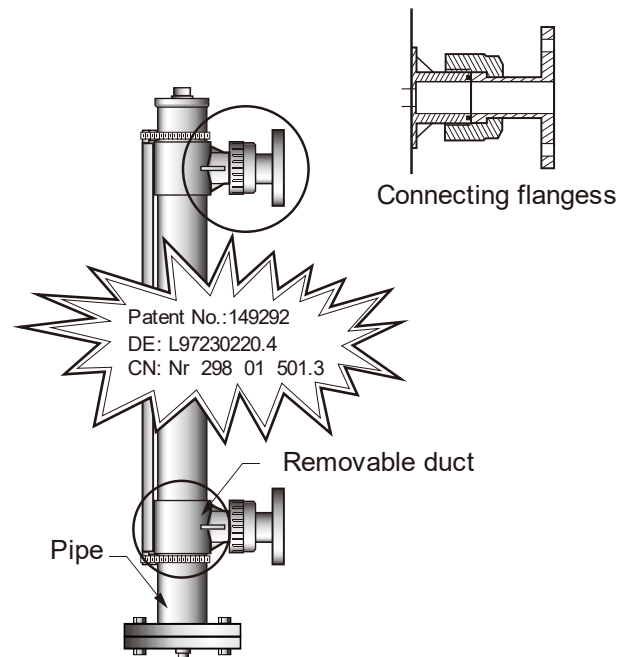


Fig.3

SPECIFICATIONS

Plastic Standard Type				
EF□□□B1H	EF□□□B1K	EF□□□B2K	EF□□□B7H	EF□□□C1H

SPECIFICATIONS:

Model No.	EF□□□B1H	EF□□□B1K	EF□□□B2K	EF□□□B7H	EF□□□C1H
Description					
Top end	Flat top with 1/2" plug				Dual flanges with 1/2" plug
Bottom end	Dual flanges with 1/2" plug	Dual flanges with 1/2" drain valve		Dual flanges with 1/2" plug	
Connecting	3/4" x10kg/cm ² (flanges)		3/4" or 1"PT (Screw)	3/4" x10kg/cm ² (Ball Valve)	3/4" x10kg/cm ² (flanges)
C-C Distance	Min. 150mm; Max. 3800mm				
Operation pressure	5kg/cm ²				
Operation temp.	PP: 80°C, PVDF: 120°C				
Chamber	PP: f60.5 x 3.8t, PVDF: f63 x 3.2t				
Float type	EFB-2500 (PVDF) / 2510 (PP) (Refer float specifications)				
Material	PP / PVDF				
Flag indicator	EFB-0750 (140°C) (Refer flag display data)				
Ruler	Option (Refer ruler data)				

Metal Standard Type			
EF□□□A1H	EF□□□A5M	EF□□□B1H	EF□□□B1K

SPECIFICATIONS

Model No. Description	EF□□□A1H	EF□□□A5M	EF□□□B1H	EF□□□B1K
Top end	Cap		Flat top with 1/2" plug	
Bottom end	Dual flanges with 1/2" plug	Dual flanges with 3" shield pipe	Dual flanges with 1/2" plug	Dual flanges with 1/2" drain valve
Bottom flanges	1-1/2" x 5kg/cm ²	3-1/2" x 5kg/cm ²	1-1/2" x 5kg/cm ²	
Connecting	3/4" x10kg/cm ² (flange)	3" (Hole)	3/4" x10kg/cm ² (flange)	
C-C Distance Flag isplay length(L)	Min. 150mm; Max. 5,800mm	Min. 150mm; Max. 2,000mm	Min. 150mm; Max. 5.800mm	
Operation pressure	25kg/cm ² (Max. 50kg/cm ²)	10kg/cm ²	25kg/cm ² (Max. 50kg/cm ²)	20kg/cm ²
Operation temp.	SUS304: 140°C, 200°C, 350°C SUS316: 140°C, 200°C, 350°C			SUS304: 140°C,200°C,350°C SUS316: 140°C,200°C,350°C
Chamber	f60.5 x 2.8t			
Float type	EFB-2580 (Refer float specifications)	Code: MC Float	EFB-2580 (Refer float specifications)	
Material	SUS304 / SUS316			
Flag indicator	EFB-0700 (200°C), EFB-0740 (350°C), EFB-0750 (140°) (Refer flag display data)			
Ruler	Option (Refer ruler data)			

Metal Standard Type

EF□□□B2K	EF□□□B7H	EF□□□C1H	EF□□□B1L

* The pipe is so long that support rack is needed to prevent pipe from bending.

SPECIFICATIONS

Model No. Description	EF□□□B2K	EF□□□B7H	EF□□□C1H	EF□□□B1L
Top end	Flat top with 1/2" plug		Dual flanges with 1/2" plug	Flat top with 1/2" plug
Bottom end	Dual flanges with 1/2" drain valve	Dual flanges with 1/2" plug		Dual flanges+angle pipe
Bottom flanges	1-1/2" x 5kg/cm ²			————
Connecting	3/4"PT or 1"PT (Screw)	3/4" x10kg/cm ² (Ball Valve)	3/4" x10kg/cm ² (flange)	
C-C Distance	Min. 150mm; Max. 5,800mm			
Operation pressure	20kg/cm ²	10kg/cm ²	25kg/cm ² (Max. 50kg/cm ²)	
Operation temp.	SUS304:140°C, 200°C, 350°C SUS316:140°C, 200°C, 350°C		SUS304:140°C, 200°C,350°C SUS316:140°C, 200°C,350°C	
Chamber	f60.5 x 2.8t			
Float type	EFB-2580 (Refer float specifications)			
Material	SUS304 / SUS316			
Flag indicator	EFB-0700 (200°C), EFB-0740 (350°C), EFB-0750 (140°) (Refer flag display data)			
Ruler	Option (Refer ruler data)			

Blanket Type	Jacket Type	Heating Type
EF□□□C1H	EF□□□C8H	EF□□□B1H

SPECIFICATIONS

Model No.	EF□□□C1H	EF□A/B□C1H	EF□□□B1H
Description			
Top end	Dual flanges with 1/2" plug		Dual flanges with 1/2" plug
Bottom end	Dual flanges with 1/2" plug		Dual flanges with 1/2" plug
Connecting	3/4" x10kg/cm ² (flange)	1-1/4" x 10kg/cm ²	3/4" x10kg/cm ² (flange)
C-C Distance	Min. 150mm; Max. 5800mm		
Operation pressure	25kg/cm ² (Max. 50kg/cm ²)		20kg/cm ²
Operation temp.	SUS304: 140°C, 200°C, 350°C SUS316: 140°C, 200°C, 350°C		SUS304: 100°C SUS316: 100°C
Chamber	φ60.5 x 2.8t	Jacket φ76 x 3.0t 1/2"PT plug	φ65 x 3.5t φ130 Heating type
Float type	EFB-2580 (Refer float specifications)		
Material	SUS304 / SUS316		
Flag indicator	EFB-0700 (200°C), EFB-0740 (350°C), EFB-0750 (140°C) (Refer flag display data)		
Ruler	Option (Refer ruler data)		

Antiseptic Type	High Pressure Type
EF□□□C1H	EF□□□C1H

SPECIFICATIONS

Model No. Description	EF□A/B□C1H	EF□□□C1H
Top end	Dual flanges	Dual flanges with 1/2" plug
Bottom end	Dual flanges	Dual flanges with 1/2" plug
Connecting	3/4" x10kg/cm ² (flange)	600Lb or 300Lb
C-C Distance	Min. 150mm; Max. 3800mm	
Operation pressure	25kg/cm ² (Max. 50kg/cm ²)	100kg/cm ² (300°C down) 600Lb 60kg/cm ² (300°C up) 300Lb
Operation temp.	PP: 80°C PTFE: 120°C	SUS304: 140°C SUS316: 140°C
Chamber	φ65 x 2t Coating PP or PTFE	φ76.3 x 5.5t
Float type	EFB-2580 (Refer float specifications) +Coating	EFB-2654 (Refer float specifications)
Material	SUS304 / SUS316	
Flag indicator	EFB-0700 (200°C), EFB-0740 (350°C), EFB-0750 (140°C) (Refer flag display data)	
Ruler	Option (Refer ruler data)	

MODEL NUMBER / ORDER CODE COMPARISON TABLE

Plastic Standard Type

Model Number	Order Code
EF□□□B1H	EFX1□□□□-B1C
EF□□□B1K	EFX1□□□□-B1G
EF□□□B2K	EFX1□□□□-B2G
EF□□□B7H	EFX1□□□□-B7C
EF□□□C1H	EFX1□□□□-C1C

Metal Standard Type

Model Number	Order Code
EF□□□A1H	EFX1□□□□-A1C
EF□□□A1L	EFX1□□□□-A1N
EF□□□A5M	EFX1□□□□-A5R
EF□□□B1H	EFX1□□□□-B1C
EF□□□B1K	EFX1□□□□-B1G
EF□□□B2K	EFX1□□□□-B2G
EF□□□B7H	EFX1□□□□-B7C
EF□□□B1H	EFX1□□□□-B1C
EF□□□B1L	EFX1□□□□-B1N

