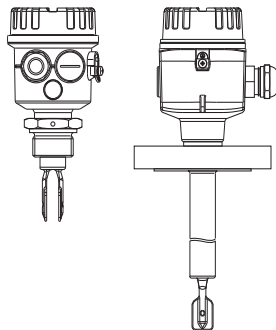


사용 설명서 **Liquiphant M FTL50, FTL51**

KO- 포인트 레벨 스위치



KO -목차

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주의!

= 금지됨.

잘못된 작동이나 파손을
유발할 수 있습니다.

KO- 안전 지침

Liquiphant M FTL50, FTL51 은
유체의 포인트 레벨 검출에
사용하는 계기입니다.

잘못 사용하면 위험한 상황이
발생할 수 있습니다.

레벨 리미트 스위치

Liquiphant M FTL50, FTL51 은
본 설명서의 지침, 관련 표준,
법적요건 및 인증서 (해당시) 를
엄격히 준수하여 **적절한 교육을**

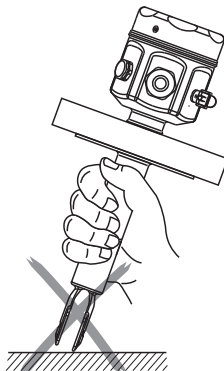
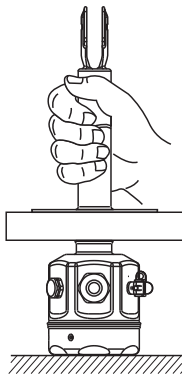
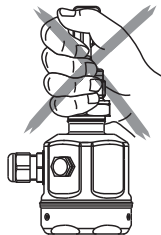
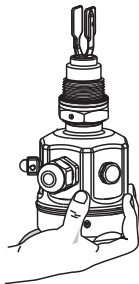
받고 자격을 갖춘 전문가만
설치, 연결, 시운전, 작동 및
유지보수할 수 있습니다.

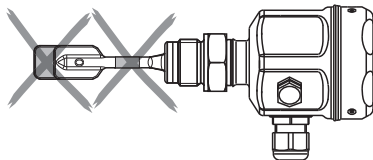
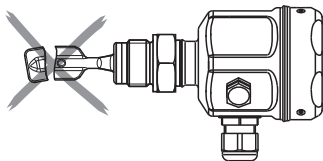
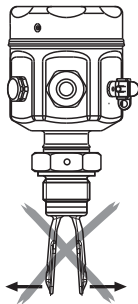
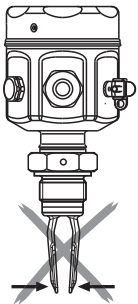
계기 근처에 쉽게 접근할 수
있는 전원 스위치를 설치하십
시오.

전원 스위치를 계기의 차단기로
표시하십시오.

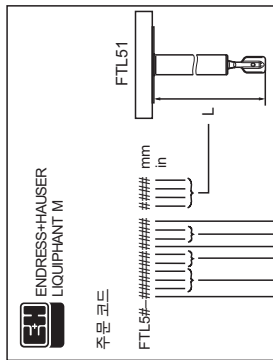
KO- 취급

하우징, 플랜지 또는 확장
튜브를 잡으십시오.

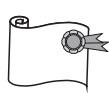




KO- 구부리지 마십시오.
줄이지 마십시오.
연장하지 마십시오.



A	*1	ATEX II 3 G	EEx nC II T6, WHG	
B		ATEX II 3 D	T85°C*3	
C		ATEX II 3 G	EEx nA II T6, WHG	
		ATEX II 3 D	T85°C*3	
D	*1	WHG		
E		ATEX II 1/2 G	EEx de IIC T6, WHG	
F		ATEX II 1/2 G	EEx ia IIC T6, WHG	
		ATEX II 1/2 D	T80°C*3	
G		ATEX II 1/2 G	EEx ia IIC T6	
		ATEX II 1/2 D	T80°C*3	
H		ATEX II 1 G	EEx ia IIC T6	
I		ATEX II 1/2 G	EEx de IIC T6	
J		ATEX II 1 G	EEx ia IIC T6, WHG	
K		ATEX II 1/2 G	EEx d IIC T6	
L		ATEX II 1/2 G	EEx d IIC T6, WHG	
M		NEPSI Ex ia IIC T6		
N		NEPSI Ex d IIC T6		
P		FM IS, Cl. I, II, III, Div. 1, Gr. A-G		
Q		FM XP, Cl. I, II, III, Div. 1, Gr. B-G, E5 => Gr. A-G		
R		FM NI, Cl. I, Div. 2, Gr. A-D		
S		CSA IS, Cl. I, II, III, Div. 1, Gr. A-G		
T		CSA XP, Cl. I, II, III, Div. 1, Gr. A-G		
U		CSA 범용		
V		TIIS Ex ia IIC T3		
W		TIIS Ex d IIB T3		
X		TIIS Ex ia IIC T6		
Y		TIIS Ex d IIC T3		
8		TIIS Ex d IIC T6		
Y		*2		



A## B## C## D## F## K## N##	플랜지		12 13
	GE2	R ¾, DIN 2999, 316L	
	GE5	R ¾, DIN 2999, AlloyC4	
	GE6	R ¾, DIN 2999, AlloyC22	
10 11	GF2	R 1, DIN 2999, 316L	 최대 100 bar, 150 °C
	GF5	R 1, DIN 2999, AlloyC4	
	GF6	R 1, DIN 2999, AlloyC22	
	GM2	NPT ¾, ANSI, 316L	
	GM5	NPT ¾, ANSI, AlloyC4	 최대 100 bar, 150 °C
	GM6	NPT ¾, ANSI, AlloyC22	
	GN2	NPT 1, ANSI, 316L	
	GN5	NPT 1, ANSI, AlloyC4	
	GN6	NPT 1, ANSI, AlloyC22	 최대 25 bar, 150 °C 최대 40 bar, 100 °C
	GQ2	G ¾, ISO 228, 316L	
	GQ5	G ¾, ISO 228, AlloyC4	
	GQ6	G ¾, ISO 228, AlloyC22	
	GR2	G 1, ISO 228, 316L	 최대 16 bar, 120 °C 최대 2 bar, 150 °C
	GR5	G 1, ISO 228, AlloyC4	
	GR6	G 1, ISO 228, AlloyC22	
	GW2	G 1, ISO 228, 316L	
YY9	TC2	DN25-38 (1...1½"), ISO 2852, 316L	
	TE2	Tri-Clamp DN40-51 (2"), ISO 2852, 316L	
		Tri-Clamp	

*¹

없음

*²

기타

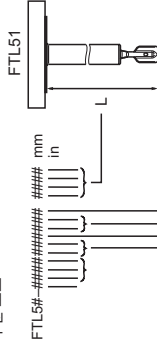
*³

PBT는 해당 없음

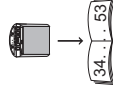
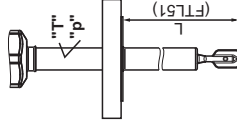


ENDRESS+HAUSER
LIQUIPHANT M

주문 코드



AA	*2	AA	mm, 316L,	Ra < 3.2 µm/80 grit (FTL50)
BB	.....	BB	mm, AlloyC4,	Ra < 3.2 µm/80 grit
BE	.....	BE	in, 316L,	Ra < 3.2 µm/80 grit
CB	.....	CB	in, AlloyC4,	Ra < 3.2 µm/80 grit
CE	.....	CE	in, AlloyC4,	Ra < 3.2 µm/80 grit
DB	"L II",	DB	316L,	Ra < 3.2 µm/80 grit
DE	"L II",	DE	AlloyC4,	Ra < 3.2 µm/80 grit
IA	*2	IA	+ "T" (FTL50)	
JB	.....	JB	mm, 316L	+ "T"
JE	.....	JE	mm, AlloyC4	+ "T"
KB	.....	KB	in, 316L	+ "T"
KE	.....	KE	in, AlloyC4	+ "T"
LB	"L II",	LB	316L	+ "T"
LE	"L II",	LE	AlloyC4	+ "T"
QA	*2	QA	+ "p" (FTL50)	
RB	.....	RB	mm, 316L	+ "p"
RE	.....	RE	mm, AlloyC4	+ "p"
SB	.....	SB	in, 316L	+ "p"
SE	.....	SE	in, AlloyC4	+ "p"
TB	"L II",	TB	316L	+ "p"
TE	"L II",	TE	AlloyC4	+ "p"
YY	*2	YY		
A		A	FEL50A, PROFIBUS PA	
1		1	FEL51, 19...253 V AC	
2		2	FEL52, 10... 55 V DC, PNP	
4		4	FEL54, 19...253 V AC, 19...55 V DC, DPDT	
5		5	FEL55, 11... 36 V DC, 8/16 mA	
6		6	FEL56, NAMUR, L-H	
7		7	FEL57, PFM	
8		8	FEL58, NAMUR, H-L	
9		9		



E1	F27	NEMA6P, NPT ¾		
E4	F16,	NEMA4X, NPT ½		
E5	F13/17,	NEMA4X, NPT ¾		
E6	F15,	NEMA4X, NPT ½		
F1	F27,	IP68, G ½		
F4	F16,	IP66, G ½		
F5	F13/17,	IP66, G ½		
F6	F15,	IP66, G ½		
G1	F27,	IP68, M20		
G4	F16,	IP66, M20		
G5	F13/17,	IP66, M20		
G6	F15,	IP66, M20		
N4	F16,	IP66, M12		
N5	F13/17,	IP66, M12		
N6	F15,	IP66, M12		
Y9	*2			
#3	컴팩트 하우징			
#7	Alu/sep.			
A	*1			
B	PVIS free			
C	EN 10204 - 3.1, 316L			
K	사양 조정 밀도 H20			
L	사양 조정 밀도 H20, EN10204-3.1			
N	EN 10204 - 3.1, NACE MR0175, 316L			
P	100 bar (FTL51)			
R	100 bar, EN 10204 - 3.1, NACE MR0175, 316L (FTL51)			
S	GL/ABS 해양 인증(FTL51: 최대 1600 mm)			
Y	*2			



F16 (PBT)



F13/17 (Alu)
F27 (316L)



F15 (316L)



#3 컴팩트 하우징



#7 Alu/sep.

