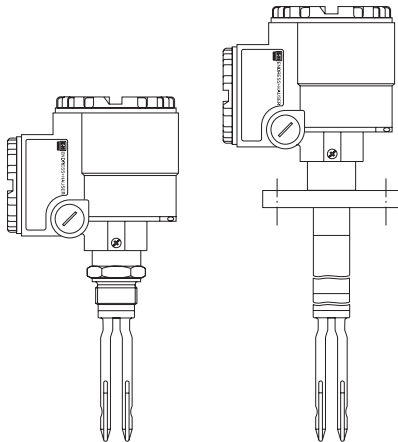


KA 024F/00/a6/02.00
016097-1000

liquiphant II FTL 365, FTL 366



- d** Füllstandgrenzschalter
- e** Level Limit Switch
- f** Détecteur de niveau
- es** Detector de nivel
- i** Interruttore di livello
- nl** Niveauschakelaar

Endress + Hauser

The Power of Know How



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nl Inhoudsopgave

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d Sicherheitshinweise

Der Liquiphant II FTL 365, FTL 366 darf nur als Füllstandgrenzschalter für Flüssigkeiten verwendet werden. Bei unsachgemäßem Einsatz können Gefahren von ihm ausgehen. Das Gerät darf **nur von qualifiziertem und autorisiertem Fachpersonal** unter besonderer Beachtung dieser Betriebsanleitung, der einschlägigen Normen, der gesetzlichen Vorschriften und der Zertifikate (je nach Anwendung) eingebaut, angeschlossen, in Betrieb genommen und gewartet werden.



Achtung!

= verboten; führt zu fehlerhaftem Betrieb oder Zerstörung.

e Notes on Safety

The Liquiphant II FTL 365, FTL 366 is a level limit switch designed for use in liquids. If used incorrectly it is possible that application-related dangers may arise. The level limit switch Liquiphant FTL 365, FTL 366 may be installed, connected, commissioned, operated and maintained **by qualified and authorised personnel only**, under strict observance of these operating instructions, any relevant standards, legal requirements, and, where appropriate, the certificate.



Caution!

= forbidden; leads to incorrect operation or destruction.

f Conseils de sécurité

Le Liquiphant II FTL 365, FTL 366 doit être exclusivement utilisé comme détecteur de niveau pour liquides. Il peut être source de danger en cas d'utilisation non conforme aux prescriptions. L'appareille ne doit être installé, raccordé, mis en service et maintenu **que par un personnel qualifié et autorisé**, qui tiendra compte des indications contenues dans la présente mise en service, des normes en vigueur et des certificats disponibles (selon l'application).



Attention!

= interdit; peut provoquer des dysfonctionnements ou la destruction.

es Notas sobre seguridad

El Liquiphant II FTL 365, FTL 366 debe emplearse única y exclusivamente como detector de nivel con fluidos. Su empleo inapropiado puede resultar peligroso. El equipo deberá ser montado, conectado, instalado y mantenido **única y exclusivamente por personal cualificado y autorizado**, bajo rigurosa observación de las presentes instrucciones de servicio, de las normativas y legislaciones vigentes, así como de los certificados (dependiendo de la aplicación).

i Note sulla sicurezza

Il Liquiphant II FTL 365, FTL 366 può essere utilizzato come sicurezza di troppo pieno. Un'installazione non corretta può determinare pericolo. Lo strumento può essere montato **solamente da personale qualificato ed autorizzato**. La messa in esercizio e la manutenzione devono rispettare le indicazioni di collegamento, le norme e i certificati di seguito riportati.

nl Veiligheidsinstructies

Gebruik de Liquiphant II FTL 365, FTL 366 alleen als niveauschakelaar voor vloeistoffen. Het instrument **alleen door gekwalificeerd en geautoriseerd personeel** laten inbouwen, aansluiten, in bedrijf nemen en onderhouden. Neem de instructies in deze Inbedrijfstellingsvoorschriften, de desbetreffende normen, de wettelijke voorschriften en eventuele certificaten in acht.



Atención!

= prohibido; peligro de mal funcionamiento o de destrucción.



Attenzione!

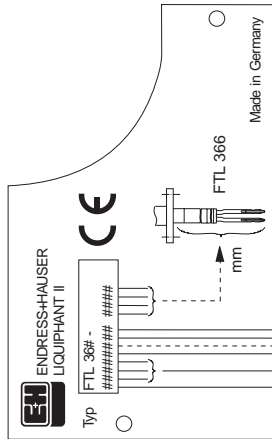
= vietato; pericolo di malfunzionamento o di distruzione.