Blanket Type

Model Number	Order Code
EF□□□C1H	EFX1A2□□-C1C

Jacket Type

Model Number	Order Code
EF□□□C8H	EFX1A3□□-C1C

Heating Type

Model Number	Order Code
EF□□□B1H	EFX1A4□□-B1C

Antiseptic Type

Model Number	Order Code
EF□□□C1H	EFX1A1□□-C1C

High Pressure Type

Model Number	Order Code
EF□□□C1H	EFX1□□□□-C1C

Plastic Float

Model Number	Order Code
EFB-2500	FLTBM1F-1245116801
EFB-2510	FLTBM1F-1184915001
EFB-1500-F	FLTBM1F-1245116807
EFB-1510-P	FLTBM1F-1184915004

Metal Float

Model Number	Order Code
EFB-2540	FLTBM1F-1MB5020001
EFB-2560	FLTBM1F-1MB5017503
EFB-2580	FLTBM1F-1MB5015002
EFB-2600	FLTBM1F-1MB5029503
EFB-2592	FLTBM1F-1MB5023001
EFB-2540-9	FLTBM1F-1MC5020001
EFB-2560-9	FLTBM1F-1MC5017501
EFB-2580-9	FLTBM1F-1MC5015001
EFB-2600-9	FLTBM1F-1MC5029501
EFB-1540	FLTBM1F-1MB5020006
EFB-1560	FLTBM1F-1MB5017507
EFB-1580	FLTBM1F-1MB5015016
EFB-1581	FLTBM1F-2MB5009602
EFB-1592	FLTBM1F-1MB5023004
EFB-1600	FLTBM1F-1MB5029504

Titanium Alloy Float

Model Number	Order Code
EFB-2630	FLTBM1F-1MF4821002
EFB-2654	FLTBM1F-1MF6139401
EFB-1630-T	FLTBM1F-1MF4821001

Level Transducer

Model Number	Order Code
EG371BQ00-00AB	EGX1001B-A1AAA5012CMA0000ABAA
EG371BQ00-00A0	EGX1001B-A1AAA5012CMA0000A0AA
EG371BQ00-00B0	EGX1001B-A1AAA5012CMA0000B0AA
TAB-2210-2	TAX□A1X-0006
EGB-0500	EFXBMIP-MAF0000002

Magnetic Switch

Model Number	Order Code
EFB-1220	EFXBM1P-MHS11
EFB-1230	EFXBM1P-MHS12
EFB-1250	EFXBM1P-MHS21
EFB-1260	EFXBM1P-MHS22
EFB-1300 	EFXBM1P-MHS3100001
EFB-1300 	EFXBM1P-MHS3100004
EFB-1310 	EFXBM1P-MHS3200001
EFB-1310 	EFXBM1P-MHS3200002
EFB-1400	EFXBM1P-18S44□□□01
EFB-1410	EFXBM1P-18S45
EFB-1420	EFXBM1P-18S41
EFB-1430	EFXBM1P-18S42
EFB-1440	EFXBM1P-18S44□□□05
EFB-1450	EFXBM1P-18S44□□□07
EFB-1800	EFXBM1P-MHS53

Flag Display

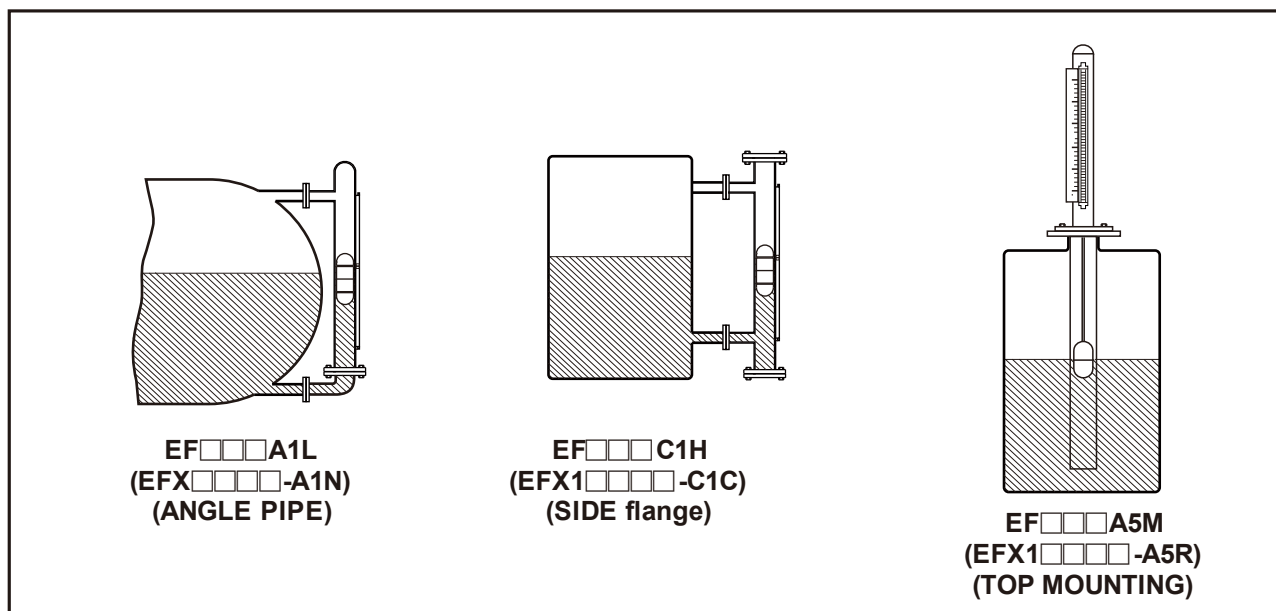
Model Number	Order Code
EFB-0700	EFXBM1D-MA22
EFB-0740	EFXBM1D-MA62
EFB-0750	EFXBM1D-MA72
EFB-0770	EFXBM1D-MA63

Ruler

Model Number	Order Code
EFA-2111	EFX□M1P-MAR
EFA-2120	
EFA-2130	EFX□M1P-15R
EFA-2140	

INSTALLATION

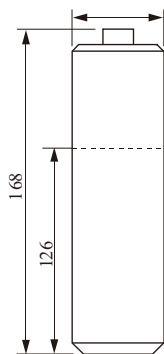
INSTALLATION EXAMPLE



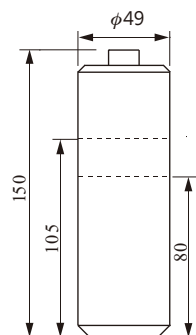
Plastic Float

Code	Order Code	Operation Temp.	Max. Pressure	Dimension	S.G.	Water Immersion Line	Material	Weight
F1	FLT□ M1F-1245116801	120°C	5kg/cm ²	OD51*168	0.75	126mm	PVDF	256
F2	FLT□ M1F-1245116807	100°C	5kg/cm ²	OD51*168	0.83	126mm	PVDF	256
P1	FLT□ M1F-1184915001	80°C	5kg/cm ²	OD49*150	0.7	80mm	PP	188
P2	FLT□ M1F-1184915004	80°C	5kg/cm ²	OD49*150	0.63	105mm	PP	188

*Specified S.G. is available made to order.



Code: F1、F2



Code: P1、P2

FLOAT SPECIFICATIONS

METAL FLOAT

Code	Order Code	Operation Temp.(°C)	Max.Pressure (kg/cm ²)	Dimension (mm)	S.G.	Water Immersion Line	Material	Weight(g)
M1	FLT□M1F-1MB5020001	350	30	OD50*200	0.7	140	SUS316	234
M2	FLT□M1F-1MB5017503	350	30	OD50*175	0.75	131		220
M3	FLT□M1F-1MB5015002	350	40	OD50*150	0.87	130		207
M4	FLT□M1F-1MB5029503	350	40	OD50*295	0.68	204		330
M6	FLT□M1F-1MB5023001	200	60	OD50*230	0.72	166		284
		201~350	45					
L1	FLT□M1F-1MC5020001	350	30	OD50*200	0.7	140	SUS316L	234
L2	FLT□M1F-1MC5017501	350	30	OD50*175	0.75	131		220
L3	FLT□M1F-1MC5015001	350	40	OD50*150	0.87	130		207
L4	FLT□M1F-1MC5029501	350	40	OD50*295	0.68	204		330
L6	FLT□M1F-1MC5023001	200	60	OD50*230	0.72	166		284
		201~350	45					
T2	FLT□M1F-1MF4821002	350	20	OD48*210	0.6	107	Titanium alloy	183
U1	FLT□M1F-1MF6139401	300	110	OD61.3*394	0.8	315		830
		301~350	90					
M9	FLT□M1F-1MB5020006	100	30	OD50*200	0.67	134	SUS316	224
M8	FLT□M1F-1MB5017507	100	30	OD50*175	0.75	120		220
M7	FLT□M1F-1MB5015016	100	40	OD50*150	0.85	130		207
MC	FLTBM1F-2MB5009602	100	10	OD50*96	1.1 (Top mounting)	106		169
MA	FLT□M1F-1MB5023004	100	60	OD50*230	0.72	166		280
MB	FLT□M1F-1MB5029504	100	40	OD50*295	0.65	192		326
T4	FLT□M1F-1MF4821001	100	20	OD48*210	0.58	107	Titanium alloy	189

* Length of float: FLT□M1F-1□□50295 is extendable at unit of 50 mm
(S.G drops 0.05 when length increases 50 mm).

* Float can be coated with PTFE.

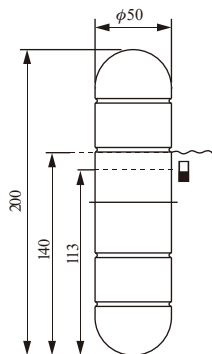
* Measuring range may vary from float size changed for the top mounting type of by pass level indicator.