*1 없음

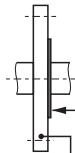
*2 기타

"L II" 스위치 지점

Liquiphant II FTL 360/365, FDL 30/35

"T" 온도 스페이서

"p" 압력 밀봉 부싱



ANSI B 16.5

AA2	1 1/4"	150 lbs, RF, 316/316L
AB2	1 1/2"	300 lbs, RF, 316/316L (FTL51)
AC2	1 1/2"	150 lbs, RF, 316/316L
AD2	1 1/2"	300 lbs, RF, 316/316L (FTL51)
AE2	2"	150 lbs, RF, 316/316L
AE5	2"	150 lbs, RF, Alloy C4 > 316/316L
AE6	2"	300 lbs, RF, Alloy C22 > 316/316L
AF2	2"	300 lbs, RF, 316/316L
AG2	2"	600 lbs, RF, 316/316L (FTL51)
AJ2	2 1/2"	300 lbs, RF, 316/316L (FTL51)
AL2	3"	150 lbs, RF, 316/316L
AM2	3"	300 lbs, RF, 316/316L (FTL51)
AN2	3"	600 lbs, RF, 316/316L (FTL51)
AP2	4"	150 lbs, RF, 316/316L
AQ2	4"	300 lbs, RF, 316/316L (FTL51)
AR2	4"	600 lbs, RF, 316/316L (FTL51)
AS2	1"	150 lbs, RF, 316/316L

EN 1092-1

BA2	DN32,	PN6 A,	316L
BB2	DN32,	PN25/40 A,	316L
BC2	DN40,	PN6 A,	316L
BD2	DN40,	PN25/40 A,	316L
BE2	DN50,	PN6 A,	316L
BG2	DN50,	PN25/40 A,	316L
BH2	DN65,	PN6 A,	316L
BJ2	DN50,	PN100 A,	316L (FTL51)
BK2	DN65,	PN25/40 A,	316L
BM2	DN80,	PN10/16 A,	316L
BN2	DN80,	PN25/40 A,	316L
BQ2	DN100,	PN10/16 A,	316L
BR2	DN100,	PN25/40 A,	316L

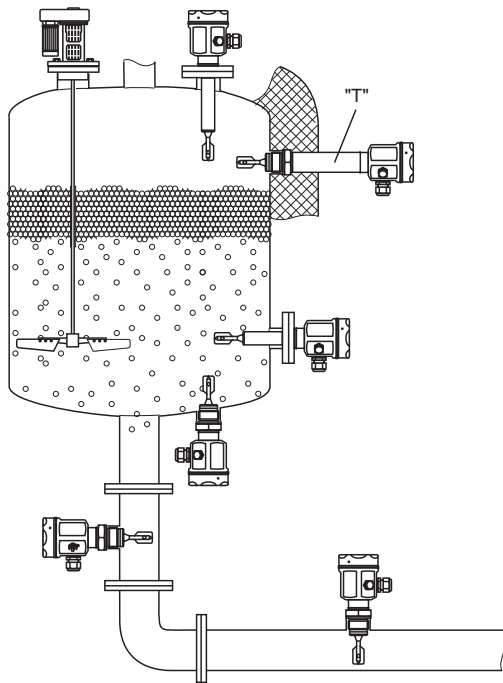
B12	DN80,	PN100 A,	316L (FTL51)
B82	DN25,	PN25/40 A,	316L
CA2	DN32,	PN6 B1,	316L
CA5	DN32,	PN6,	AlloyC4 >316L
CA6	DN32,	PN6,	AlloyC22 >316L
CE2	DN50,	PN6 B1,	316L
CE5	DN50,	PN6,	AlloyC4 >316L
CE6	DN50,	PN6,	AlloyC22 >316L
CG2	DN50,	PN25/40 B1,	316L
CG5	DN50,	PN25/40,	AlloyC4 >316L
CG6	DN50,	PN25/40,	AlloyC22 >316L
CJ2	DN50,	PN100 B2,	316L (FTL51)
CN2	DN80,	PN25/40 B1,	316L
CN5	DN80,	PN25/40,	AlloyC4 >316L
CN6	DN80,	PN25/40,	AlloyC22 >316L
CQ2	DN100,	PN10/16 B1,	316L
CQ5	DN100,	PN10/16,	AlloyC4 >316L
CQ6	DN100,	PN10/16,	AlloyC22 >316L
C12	DN80,	PN100 B2,	316L (FTL51)
C82	DN25,	PN25/40 B1,	316L
C85	DN25,	PN25/40,	AlloyC4 >316L
C86	DN25,	PN25/40,	AlloyC22 >316L
DG2	DN50,	PN40 B1,	316L
DN2	DN80,	PN40 B1,	316L
D82	DN25,	PN40 B1,	316L
FG2	DN50,	PN40 C,	316L
NG2	DN50,	PN40 D,	316L

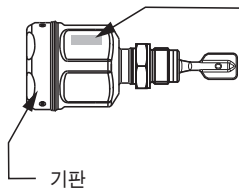
JIS B2220

KA2	10K 25,	RF,	316L
KC2	10K 40,	RF,	316L
KE2	10K 50,	RF,	316L
KE5	10K 50,	RF,	AlloyC4 >316L
KE6	10K 50,	RF,	AlloyC22 >316L
KL2	10K 80,	RF,	316L
KP2	10K 100,	RF,	316L

KO- 어플리케이션

유체의 포인트 레벨 검출

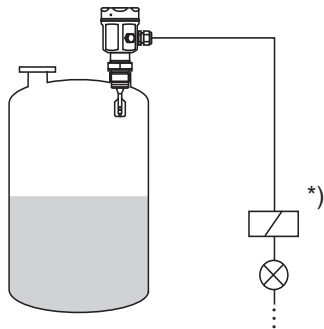




주문 코드 :
FTL5# - # ### ## # ## #

FEL51
FEL52
FEL54

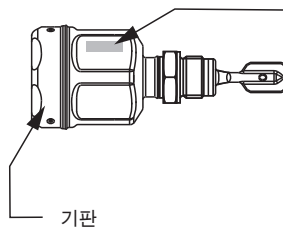
KO- 측정 시스템 직접 연결



*) 외부 부하

KO- 측정 시스템

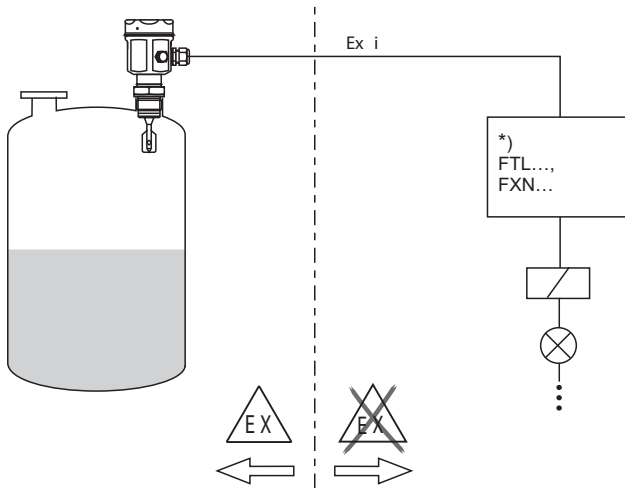
스위칭 유닛 통한 연결



주문 코드 :
FTL5# - # ### ## # ## #

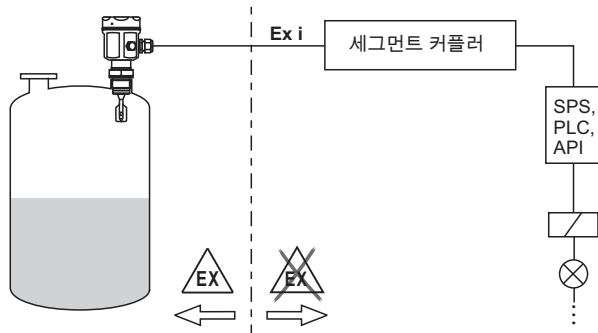
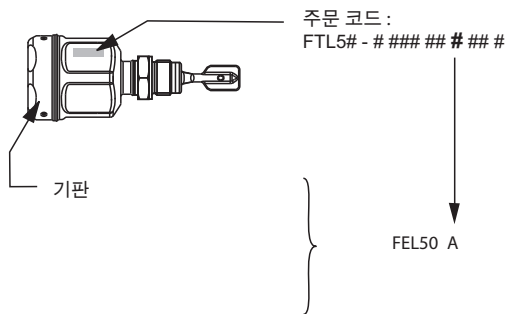