Opgelet!

= verboden; leidt tot foutieve werking of storing

- d** Geräte-Identifikation
- e** Device Identification
- f** Dénomination
- es** Identificación del equipo
- i** Identificazione dello strumento
- nl** Instrument-identificatie



R = ---

D = DIBt Überfüllsicherung nach WHG

E/2/5 = CENELEC, EEx de II C T6, ATEX II 1/2 G
DIBt Überfüllsicherung nach WHG

I/3/6 = CENELEC, EEx de II C T6, ATEX II 1/2 G

Q = FM, Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G (FTL 365)
FM, Class I, II, III, Div. 1, Groups B, C, D, E, F, G (FTL 366)

U = CSA, Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G

GN2 = 1-11/2" NPT, ANSI B1.20.1, 1.4571 (AISI 316 Ti)

GN5 = 1-11/2" NPT, ANSI B1.20.1, Hastelloy C

GR2 = G 1 A, DIN ISO 228/1, 1.4571 (AISI 316 Ti)

GR5 = G 1 A, DIN ISO 228/1, Hastelloy C

ME2 = DIN 11851 DN 50, 1.4571 (AISI 316 Ti)

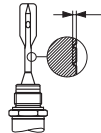
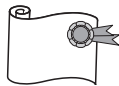
TE2 = Triclamp 2" ISO 2852, 1.4571 (AISI 316 Ti)

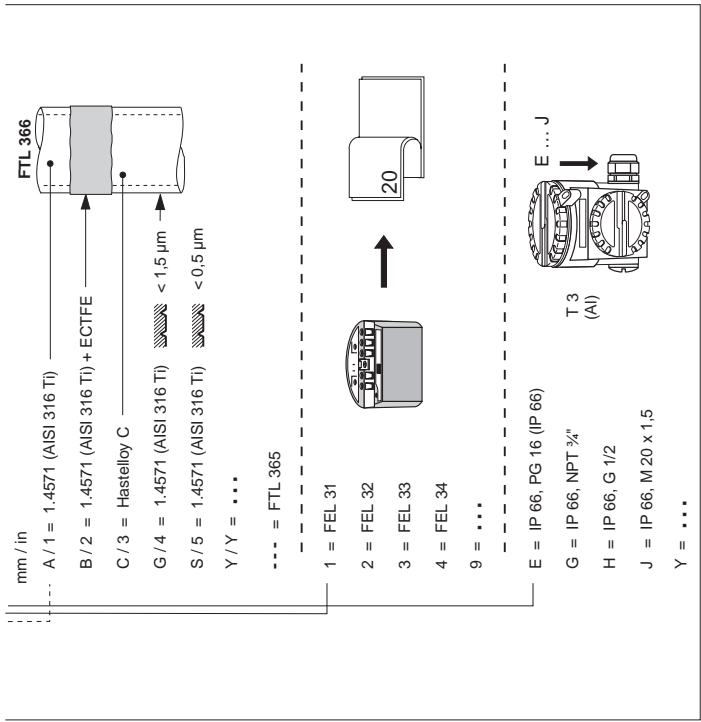
..... = → 

YY9 = ... → 

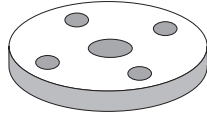
A = Standard / Standard / Standard
Standard / Standard / Standard

B = < 1,5 µm





- = ohne / without / sans
sin / senza / zonder
- ... = andere / others / autres
otros / altri / andere



ENDRESS+HAUSER
LIQUIPHANT II

Typ

FTL 36# -

####



Made in Germany



ANSI B 16.5 RF 1.4571 (AISI 316 Ti)

AE2 = 2", 150 psi

AE5 = 2", 150 psi + Hastelloy

AE7 = 2", 150 psi + ECTFE

AG2 = 2", 300 psi

AG5 = 2", 300 psi + Hastelloy

AG7 = 2", 300 psi + ECTFE

AK2 = 2 1/2", 300 psi

AL2 = 3", 150 psi

AL7 = 3", 150 psi + ECTFE

AN2 = 3", 300 psi

AP2 = 4", 150 psi

AR2 = 4", 300 psi

AV2 = 6", 150 psi

A12 = 6", 300 psi

DIN

BE2 = DN 50, PN 6, DIN 2527 (B)

BE7 = DN 50, PN 6, DIN 2527 (B) + ECTFE

BG2 = DN 50, PN 40, DIN 2527 (B)