* The resolution of FG is 12.7mm, is restricted to use float temperature 100°C

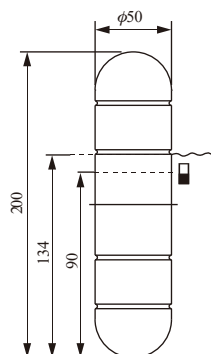
FLOAT SPECIFICATIONS

~~~~~ Water Immersion location.

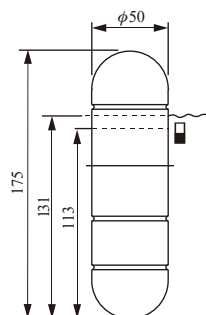
■ The Magnet location.



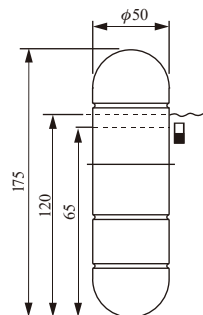
Code: M1/L1



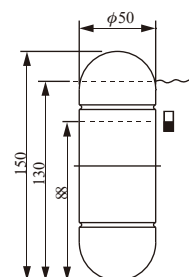
Code: M9



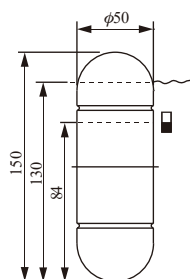
Code: M2/L2



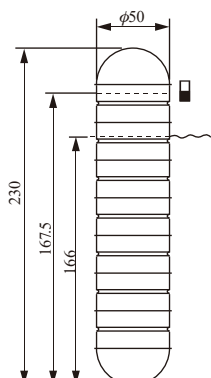
Code: M8



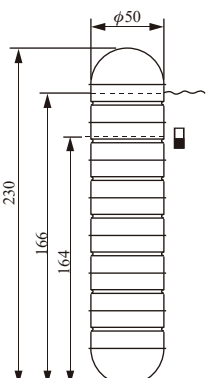
Code: M3/L3



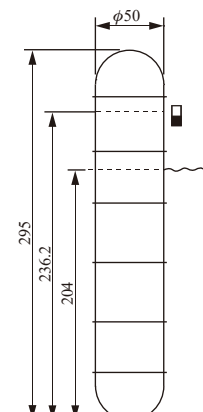
Code: M7



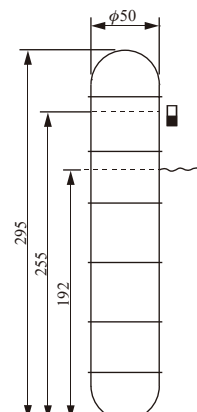
Code: M6/L6



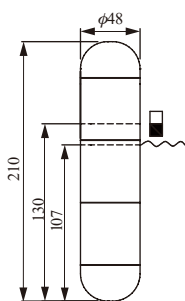
Code: MA



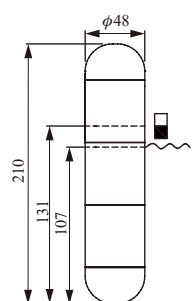
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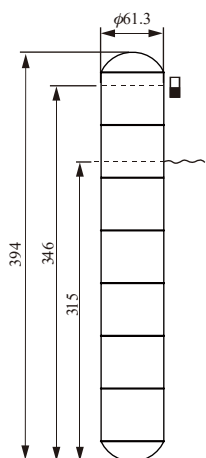
Code: MB



Code: T2



Code: 4

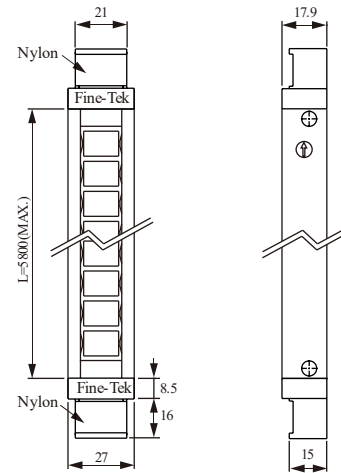


Code: U1

# FLAG DISPLAY

## Model No. EFB-0750

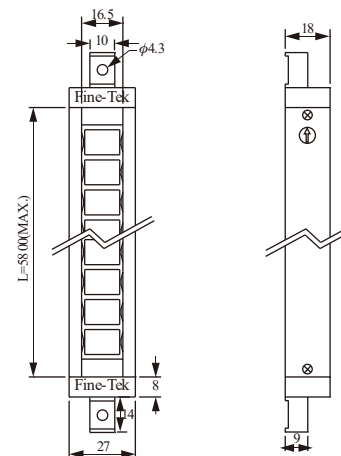
1. Housing material: SUS 304
2. Flag Material: Engineering plastic
3. Flag Color : Red / White; Green / White
4. Cover Material : Engineering plastics
5. Operation Temp. : -20~140°C
6. Standard Unit : 50mm



EFB-0750

## Model No. EFB-0700

1. Housing material: SUS 304
2. Flag Material: Engineering plastic
3. Flag Color : Red / White; Green / White
4. Cover Material : Engineering plastics
5. Operation Temp. : -20~200°C
6. Standard Unit: 50mm



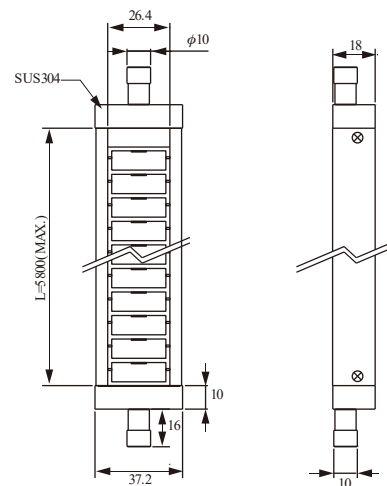
EFB-0700  
EFB-0740

## Model No. EFB-0740

1. Housing material: SUS 304
2. Flag Material: Ceramic
3. Flag Color: Red / White; Green / White
4. Cover Material: Glass
5. Operation Temp. : -20~350°C
6. Standard Unit : 50mm

## Model No. EFB-0770

1. Housing material: SUS 304
2. Flag Material: SUS 304
3. Flag Color: Red / White; Green / White
4. Cover Material: Glass
5. Operation Temp. : -20~350°C
6. Standard Unit : 50mm



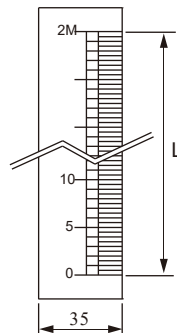
EFB-0770

# RULER

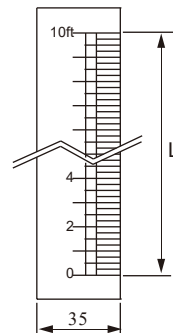
## Model No. EFA-2111 (unit: cm L Type)

## Model No. EFA-2120 (unit: inch)

1. Dimension: 35(W)x1.5(T)xL
2. Material : SUS 304
3. Color: Black word
4. Operation Temp. : -20~350°C
5. Length: 5.8M (228")



**EFA-2111**



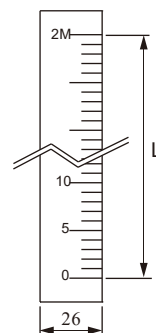
**EFA-2120**

## Model No. EFA-2130-cm (unit: cm)

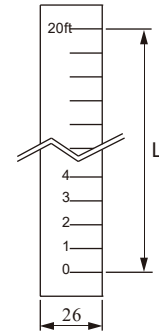
## Model No. EFA-2140-in (unit: inch)

1. Dimension: 26(W)x3(T)xL
2. Material: Plastic
3. Color: Red word
4. Operation Temp. : -20~80°C
5. Length: 5.8M (228")

\* Custom-made scale is available.



**EFA-2130-cm**



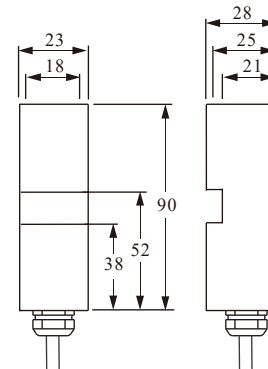
**EFA-2140-in**

# MAGNETIC SWITCH

## [ ECONOMY TYPE ]

### Model No. EFB-1220/1230

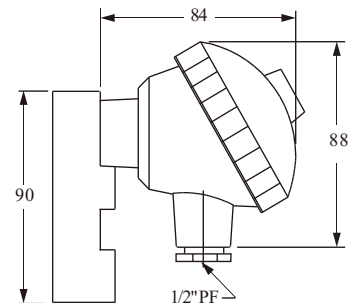
1. Contact Element : Reed Switch
2. Switch Form : EFB-1220, SPDT Hold type  
EFB-1230, SPDT Normal type
3. Contact Capacity : 1A /30W / 200Vdc /240Vac
4. Housing Material : Aluminum
5. Operation Temp. : -20~200°C
6. Protection : IP67
7. Cable Length : 1M (Silicon Cable)
8. Color code of wires : Black- COM; brown-NC; blue-NO  
Yellow /green-GND



## [ STANDARD TYPE ]

### Model No. EFB-1250/1260

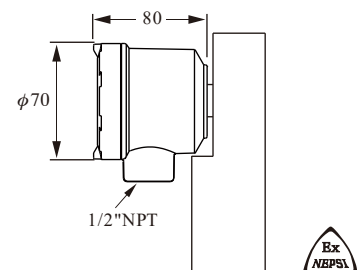
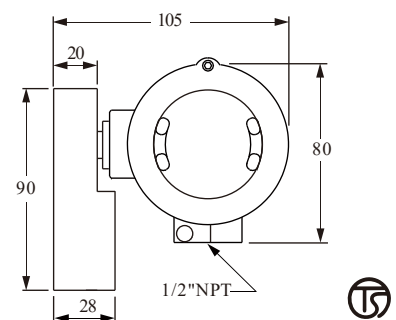
1. Contact Element : Reed switch
2. Switch Form : EFB-1250, SPDT Hold type  
EFB-1260, SPDT Normal type
3. Contact Capacity : 1A /30W / 200Vdc /240Vac
4. Housing Material : Aluminum
5. Operation Temp. : -20~150°C(max. 250°C)
6. Protection : IP65



## [ ENCLOSURE EXPLOSION-PROOF TYPE ]

### Model No. EFB-1300/1310

1. Contact Element : Reed switch
2. Switch Form : EFB-1300, SPDT Hold type  
EFB-1310, SPDT Normal type
3. Contact Rating : 1A /30W / 200Vdc /240Vac
4. Housing Material : Aluminum(TS);SUS316(Nepsi)
5. Operation Temp. : -20~85°C (max. 250°C)
6. Protection : IP65
7. Certification : Ex d IIC T3~T6 Gb
8. Explosion-proof cable conduit is optional.

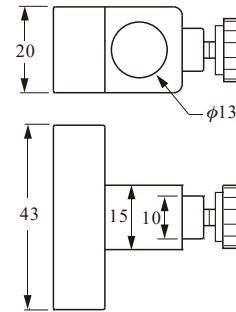


# MAGNETIC SWITCH

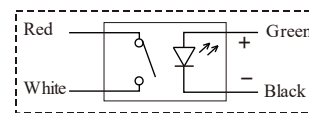
## [ ADJUSTABLE TYPE ]

### Model No. EFB-14□□

1. Contact Element : Reed Switch
2. Switch Form : EFB-1400, SPST NO Hold type  
                   EFB-1410, SPST NO Normal type  
                   EFB-1420, SPDT Hold type  
                   EFB-1430, SPDT Normal type  
                   EFB-1440, SPST NO Hold type (side lead wire)  
                   EFB-1450, SPST NO Hold type (LED display)
3. Contact Rating : 1A /30W / 200Vdc /240Vac
4. LED Power : 24Vdc K20%(for EFB-1450)
5. Housing Material : PP
6. Operation Temp. : 20~140°C
7. Protection : IP67
8. Cable Length : 2M (PVC Cable)
9. Contact wiring :  
     Red: COM, White : NO (EFB-1400/ 1410/ 1440 / 1450)  
     Black: COM, Red : NC, White: NO (EFB-1420 / 1430)



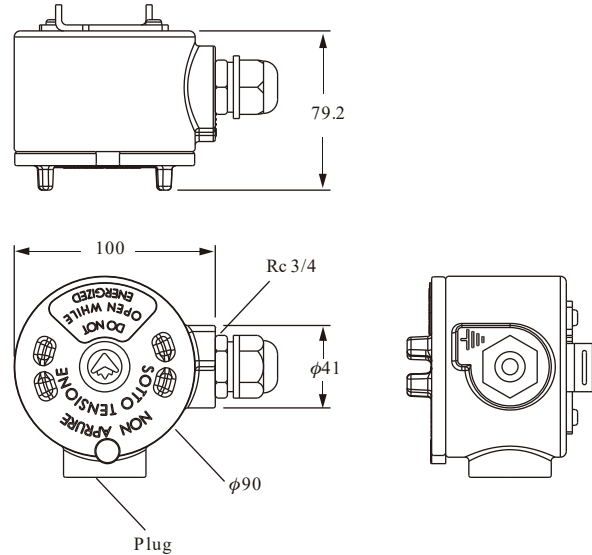
EFB-1450 Wiring



## [ HIGH CONTACT RATING TYPE ]

### Model No. EFB-1800

1. Contact Element : Micro switch
2. Switch Form : DPDT Hold type
3. Contact Rating : 5A 250VAC ; 5A 30VDC
4. Housing Material : Aluminum
5. Process temp. : -20~350°C
6. Protection : IP67
7. Conduit : Rc 3/4