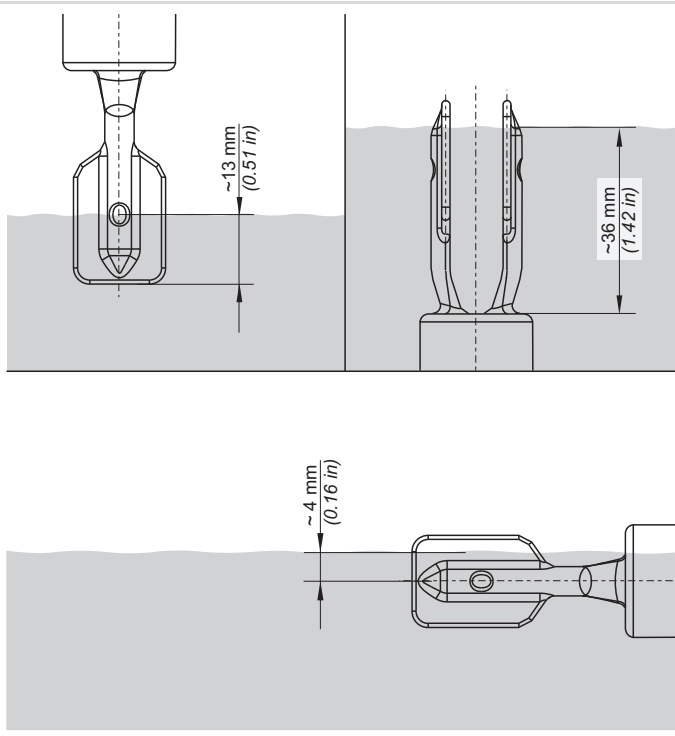
FEL55
FEL56
FEL57
FEL58



*) 스위칭 유닛, PLC, 절연 증폭기

KO- 측정 시스템 PROFIBUS PA 연결



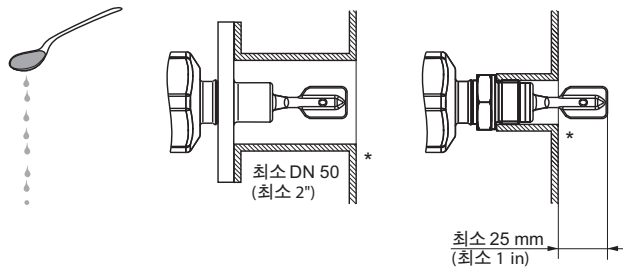


KO-설치

스위치 지점은 설치 위치에
따라 다름

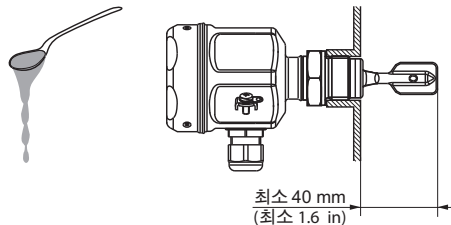
KO- 유체 점성 측정을 위한
설치 예시 v

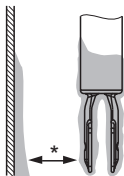
$v = 0 \dots 2000 \text{ mm}^2/\text{s}$
($v = 0 \dots 2000 \text{ cSt}$)



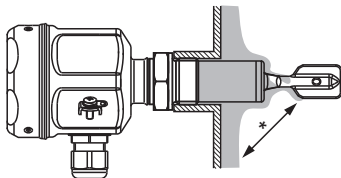
* 디버링

$v = 0 \dots 10000 \text{ mm}^2/\text{s}$
($v = 0 \dots 10000 \text{ cSt}$)

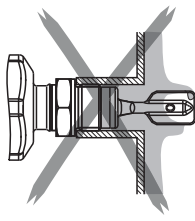
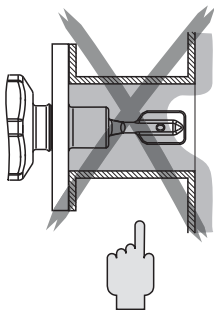
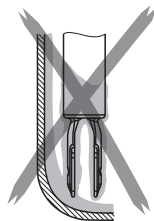




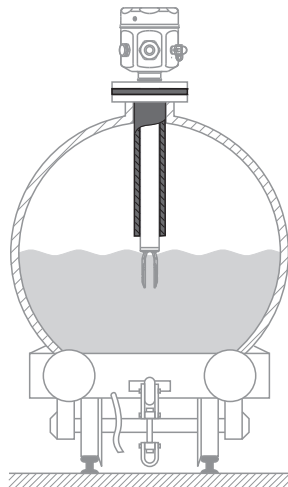
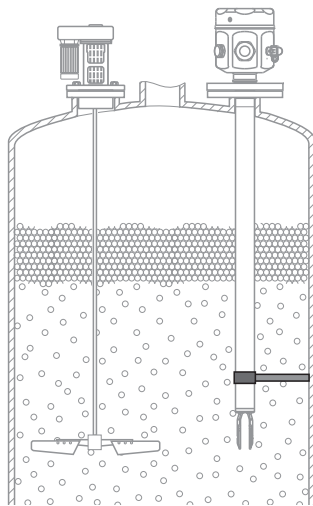
* 거리!



KO- 축적된 유체층을 고려하십시오.
포크가 축적된 유체층에 닿으면
안 됩니다.

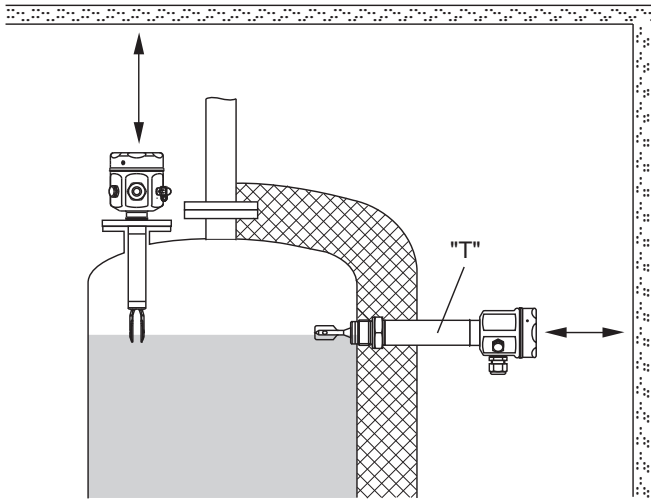


KO- 동적 힘이 있는 경우 서포트를
설치하십시오 .

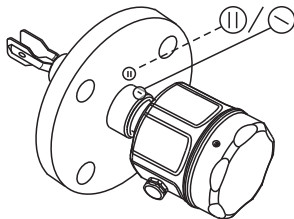
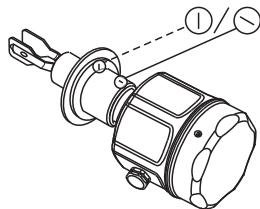
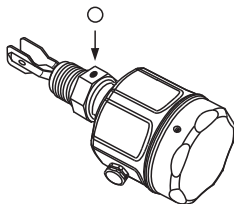
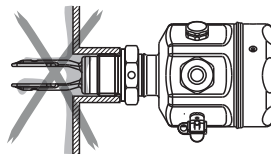
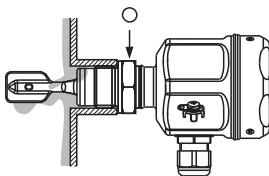


"T" = 단열 탱크용 온도 스페이서 포함

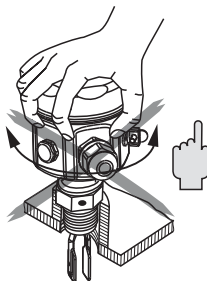
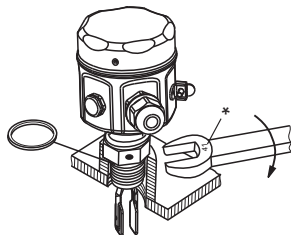
KO- 간격을 유지하십시오 .



KO- 포크 방향
마킹을 위나 아래로 향하도록
하십시오.

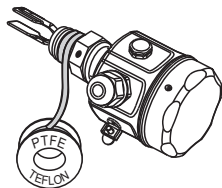


G $\frac{3}{4}$, 32 mm ($1\frac{1}{4}$ ")*
G 1, 41 mm ($1\frac{5}{8}$ ")*

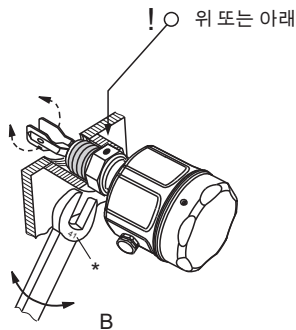


KO- Liquiphant 를 프로세스
연결부에 끼우십시오.
하우징을 돌리지 마십시오.

NPT $\frac{3}{4}$, R $\frac{3}{4}$, G $\frac{3}{4}$, 32 mm ($1\frac{1}{4}$ ")*
NPT 1, R 1, G 1, 41 mm ($1\frac{5}{8}$ ")*

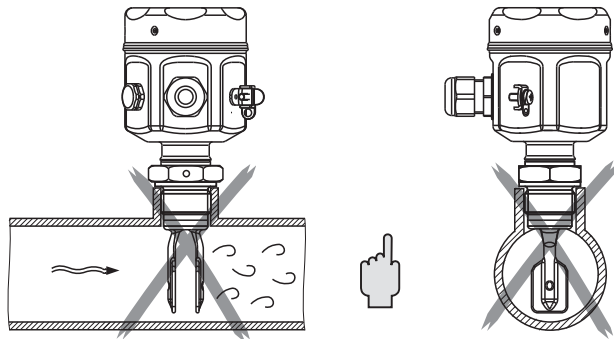
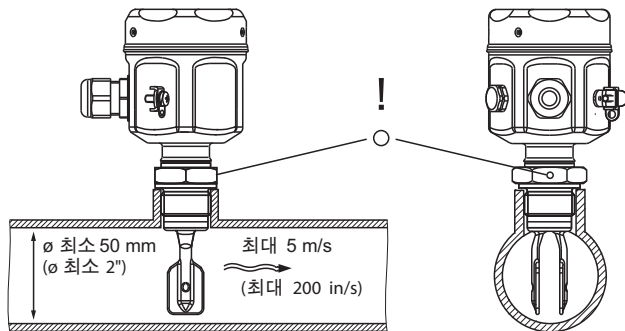


A

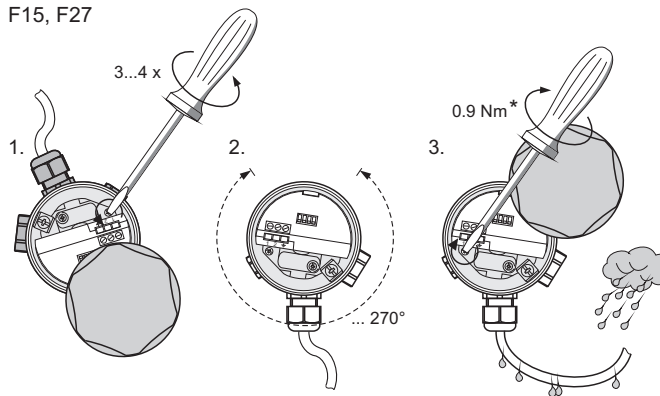


B

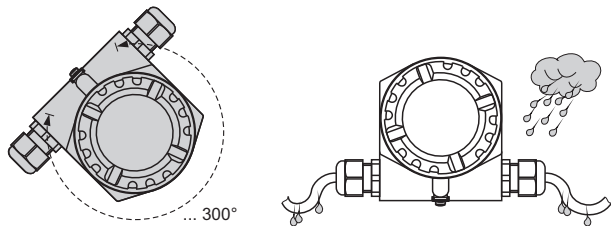
KO- 파이프에서의 설치 방향
마킹을 유체 방향으로 향하도록
하십시오.



F15, F27



F16, F13, F17

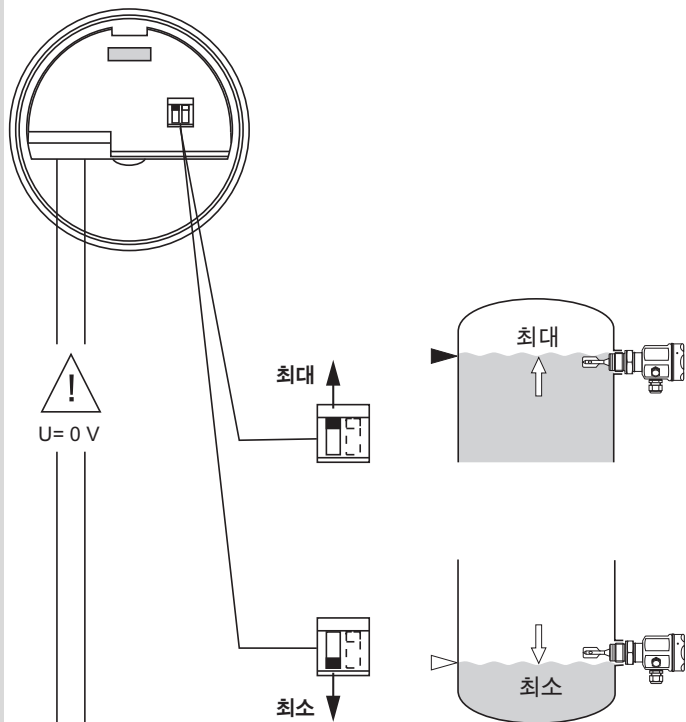


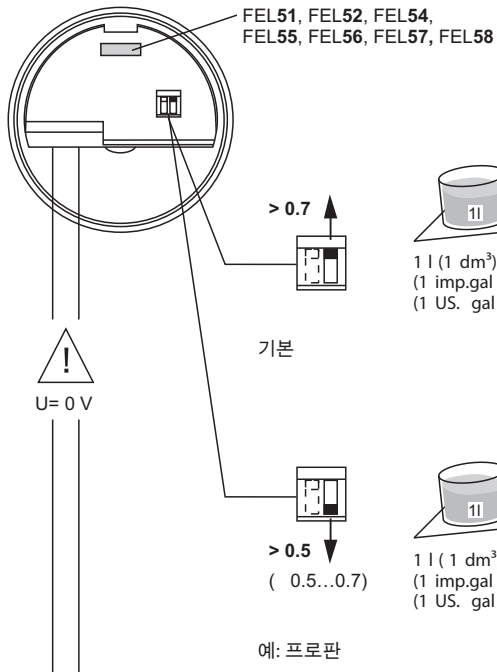
KO- 케이블 그랜드 방향

* 토크

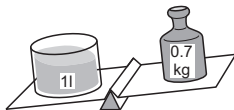
KO-설정

Min 모드 / Max 모드





KO- 유체 밀도에 따른 설정
밀도 ρ 는 g/cm^3 또는 kg/l 로
측정됨

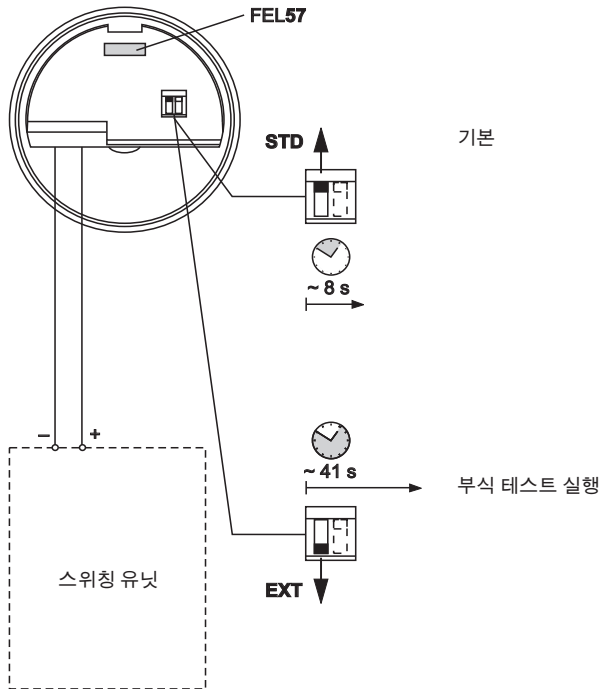


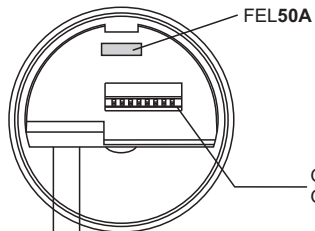
1 l (1 dm³) = 최소 0.7 kg
(1 imp.gal = 최소 7.0 lbs)
(1 US. gal = 최소 5.9 lbs)



1 l (1 dm³) = 0.5...0.7 kg
(1 imp.gal = 5.0...0.7 lbs)
(1 US. gal = 4.2...5.9 lbs)

KO- 자가 테스트 FEL57
(순서는 44, 45 페이지 및
스위칭 유닛 참조)





ON	1	2	4	8	16	32	64	SW
OFF	0	0	0	0	0	0	0	HW
	1	2	3	4	5	6	7	8

예:

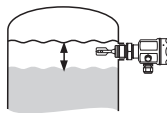
$$2 + 8 = 10 = \text{주소}$$

KO- 계기 주소 설정
(파라미터 설정 , BA141F 참조)

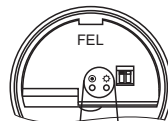
세그먼트 커플러

예: PLC

KO- 점등 신호



레벨 변화



GN RD (YE)

LED



대기



스위칭 상태



FEL57, FEL50A: 커버링



켜짐



점멸



꺼짐



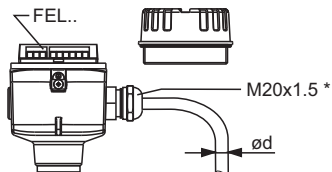
출력 신호



고장

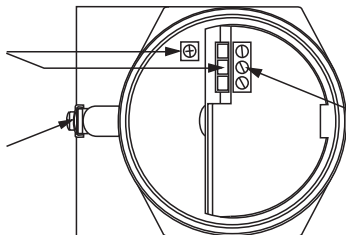


국가 규정 참조

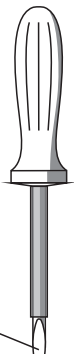


최대 2.5 mm²
(최대 AWG 14)