8. Explosion-proof cable conduit (optional).

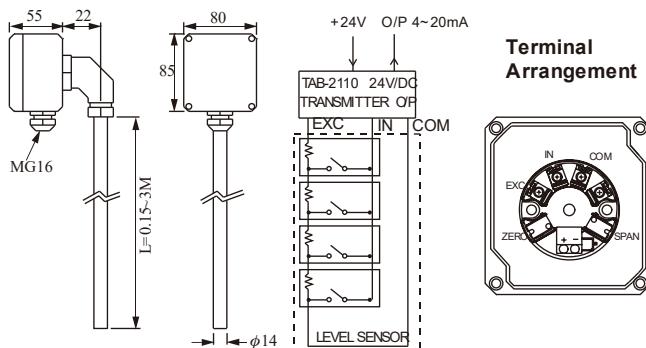


# LEVEL TRANSDUCER

## TYPE: FGX100□□-A6G000000□□□□□0000□00□□□□□

1. Housing material : PC(IP65) 85(W)x80(H)x55(D)
2. Tube : f14mm /f17.2 (length over 3M)  
SUS 304 or SUS 316
3. Resolution : 6.35mm、12.7mm
4. Output : 4~20mA two-wire
5. Power : 12~36Vdc
6. Measuring Range : 0.15~3M / 3~5.8M (f17.2)
7. Ambient Temp. : -10~80°C

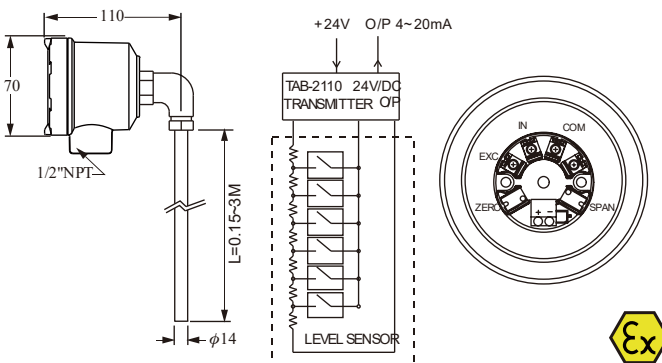
※ The resolution of FG is 12.7mm, is restricted to use float temperature 100 ℃.



## TYPE: FGX1001C-A6N000000□□□□□0000□00□□□□□

1. Housing material : SUS316  
Ex d IIB T3 or T4 or T5 or T6 Gb
2. Tube : f14mm /f17.2 (length over 3M)  
SUS 304 or SUS 316
3. Resolution : 6.35mm、12.7mm
4. Output : 4~20mA two-wire
5. Power : 12~24Vdc
6. Measuring Range : 0.15~3M / 3~5.8M (f17.2)
7. Ambient Temp. : -10~80°C
8. Explosion-proof cable conduit is optional.

※ The resolution of FG is 12.7mm, is restricted to use float temperature 100°C



## MODEL NUMBER / ORDER CODE COMPARISON TABLE

| Model Number   | Order Code                          |
|----------------|-------------------------------------|
| FG7ANSS4S3□□□□ | FGX1001C-A6N000000CMA2B0000B00 □□□□ |
|                | FGX1001C-A6N000000CMB2B0000B00 □□□□ |
| FG7ANSS7S3□□□□ | FGX1001C-A6N000000CMA2D0000B00 □□□□ |
|                | FGX1001C-A6N000000CMB2D0000B00 □□□□ |
| FG7BNSS4S3□□□□ | FGX1001C-A6N000000EMA2B0000B00 □□□□ |
|                | FGX1001C-A6N000000EMB2B0000B00 □□□□ |
| FG7BNSS7S3□□□□ | FGX1001C-A6N000000EMA2D0000B00 □□□□ |
|                | FGX1001C-A6N000000EBB2D0000B00 □□□□ |

# ORDER INFORMATION

FGX1 0 0 <sup>⑦</sup> <sup>⑧</sup> - A6 <sup>⑪</sup> 0 0 0 0 0 0 <sup>⑱</sup> <sup>⑲</sup> <sup>⑳</sup> <sup>㉑</sup> <sup>㉒</sup> 0 0 0 0 B 0 0 <sup>⑳</sup> <sup>㉑</sup> <sup>㉒</sup> <sup>㉓</sup>

## ⑦ ⑧ Certification

00: None  
1C: ATEX-Ex d  
B0: DNV.GL  
C0: ABS  
E0: BV  
F0: LR  
G0: CR

## ⑪ Terminal Housing

G: PC (IP65)  
N: SUS304 or 316

## ⑱ Resolution

C: 6.35mm  
E: 12.7mm

## ⑲ ㉑ Probe material

MA: SUS 304  
MB: SUS 316

## ㉑ ㉒ Probe diameter

2B:  $\phi$ 14.0mm  
2D:  $\phi$ 17.2mm(More than 3 meters long)

## ⑳ ㉑ ㉒ ㉓ Length(C-C)

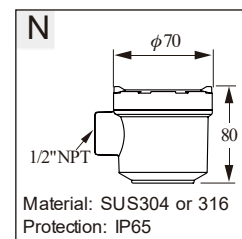
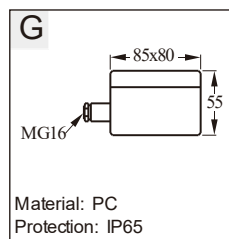
| Code      | Probe Length |
|-----------|--------------|
| 0150~5800 | 150mm~5800mm |

## ACCESSORIES

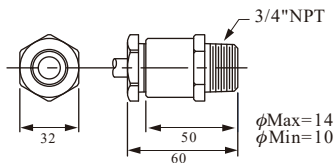
### Cable Conduit - Ex d IIC

Material: Washer — NBR

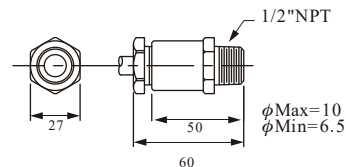
Body— Copper alloy(3/4"NPT)  
Nickel plated(1/2"NPT)



HP415-A23100MH01(29-1104)



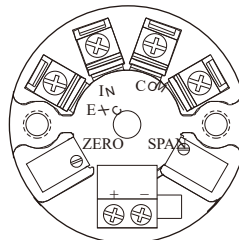
HP415-A23000MG01(29-1108)



# TRANSDUCER & TRANSDUCER WIRING DIAGRAMS

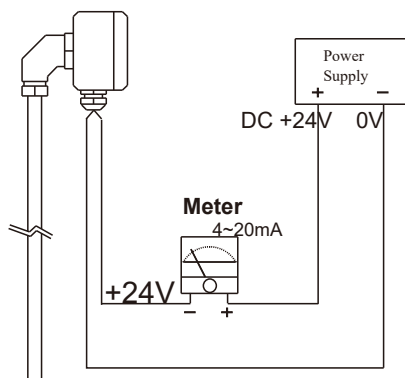
## Model No.: TAB-2110 Transducer

1. Power Supplyr : 12~36Vdc
2. Output Current : Loop power 4~20mA
3. Load Resistance :  $R_L(\text{Max})=50(V_s-8)$
4. Operation Temperature : -40~80 °C
5. Ambient Humidity : 0~80 RH
6. Accuracy :  $\pm 0.1\%$ (25°C)
7. Temperature Effect : 0.01%F.S./°C
8. Adjustment Range : Span Ajustment 20% FS  
Zero Ajustment 5% FS

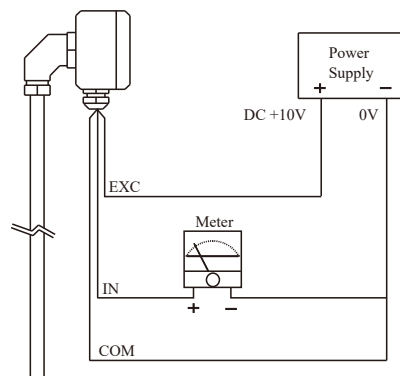


### TRANSDUCER WIRING DIAGRAMS

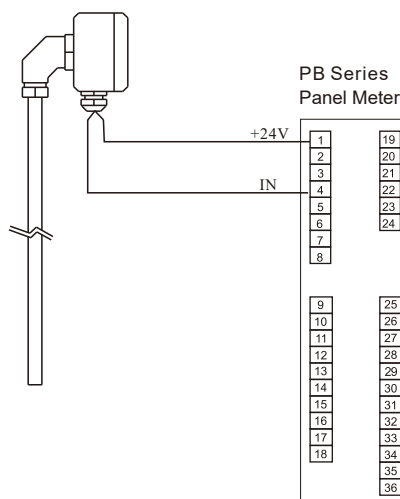
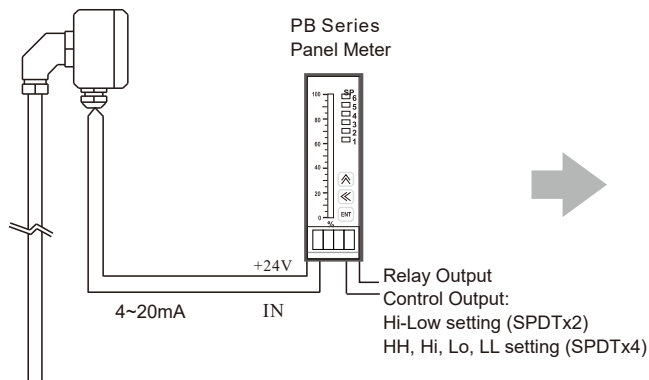
- 2-wire level transducer (resistance output) connected with analog meter for level monitoring.



- 3-wire level transducer (4~20mA output) connected with 4~20mA analog meter for level monitoring.



- 2-wire level transducer (4~20mA output) connected with digital meter (PB-Series) for level control.

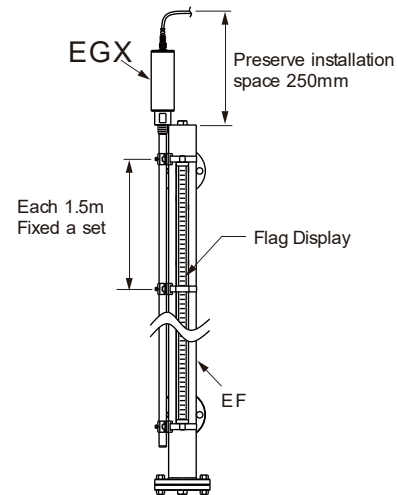


# MAGNETOSTRICTIVE LEVEL TRANSMITTER / MODEL NUMBER / ORDER CODE COMPARISON TABLE

## TYPE: EFX+EGX

1. Material : SUA304
2. Non-Linearity :  $\pm 0.05\%$  F.S or  $\pm 1.0\text{mm}$ (whichever is greater)
3. Repeatability :  $\pm 0.01\%$  F.S or  $\pm 0.5\text{mm}$ (whichever is greater)
4. Operation Temp. :  $-30^{\circ}\text{C}\sim 200^{\circ}\text{C}$
5. Output : 4~20mA
6. Communication : RS-485
7. Loop power :  $+24\text{Vdc}\pm 10\%$
8. Protection : IP67

※ Double flanges type cannot be installed.



| Model Number                        | Order Code   |
|-------------------------------------|--------------|
| EG371 Ex-proof Standard Model       | EGX1001B-A1  |
| EG37A Ex-proof High Temp. Model     | EGX1021B-A1  |
| EG36 Display Model                  | EGX3001B-A1  |
| EG36 Display High Temperature Model | EGX3021B-A1  |
| EG60                                | EGX6 □□□□-□□ |

※If the model number wasn't showed on above list, kindly refer to the catalogue of EG Magnetostrictive Level Transmitter.

# ORDER INFORMATION (EG36 、EG37)

|                                                                                              |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------------------------------------------------------------------------------------|-----|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                                                                                              | ④   | ⑤ | ⑥ | ⑦ | ⑧ |    | ⑰ | ⑱ | ⑲ | ⑳ |   | ㉕ | ㉖ | ㉗ |   | ㉓ | ㉔ | ㉕ | ㉖ |