최대 4 mm²
(최대 AWG 12)



3 mm
(1/8 in)



KO- 연결

* 케이블 인입구

니켈 도금 황동 :

Ød = 7...10.5 mm (0.28...0.41 in)

플라스틱:

Ød = 5...10 mm (0.2...0.38 in)

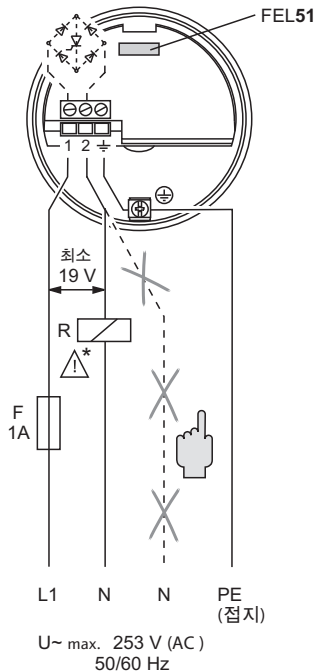
스테인리스강:

Ød = 7...12 mm (0.28...0.47 in)

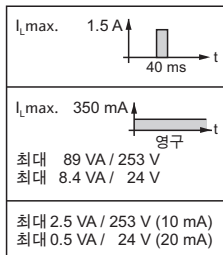
KO- FEL51 연결 2 선 AC 연결

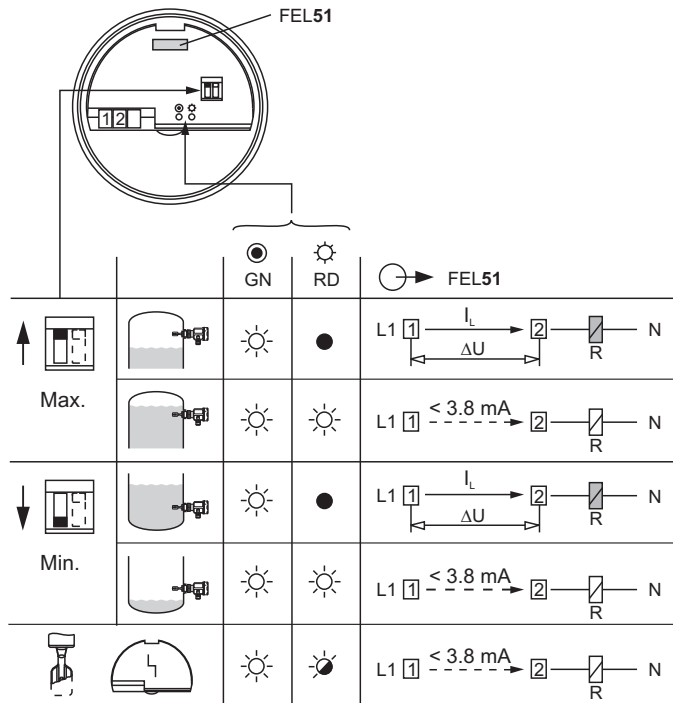


파손



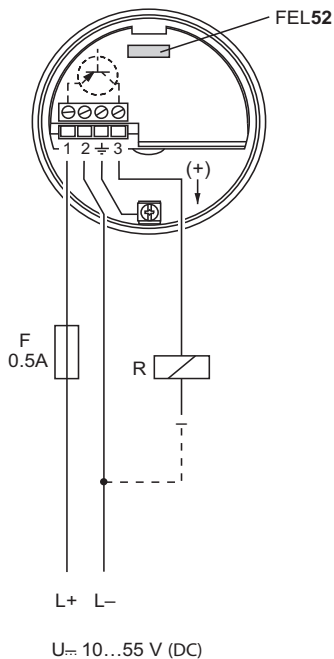
* 외부 부하 R이
연결되어야 함





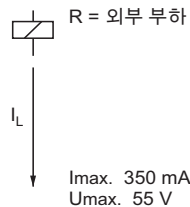
ΔU_{FEL51} 최대 12 V

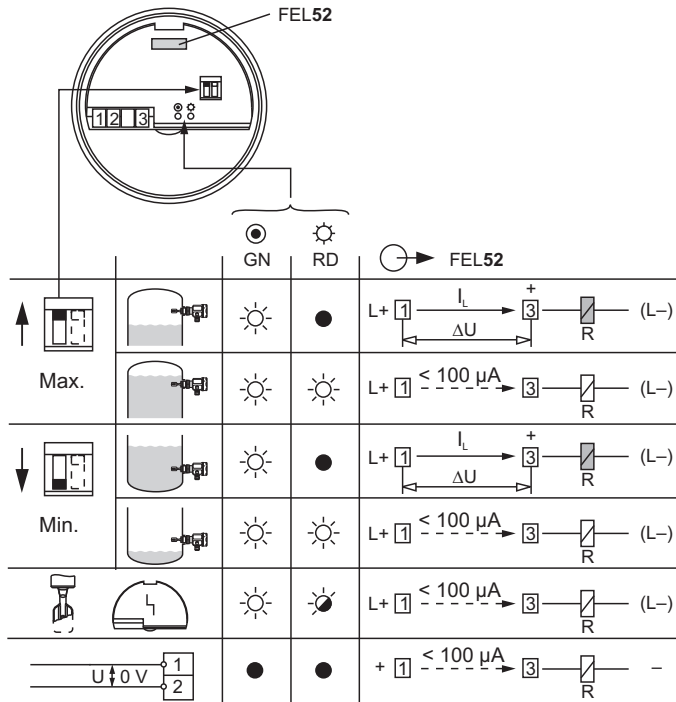
KO- FEL52 연결
DC 연결 (PNP)



DI 모듈도 해당

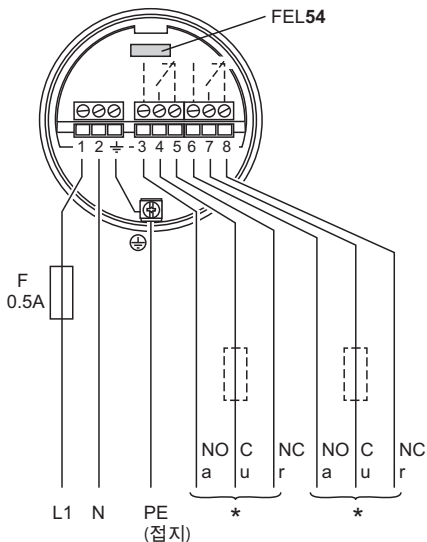
EN 61131-2





ΔU_{FEL52} 최대 3 V

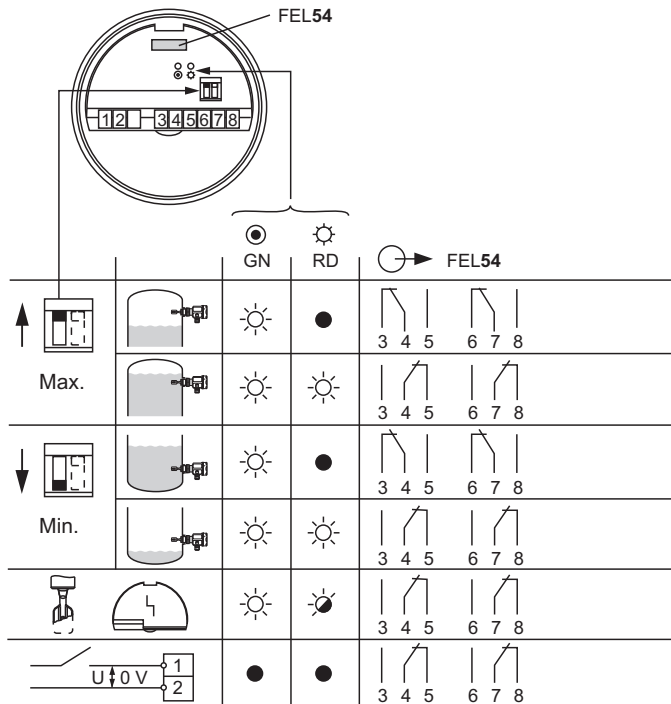
KO- FEL54 연결
범용 릴레이
릴레이 출력



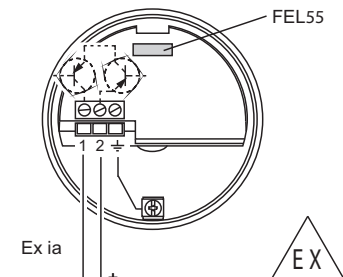
$U \sim 19 \dots 253 \text{ V (AC)}$

$U_{DC} 19 \dots 55 \text{ V (DC)}$
 $L+ \quad L-$

* $\left\{ \begin{array}{l} U \sim \text{max. } 253 \text{ V, } I \sim \text{max. } 6 \text{ A} \\ P \sim \text{max. } 1500 \text{ VA, } \cos \varphi = 1 \\ P \sim \text{max. } 750 \text{ VA, } \cos \varphi > 0.7 \\ I_{DC} \text{ max. } 6 \text{ A, } U_{DC} < 30 \text{ V} \\ I_{DC} \text{ max. } 0.2 \text{ A, } U_{DC} < 125 \text{ V} \end{array} \right.$



KO- FEL55 연결
8/16 mA 출력
*** 습한 연결**



Ex ia

- +

F T 50 mA**

- +

- +

- +

- +

- +

U₀ 11...36 V (DC)

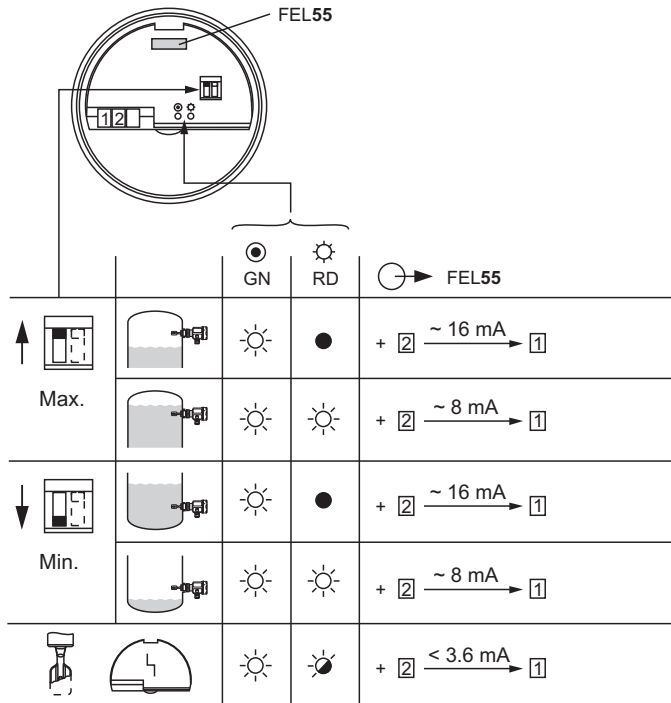
U₀ 11...35 V (DC) *

$$R_{\max} = \frac{U - 11 \text{ V}}{16.8 \text{ mA}}$$

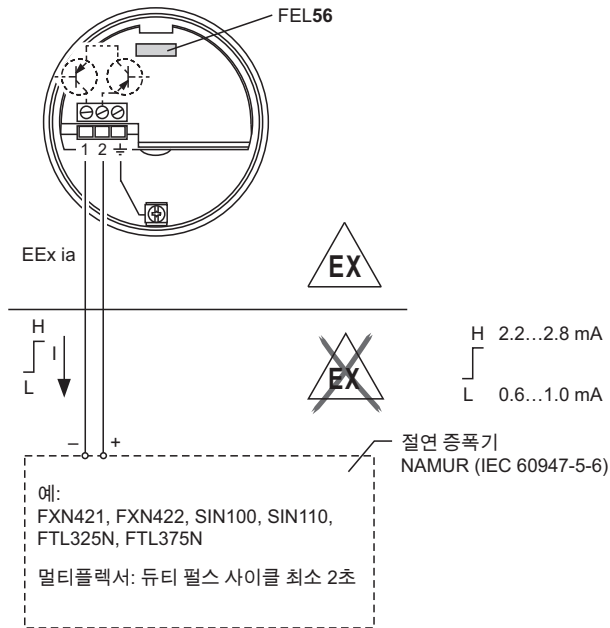
****비 방폭 어플리케이션:**
 퓨즈가 필요합니다!
 안전한 갈바닉 분리(예: SELV)가
 적용된 전원 공급 장치만
 사용하십시오!

PLC , AI 모듈 ...

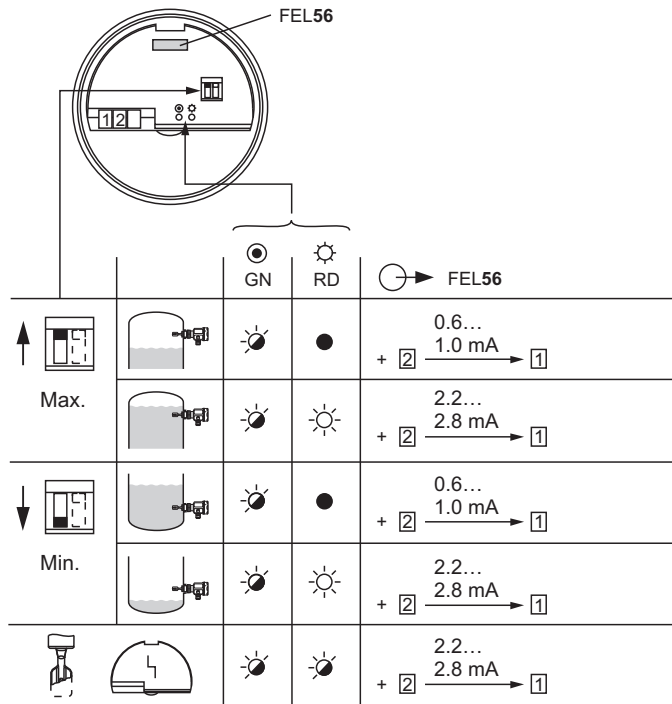
4...20 mA
 EN 61 131-2



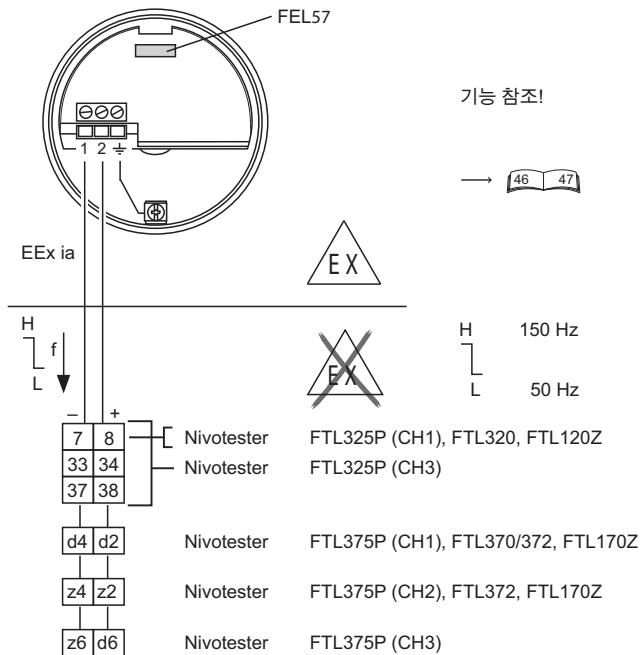
KO- FEL56 연결
NAMUR 출력 L-H
 $< 1.0 \text{ mA} / > 2.2 \text{ mA}$

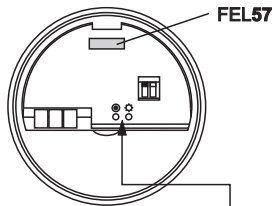


전원 공급 장치
 DC: 8.2 V $\pm$ 20%



KO- FEL 57 연결
PFM 출력
150 Hz / 50 Hz



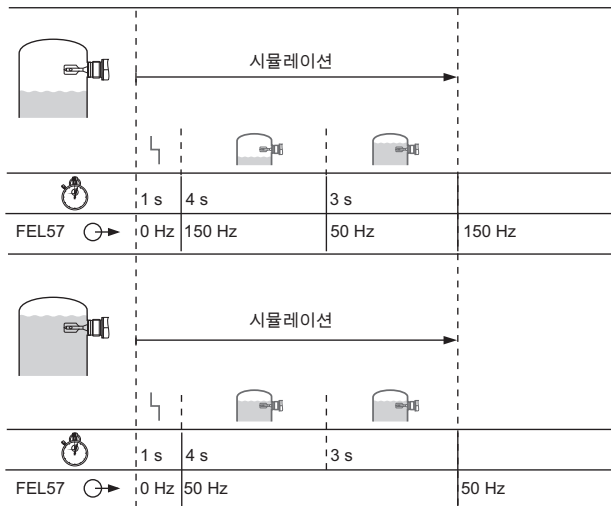
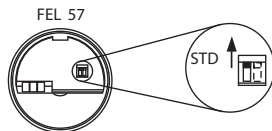


		● GN	☀ YE	☉ ➔ FEL57
		☀	☀	
		☀	●	
		☀	☾	
		●	●	

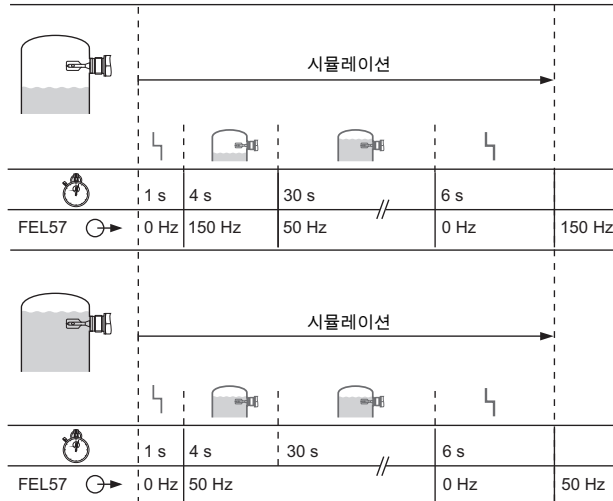
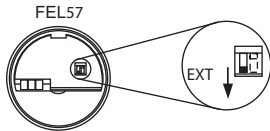
* 스위치 온 동작