|                                                                                              | EGX | □ | □ | □ | □ | -A | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | □ | □ | □ | □ | □ |
| ④ <b>Version</b>                                                                             |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1: 132mm (EG37)                                                                              |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3: Display type (EG36)                                                                       |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ⑤ ⑥ <b>Model</b>                                                                             |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 00: Standard                                                                                 |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 02: Hi-temperature                                                                           |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ⑦ ⑧ <b>Certification</b>                                                                     |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 00: None                                                                                     |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1B: ATEX-Ex ia                                                                               |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7B: NEPSI-Ex ia                                                                              |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ⑰ ⑱ <b>Probe diameter</b>                                                                    |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2A: f12.7mm                                                                                  |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2C: f16.0mm                                                                                  |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ⑲ ⑳ <b>Probe material</b>                                                                    |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| MA: SUS 304                                                                                  |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| MB: SUS 316                                                                                  |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ㉕ <b>Analog output</b>                                                                       |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0: None                                                                                      |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| A: 4~20mA                                                                                    |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| B: 20~4mA                                                                                    |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ㉖ <b>Digital output</b>                                                                      |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 0: None                                                                                      |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| B: RS-485                                                                                    |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| E: HART                                                                                      |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ※ When RS-485 is applied, loop power only as power supply function, coding 25 has to be "0". |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ㉗ <b>Housing</b>                                                                             |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| A: Top conduit                                                                               |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| B: Side conduit                                                                              |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ㉓ ㉔ ㉕ ㉖ <b>Length</b>                                                                        |     |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |

| Code      | Probe Length |
|-----------|--------------|
| 0150~1500 | 150mm~1500mm |

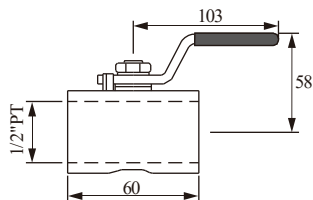
- ※ EFX By-pass level transmitter, Dual-flanges, Blanket and Jacket type are not available for EG Magnetostrictive Level Transmitter.
- ※ EG transmitter fastener code number: EGB-0500(EFXBMIP-MAF0000002)
- ※ The EG36□37 being paired with EFX product where its measurement length and order code is limited under 1500mm.

| Code      | Probe Length |