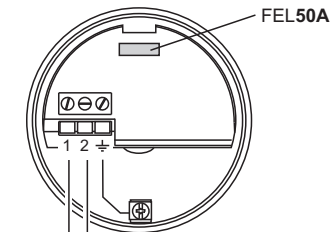


KO- 스위치 온 동작 자가 테스트 (STD)

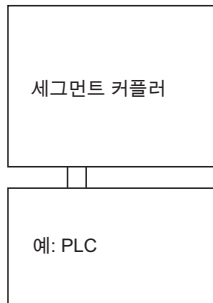


KO- 스위치 온 동작 자가 테스트 (EXT)

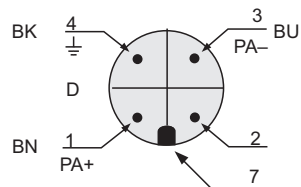




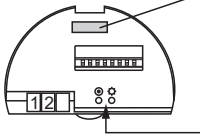
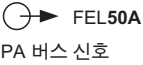
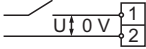
PA- PA+
U... 9...32 V (DC)



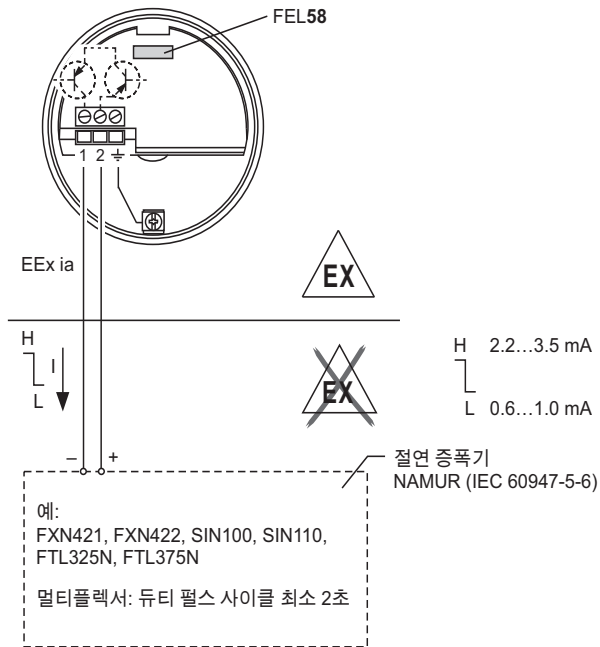
M12 플러그



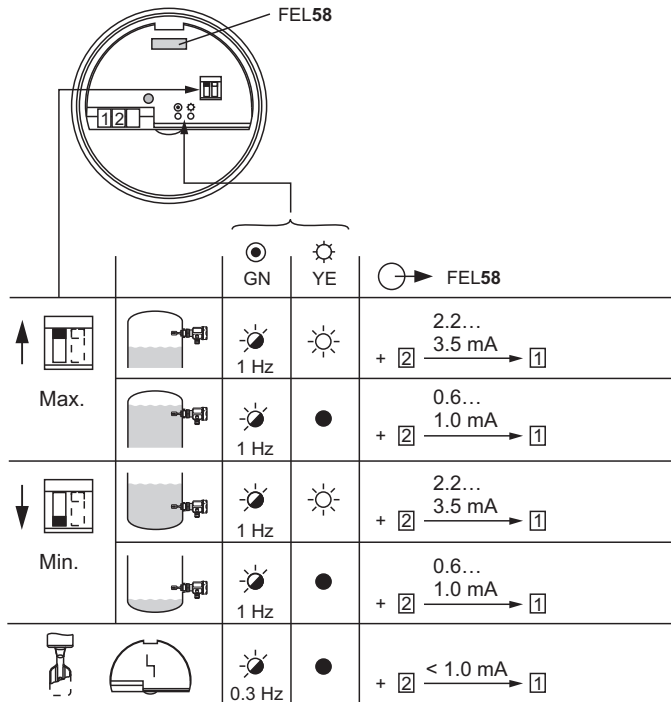
하우징의 계기 플러그(수)

				
반전 안 됨				OUT_D = 0
				OUT_D = 1
반전 됨				OUT_D = 0
				OUT_D = 1
			—	통신
		—		상태, BA141F 참조
				../..

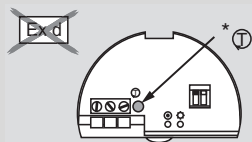
KO- FEL58 연결
NAMUR 출력 H-L
 $> 2.2 \text{ mA} / < 1.0 \text{ mA}$



전원 공급 장치
 DC: 8.2 V +/- 20%



KO- MAX 모드에서의 FEL58 테스트 버튼 기능



MAX  + 



1. 정상 작동

GN  YE 
1 Hz
+ 2.2...
3.5 mA → 1

GN  YE 
1 Hz
+ 0.6...
1.0 mA → 1

2. 테스트 버튼 누름



GN  YE 
+ 0 mA → 1

GN  YE 
+ 0 mA → 1

3. ~2초 정상 작동 후 테스트 버튼 해제



GN  YE 
1 Hz
+ 2.2...
3.5 mA → 1

GN  YE 
1 Hz
+ 0.6...
1.0 mA → 1



KO- MIN 모드에서의 FEL58 테스트 버튼 기능

1. 정상 작동

GN YE
1 Hz
+ 2.2...
3.5 mA → 1

GN YE
1 Hz
+ 0.6...
1.0 mA → 1

2. 테스트 버튼 누름



GN YE
● ●
+ 0 mA → 1

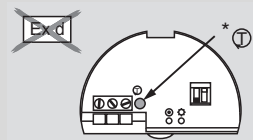
GN YE
● ●
+ 0 mA → 1

3. ~2초 정상 작동 후 테스트 버튼 해제

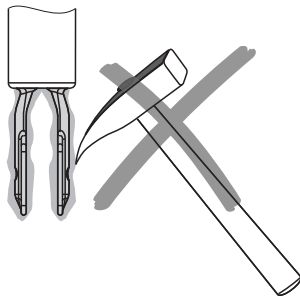
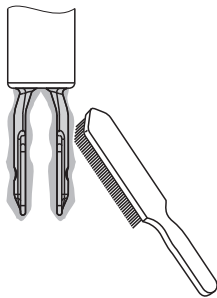


GN YE
1 Hz
+ 2.2...
3.5 mA → 1

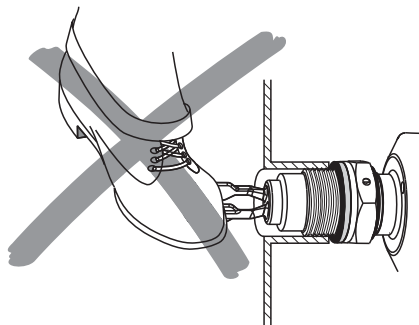
GN YE
1 Hz
+ 0.6...
1.0 mA → 1



KO- 유지보수, 세척
축적된 유체층 제거



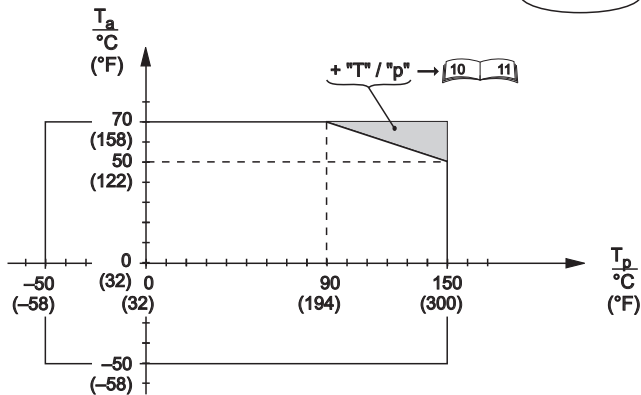
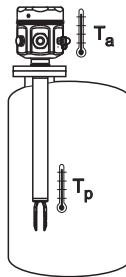
발판으로
사용하지 마십시오!