|-----------|--------------|
| 0150~1500 | 150mm~1500mm |

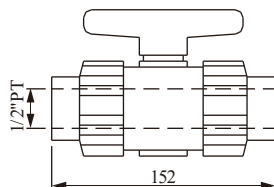
22

# BALL VALVE

## Metal Thread Type

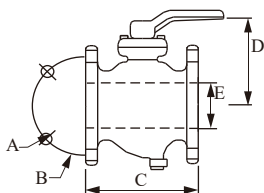


## Plastic Thread Type



|   |               |                      |                     |       |
|---|---------------|----------------------|---------------------|-------|
| 1 | Body Material | SUS316               | PP                  | PVDF  |
| 2 | Working Temp. | 150°C                | 80°C                | 120°C |
| 3 | Connection    | 1/2"PT               | 1/2"PT              |       |
| 4 | Working Pres. | 20kg/cm <sup>2</sup> | 5kg/cm <sup>2</sup> |       |

## Metal flange Type

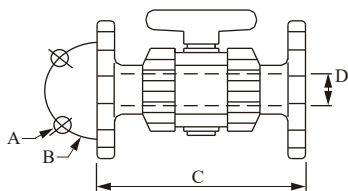


### DIMENSIONS

| SIZE | 3/4"                 | 1"  |
|------|----------------------|-----|
| CODE | A, B                 |     |
|      | ACCORDING TO JIS 10K |     |
| C    | 120                  | 130 |
| D    | 90                   | 90  |
| E    | 21.8                 | 25  |

|   |               |                            |
|---|---------------|----------------------------|
| 1 | Body Material | SUS304                     |
| 2 | Working Temp. | 150°C                      |
| 3 | Connection    | 3/4" JIS 10K<br>1" JIS 10K |
| 4 | Working Pres. | 10kg/cm <sup>2</sup>       |

## Plastic flange Type



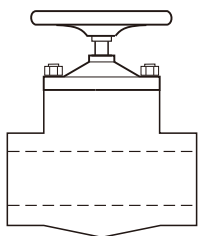
### DIMENSIONS

| SIZE | 3/4"                 | 1"  |
|------|----------------------|-----|
| CODE | A, B                 |     |
|      | ACCORDING TO JIS 10K |     |
| C    | 172                  | 187 |
| D    | 18                   | 23  |

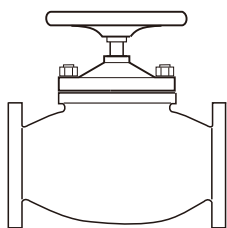
|   |               |                            |       |
|---|---------------|----------------------------|-------|
| 1 | Body Material | PP                         | PVDF  |
| 2 | Working Temp. | 80°C                       | 120°C |
| 3 | Connection    | 3/4" JIS 10K<br>1" JIS 10K |       |
| 4 | Working Pres. | 5kg/cm²                    |       |

## Bellows Sealed Valve

### Thread Type



### flanges Type



|   | Project       | Thread               | Flang                  |
|---|---------------|----------------------|------------------------|
| 1 | Body Material | SUS316               | SUS316                 |
| 2 | Working Temp. | 350°C                | 350°C                  |
| 3 | Connection    | 3/4"PT<br>1"PT       | DN15 PN16<br>DN20 PN16 |
| 4 | Working Pres. | 25kg/cm <sup>2</sup> | 25kg/cm <sup>2</sup>   |

# ORDER INFORMATION



MT1 1 1- 06 07 08 09 10 11 12 13

## ⑥ Model

B: Ball Valve  
4: Bellows Sealed Valve

## ⑦ Connection type

1: Thread Type  
4: flanges Type

## Connection

⑧ ⑨

A5: 1/2"  
A7: 3/4"  
A8: 1"  
A9: 1-1/4"  
B1: 1-1/2"  
D6: DN15  
D7: DN20  
D8: DN25  
D9: DN32  
E1: DN40

⑩ ⑪

flanges  
40: 5kg/cm<sup>2</sup>  
42: 10kg/cm<sup>2</sup>  
48: 150Lbs  
49: 300Lbs  
57: PN 10  
58: PN 16

Thread  
01: PT male  
02: PT female  
03: PF male  
04: PF female  
05: BSP male  
06: BSP female  
07: NPT male  
08: NPT female

## ⑫ ⑬ Connection material

18: PP  
24: PVDF  
MA: SUS304  
MB: SUS316  
MC: SUS316L  
ME: Carbon steel

# OPTIONS

As shown below the optional accessories can be installed on to a By-Pass Level Indicator to monitor and control the level of the liquid.

## A. Flag Indicator

- 1) Economy Type : EFB-0750 series
- 2) Standard Type : EFB-0700 series
- 3) High Temp. Type : EFB-0740/0770 series

## B. Ruler

- 1) Stainless ruler (metric) : EFA-2110/2111(L Type)
- 2) Stainless ruler (imperial) : EFA-2120
- 3) Plastic ruler (metric) : EFA-2130
- 4) Plastic ruler (imperial) : EFA-2140

## C. Magnetic Switch (see page 15)

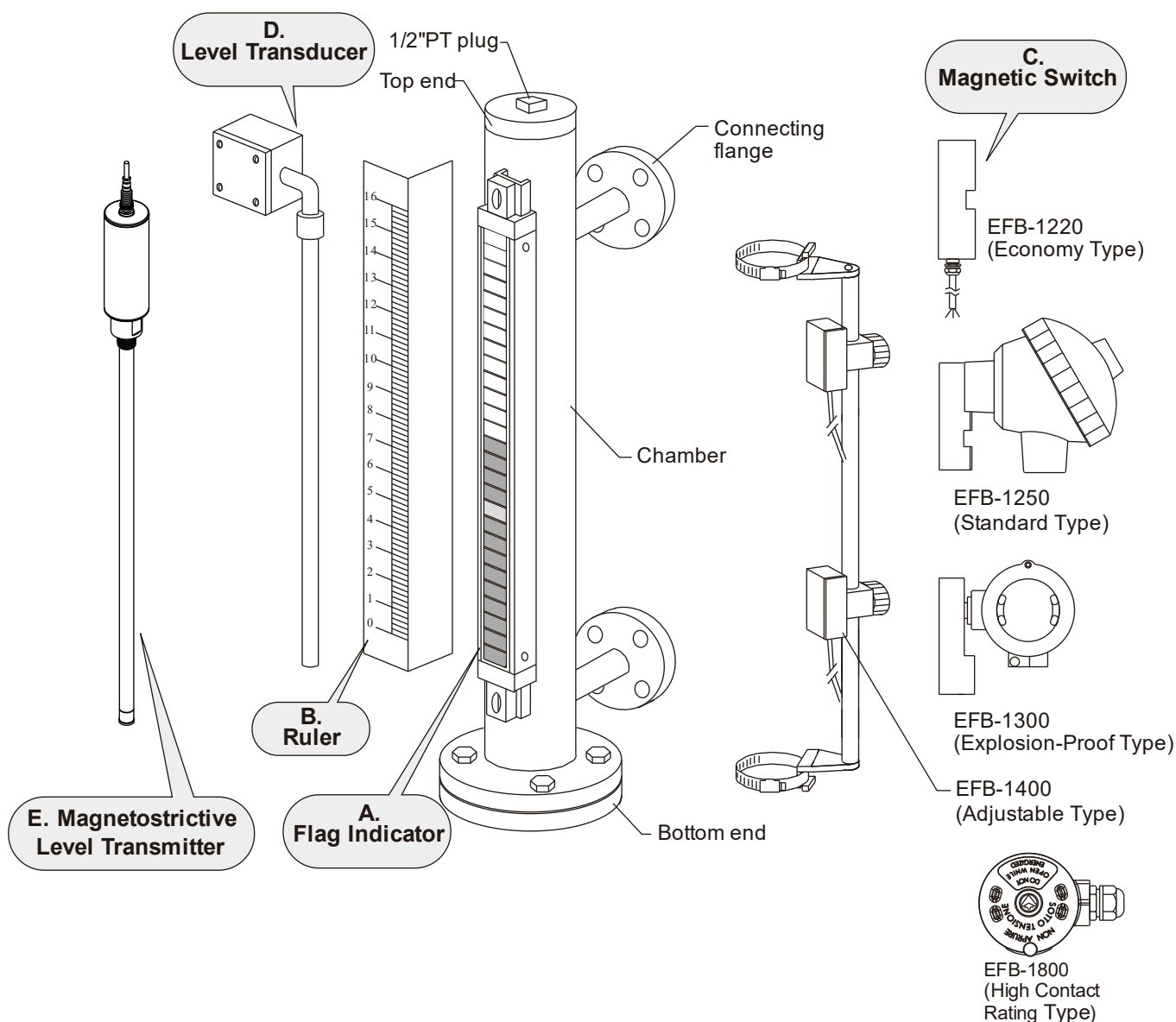
- 1) Economy Type : EFB-1220 series
- 2) Standard Type : EFB-1250 series
- 3) Explosion-proof Type : EFB-1300 series
- 4) Adjustable Type : EFB-1400 series

## D. Level Transducer

- 1) 3-wire standard
- 2) 2-wire standard
- 3) 3-wire explosion proof
- 4) 2-wire explosion proof
- 5) 2-wire reversible

## E. Magnetostrictive Level Sensor

- 1) 2-Wire



## TYPICAL ASSEMBLY

1. (Fig.1) By-pass Level indicator with the standard magnetic switches (Aluminum Alloy) and liquid level transmitter. With the housing protection IP65, it is suitable for outdoor or moist environment.
2. (Fig.2) By-pass Level Indicator with explosion-proof magnetic switches. With its housing protection Ex d IIC T3~T6 Gb, it is applicable for hazardous environments .
3. (Fig.3) By-pass Level Indicator with adjustable magnetic switches and SUS304 ruler. It can be assembled with upward /downward movable multiple magnetic switches on a riding rod.
4. (Fig.4) By-pass Level Indicator with high contact rating (5A 250Vac, 5A 30Vdc) magnetic switch.

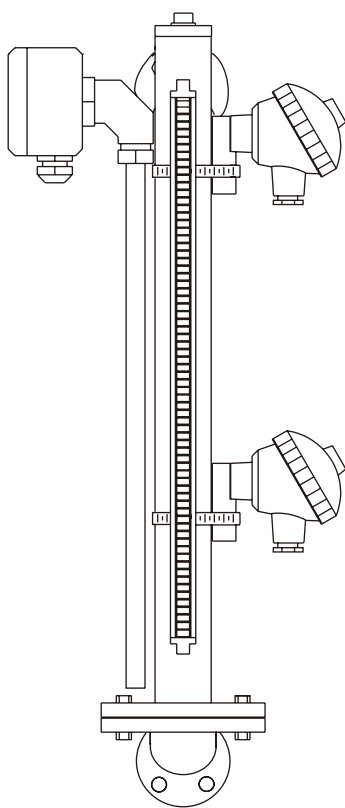


fig. 1

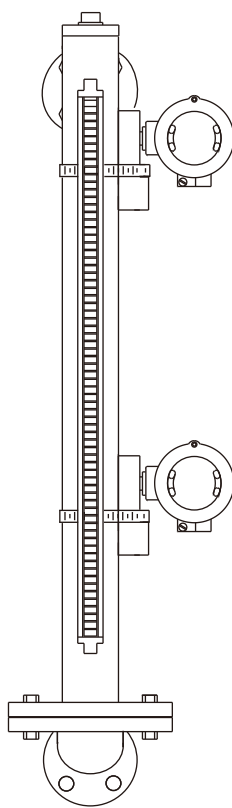


fig. 2

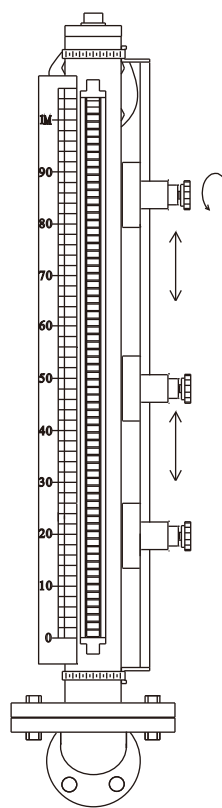


fig. 3

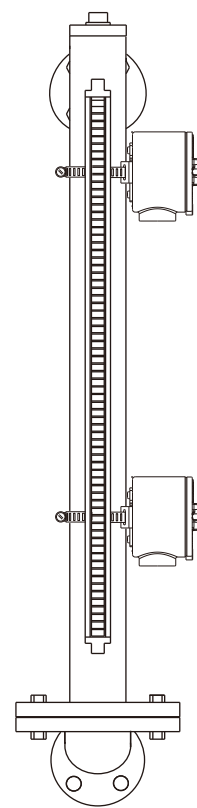


fig. 4

## CAUTIONS FOR INSTALLATION

1. The adjustable magnetic switch (EFB-14□□ series) is placed on a riding rod, then fasten the riding rod to the chamber with two hose clamps. (see page 24 - fig.3)
2. The magnetic switch (EFB-1299 ,EFB-1399 & EFB-1800) is to be fastened on the chamber with a hose clamp. (see fig.5 and page 24 - fig.1, fig.2, fig.3, fig.4) Positioning orientation of magnetic switches.
3. Because the magnetic switch is a sensitive component, thus any extreme shock to the switch will cause malfunction.
4. Make sure there is no external magnetic field or source within 10 centimeters of the switch to avoid magnetic interference.
5. Make sure the wire of the magnetic switch is pointing downward.
6. Do not contact any high temperature material with unit's cables while wiring.
7. When using magnetic switch to control inductive or capacitive load, a RC protective circuit should be used to ensure long life of the switch contact.
8. The magnetic switch must be located near the flag display and the surface of it is as close to the outer chamber wall as possible.(fig. 6)
9. Before actuating, be sure all wirings are done correctly.
10. See fig.5 for the installation direction of mounting holes
11. C-C length (plastic type >1.5m; metal type >3.5m), fix support is recommended. The distance between fix support/ flanges shall be within 1 m (plastic type); 2.5 m (metal type). It depends on the application to have different fix support, FineTek provide customized service as fig. 8 showed.
12. Dust-proof plug on the flanges should be removed before installation, as fig. 8 showed.

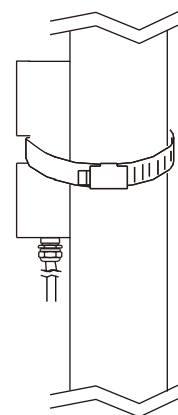


fig. 5

### Position Orientation Of Magnetic Switches

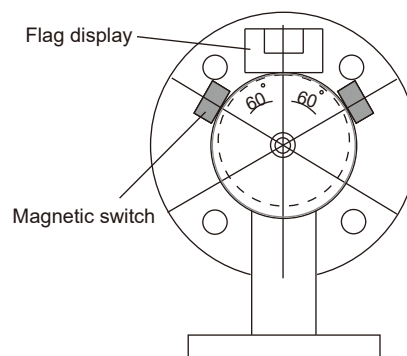


fig. 6

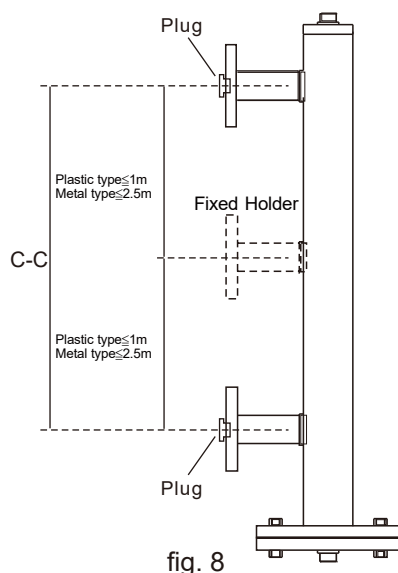


fig. 8

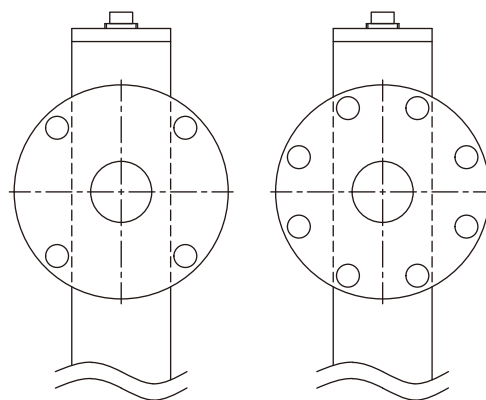
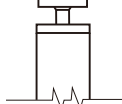
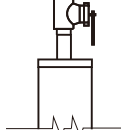
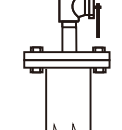
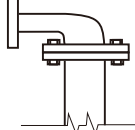


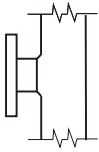
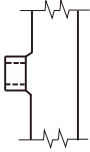
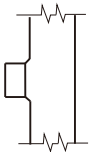
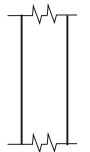
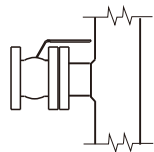
fig. 7

# ORDER INFORMATION

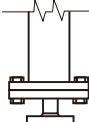
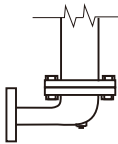
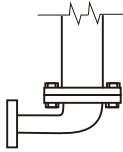
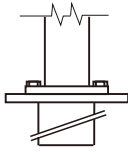
## Top End Type

|                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>A</b> Cap                                                                      | <b>B</b> Flat top<br>+Plug                                                        | <b>C</b> Dual flanges<br>+Plug                                                     | <b>D</b> Flat top<br>+Top mounting flange                                           |
|  |  |  |  |
| <b>E</b> Dual flanges<br>+Top mounting flange                                     | <b>F</b> Flat top<br>+Control valve                                               | <b>G</b> Dual flanges<br>+Control valve                                            | <b>N</b> Dual flanges<br>+Angle pipe                                                |
|  |  |  |  |

## Connection

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>1</b> flange                                                                     | <b>2</b> Screw<br>(bolt type)                                                       | <b>3</b> Screw<br>(nut type)                                                        | <b>4</b> Slip pipe                                                                  | <b>5</b> N/A                                                                          | <b>7</b> Control<br>valve                                                             |
|  |  |  |  |  |  |

## Bottom End Type

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>C</b> Dual flanges+Plug                                                          | <b>E</b> Dual flanges<br>+Bottom mounting flange                                    | <b>M</b> Dual flanges<br>+Angle pipe+Plug                                            | <b>G</b> Dual flanges<br>+Control valve                                               |
|  |  |  |  |
| <b>N</b> Dual flanges<br>+Angle pipe                                                | <b>R</b> Dual flanges<br>+Still Well pipe                                           |                                                                                      |                                                                                       |
|  |  |                                                                                      |                                                                                       |

# ORDER INFORMATION

EFX1     -     .....

## ⑤⑥ Model

- 0: Standard type (<140°C)
- 01: Plastic standard type
- 02: High temperature type (200°C)
- 05: High Pressure Type (31~60kg/cm<sup>2</sup>)
- 06: High Pressure Type-1 (61~100kg/cm<sup>2</sup>)
- 8: High temperature type-1 (350°C)
- A1: Antiseptic Type
- A2: Blanket Type
- A3: Jacket Type
- A4: Heating Type