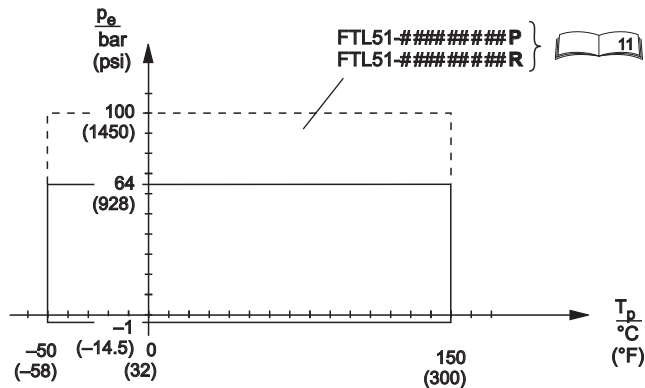
KO- 기술 데이터

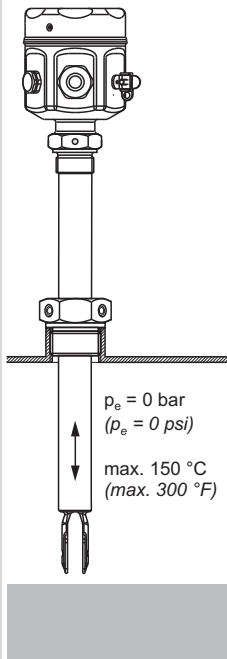
주변 온도 T_a

처리 온도 T_p

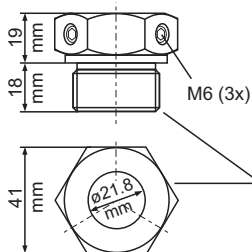


KO- 프로세스 압력 p_e
처리 온도 T_p

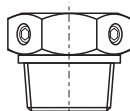




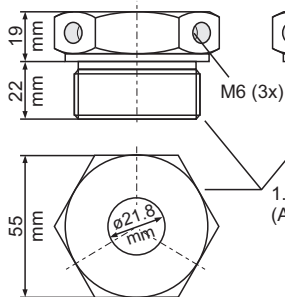
G 1
52003978



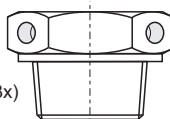
NPT 1 - 11½
52003979



G 1½
52003980



NPT 1½ - 11½
52003981

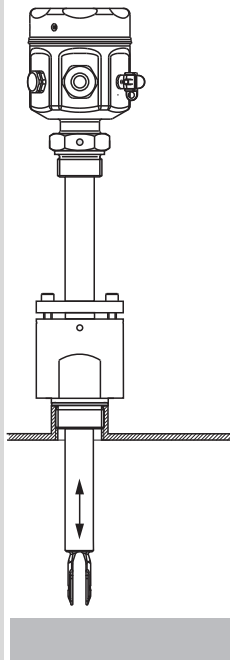


KO-액세서리 비가압 작동용 슬라이딩 슬리브

참조 :
KA00151F (G 1, NPT 1)
KA00152F (G 1½, NPT 1½)

100 mm = 3.94 in

KO- 고압 슬라이딩 슬리브



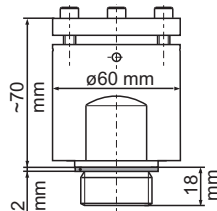
참조 :
KA00153F (G 1, NPT 1)
KA00154F (G 1½, NPT 1½)

100 mm = 3.94 in

G 1

1.4435 (AISI 316L)
52003663

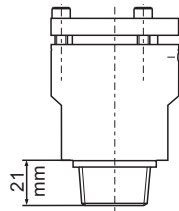
AlloyC4: 52003664
AlloyC22: 71118691



NPT 1 - 1½

1.4435 (AISI 316L)
52003667

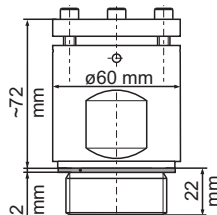
AlloyC4: 52003668
AlloyC22: 71118694



G 1½

1.4435 (AISI 316L)
52003665

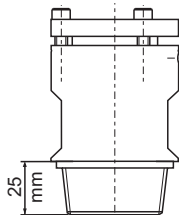
AlloyC4: 52003666
AlloyC22: 71118693



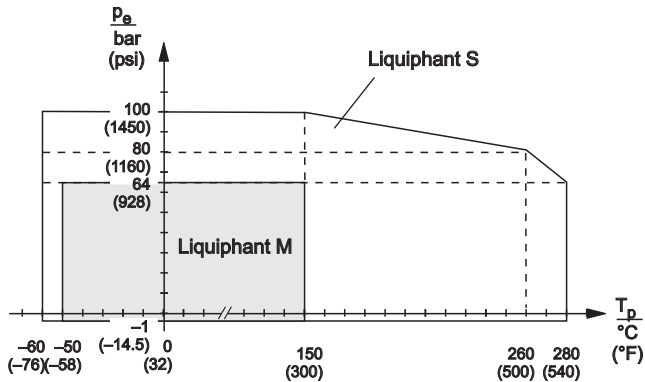
NPT 1½ - 11½

1.4435 (AISI 316L)
52003669

AlloyC4: 52003670
AlloyC22: 71118695



KO- 고압 슬라이딩 슬리브 :
 프로세스 압력 p_e
 처리 온도 T_p



KO- 문제 해결

고장	이유	조치
스위칭 안 됨	전원 없음	전원 점검
	고장 난 신호선	신호선 점검
	고장 난 기판 - FEL51 이 L1 및 N 에 직접 연결	교체 - 항상 FEL51 을 외부 부하를 통해 연결
	유체 밀도가 너무 낮음	기판에서 밀도를 > 0.5 로 설정
	포크에 유체층 축적	포크 세척
	포크 부식 (FEL 에 표시 : 적색 / 황색 점멸, FEL58: 녹색 점멸 0.3 Hz)	포크 및 프로세스 연결부 교체
	FEL51: 연결된 릴레이의 내부 저항이 너무 큼	적합한 릴레이 연결
	FEL51: 연결된 릴레이의 유지 전류가 너무 낮음	저항기를 릴레이와 병렬로 연결
잘못된 스위칭	FEL54: 접점 융착 (단락 이후)	FEL54 교체 . 접점 회로에 퓨즈 설치
	잘못 설정된 최소 / 최대 고장 안전 모드	기판에서 올바른 모드 설정
산발적인 스위칭 고장	두꺼운 기포 , 매우 거친 조건 , 발포성 유체	Liquiphant 를 우회해서 설치
	극심한 RFI	차폐 케이블 사용
	극심한 진동	디커플링 , 댐핑 , 포크를 90° 회전
	하우징 내부의 물	커버와 케이블 그랜드를 꼭 조임
	FEL52: 출력 과부하	부하 , (케이블) 정전용량 감소
전원 장애 후 잘못된 스위칭	FEL57, 스위치 온 테스트 (기능 테스트) 중 동작	FEL57 의 스위칭 동작 관찰 . 전원 장애 후 최대 45 초 동안 플랜트 제어 차단

KO- 문제 해결 추가 정보

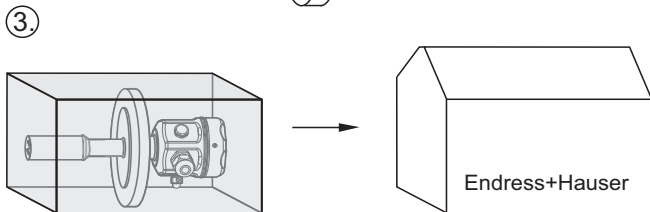
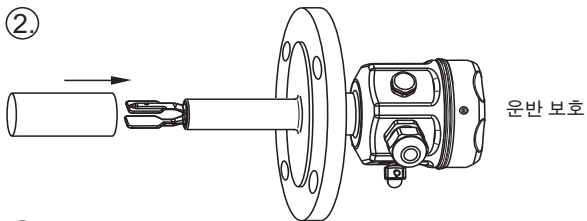
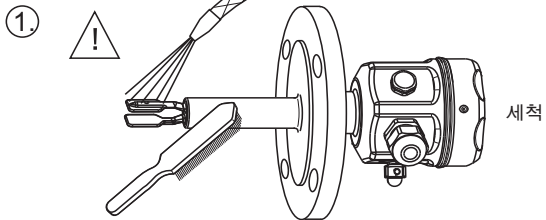
포크의 스위칭 동작이 비정상적이면, 진단 소켓의 PIN 4 에서 포크 주파수를 측정할 수 있습니다 .
기판 FEL51/52/54/55/56/57/58 의 경우 정현 진동의 진폭으로 포크의 상태를 파악할 수 있습니다 .
FEL50A 의 경우 직사각형 펄스 신호 때문에 포크 주파수 측정만 가능합니다 .

KO- 예비 부품 기판



FEL51	52002304
FEL52	52002305
FEL54	52002306
FEL55	52002307
FEL56	52002308
FEL57	52002309
FEL58	52006454
FEL50A	52010527

설치 사양: 설치 중 한 번이라도 본질 안전 전원이 아닌 전원에 연결된 기판은 더 이상 본질 안전 회로에 연결할 수 없습니다.



기술 정보

TI328F

Liquiphant FTL50, FTL50H, FTL51, FTL51H

TI426F

용접 어댑터, 레벨 및 압력

사용 설명서

BA00141F FEL50A, PROFIBUS PA

안전 지침

XA00031F	CE Ex	II 1/2 G,	Ex d	IIC/IIB
XA00063F	CE Ex	II 1/2 G, II 1/2 D,	Ex ia/ib	IIC/IIB
XA00064F	CE Ex	II 1 G,	Ex ia	IIC/IIB
XA00108F	CE Ex	II 1/2 G,	Ex de	IIC/IIB
XA00113F	CE Ex	II 1/2 G,	Ex ia/ib	IIC
XA00114F	CE Ex	II 1/2 G,	Ex d	IIC
XA00115F	CE Ex	II 1/2 G,	Ex de	IIC
XA00154F	CE Ex	II 1/2 G, II 1/2 D,	Ex ia/ib	IIC/IIB
XA00158F	CE Ex	II 1/2 G,	Ex ia/ib	IIC
XA00159F	CE Ex	II 1 G,	Ex ia	IIC/IIB
XA00182F	CE Ex	II 3 G, II 3 D,	Ex nA/nC	IIC/IIIC



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