- 25: High temperature & Pressure( 350°C, 31~60kg/cm<sup>2</sup>)

## ⑦⑧ Certificate

- 00: None
- B0: DNV.GL
- C0: ABS
- E0: BV
- F0: LR
- G0: CR

## ⑨ Top end model

- A: Cap
- B: Flat top+plug
- C: Dual flanges+plug
- D: Flat top+Top mounting flange
- E: Dual flanges+Top mounting flange
- F: Flat top+Control valve
- G: Dual flanges+Control valve
- N: Dual flanges+Angle pipe

## ⑩ Connection(C-C)

- 1: Flange
- 2: Screw (bolt type)
- 3: Screw (nut type)
- 4: Slip pipe
- 5: N/A
- 6: Flange flexible
- 7: Control valve

## ⑪ Bottom end model

- C: Dual flanges+Plug
- E: Dual flanges+Bottom mounting flange
- G: Dual flanges+Control valve
- M: Dual flanges+Angle pipe+Plug
- N: Dual flanges+Angle pipe
- R: Dual flanges+Still well pipe

(Next page)



EFX1

**②① Connection type(Top)**

|                          |                |
|--------------------------|----------------|
| 00: None<br>flanges      | Thread         |
| 40: 5kg/cm <sup>2</sup>  | 01: PT Male    |
| 42: 10kg/cm <sup>2</sup> | 02: PT Female  |
| 48: 150Lbs               | 03: PF Male    |
| 49: 300Lbs               | 04: PF Female  |
| 57: PN 10                | 05: BSP Male   |
| 58: PN 16                | 06: BSP Female |
|                          | 07: NPT Male   |
|                          | 08: NPT Female |

**②③ Connection size(bottom)**

|            |         |
|------------|---------|
| 00: None   | D6:DN15 |
| A5: 1/2"   | D7:DN20 |
| A7: 3/4"   | D8:DN25 |
| A8: 1"     | D9:DN32 |
| A9: 1-1/4" | E1:DN40 |
| B1: 1-1/2" |         |

**②⑤ Connection type(bottom)**

|                          |                |
|--------------------------|----------------|
| 00: None<br>flanges      | Thread         |
| 40: 5kg/cm <sup>2</sup>  | 01: PT Male    |
| 42: 10kg/cm <sup>2</sup> | 02: PT Female  |
| 48: 150Lbs               | 03: PF Male    |
| 49: 300Lbs               | 04: PF Female  |
| 57: PN 10                | 05: BSP Male   |
| 58: PN 16                | 06: BSP Female |
|                          | 07: NPT Male   |
|                          | 08: NPT Female |

**②⑦ Wetted part material**

MA: SUS304  
MB: SUS316  
MC: SUS316L  
18: PP  
24: PVDF

(Next page)

## EFX1

②⑧⑨⑩⑪⑫⑬⑭⑮⑯⑰⑱⑲⑳㉑㉒㉓㉔㉕㉖㉗㉘㉙㉚㉛㉜㉝㉞㉟㊱㊲㊳㊴㊵㊶㊷㊸㊹㊺㊻㊼㊽㊾㊿

| Code      | Length                       |
|-----------|------------------------------|
| 0150~3800 | 150mm~3800mm (Antiseptic)    |
| 0150~2000 | 150mm~2000mm (Tank top)      |
| 0150~5800 | 150mm~5800mm (Metal Type)    |
| 0150~3800 | 150mm~3800mm (High Pressure) |

### ③② ③③ Float type

## Plastic Float

| Code | size(mm) 、 pressure 、 Specific gravity     | Material |
|------|--------------------------------------------|----------|
| F1   | OD51*168 、 5kg/cm <sup>2</sup> 、 S.G. 0.75 | PVDF     |
| F2   | OD51*168 、 5kg/cm <sup>2</sup> 、 S.G. 0.83 | PVDF     |
| P1   | OD49*150 、 5kg/cm <sup>2</sup> 、 S.G. 0.7  | PP       |
| P2   | OD49*150 、 5kg/cm <sup>2</sup> 、 S.G. 0.63 | PP       |

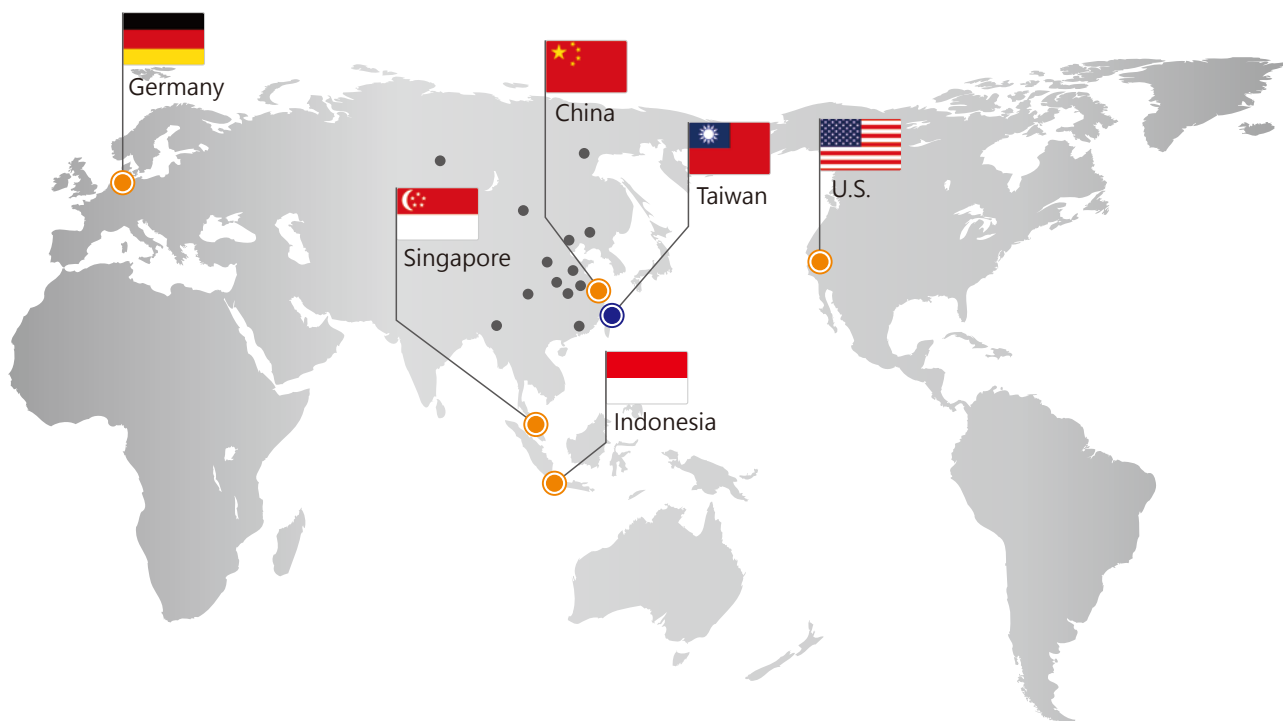
## Metal Float

| Code | size(mm) 、 pressure 、 Specific gravity                | Material       |
|------|-------------------------------------------------------|----------------|
| M1   | OD50*200, 30kg/cm <sup>2</sup> , S.G. 0.7             | SUS316         |
| M2   | OD50*175, 30kg/cm <sup>2</sup> , S.G. 0.75            |                |
| M3   | OD50*150, 40kg/cm <sup>2</sup> , S.G. 0.87            |                |
| M4   | OD50*295, 40kg/cm <sup>2</sup> , S.G. 0.68            |                |
| M5   | OD50*96, 10kg/cm <sup>2</sup> , (Top mounting)        |                |
| M6   | OD50*230, 60kg/cm <sup>2</sup> , S.G. 0.72            |                |
| M7   | OD50*150, 40kg/cm <sup>2</sup> , S.G. 0.85            |                |
| M8   | OD50*175, 30kg/cm <sup>2</sup> , S.G. 0.75            |                |
| M9   | OD50*200, 30kg/cm <sup>2</sup> , S.G. 0.67            |                |
| MA   | OD50*230, 60kg/cm <sup>2</sup> , S.G. 0.72            |                |
| MB   | OD50*295, 40kg/cm <sup>2</sup> , S.G. 0.65            |                |
| MC   | OD50*96, 10kg/cm <sup>2</sup> , (Top mounting)        |                |
| L1   | OD50*200, 30kg/cm <sup>2</sup> , S.G. 0.7             | SUS316L        |
| L2   | OD50*175, 30kg/cm <sup>2</sup> , S.G. 0.75            |                |
| L3   | OD50*150, 40kg/cm <sup>2</sup> , S.G. 0.87            |                |
| L4   | OD50*295, 40kg/cm <sup>2</sup> , S.G. 0.68            |                |
| L5   | OD50*96, 10kg/cm <sup>2</sup> 、 S.G.1.1(Top mounting) |                |
| L6   | OD50*230, 60kg/cm <sup>2</sup> , S.G. 0.72            |                |
| T2   | OD48*210, 20kg/cm <sup>2</sup> , S.G. 0.6             | Titanium alloy |
| T4   | OD48*210, 20kg/cm <sup>2</sup> , S.G. 0.58            |                |
| U1   | OD61.3*394, 110kg/cm <sup>2</sup> , S.G. 0.8          |                |

### ③④ Flag Display

- A: Flag (Small)(140°C)  
B: Flag (Small)(200°C)  
C: Flag (Small)(350°C)  
R: Flag (Big)(350°C)  
0: None

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