BG7 = DN 50, PN 40, DIN 2527 (B) + ECTFE

BK2 = DN 65, PN 40, DIN 2527 (B)

BM2 = DN 80, PN 16, DIN 2527 (B)

BN2 = DN 80, PN 40, DIN 2527 (B)

BN7 = DN 80, PN 40, DIN 2527 (B) + ECTFE

BQ2 = DN 100, PN 16, DIN 2527 (B)
BQ7 = DN 100, PN 16, DIN 2527 (B) + ECTFE
BR2 = DN 100, PN 40, DIN 2527 (B)

CE5 = DN 50, PN 6, DIN 2526 (C) + Hastelloy
CG2 = DN 50, PN 40, DIN 2526 (C)
CG5 = DN 50, PN 40, DIN 2526 (C) + Hastelloy
CN2 = DN 80, PN 40, DIN 2526 (C)
CN5 = DN 80, PN 40, DIN 2526 (C) + Hastelloy
CQ2 = DN 100, PN 16, DIN 2526 (C)
CQ5 = DN 100, PN 16, DIN 2526 (C) + Hastelloy

FG2 = DN 50, PN 40, DIN 2512 (F)

NG2 = DN 50, PN 40, DIN 2512 (N)

JIS B 2210

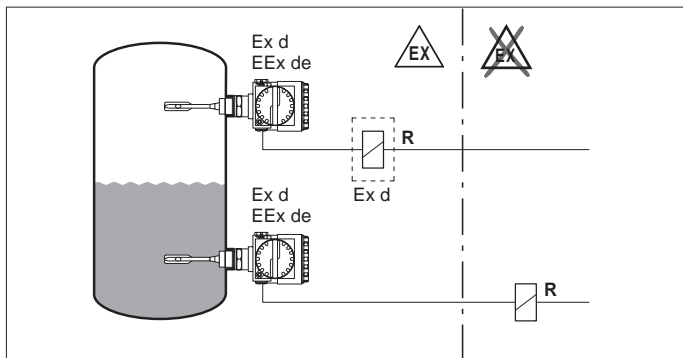
KE2 = 10 K, 50
KE5 = 10 K, 50 + ECTFE
KE7 = 10 K, 50 + Hastelloy

YY9 = ...

--- = ohne / without / sans
sin / senza / zonder

... = andere / others / autres
otros / altri / andere

- d** Verwendung
- e** Application
- f** Utilisation
- es** Aplicación
- i** Applicazione
- nl** Toepassing



- d** Nationale Vorschriften beachten!
Ex d = Zündschutzart
"druckfeste Kapselung"
EEx de = Zündschutzart
"druckfeste Kapselung"
und "erhöhte Sicherheit"
R = externe Last

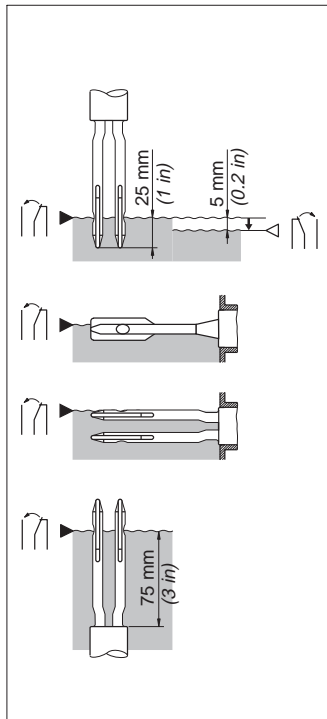
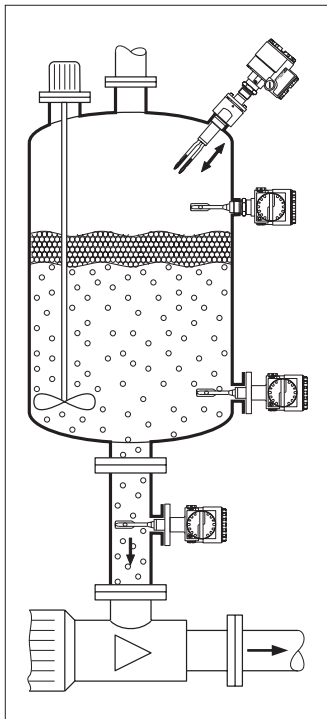
- e** Note national regulations!
Ex d = explosion-proof
EEx de = flame-proof
with enhanced safety
R = external load

- f** Respecter les lois et règles
locales en vigueur!
Ex d = version ADF
EEx de = version ADF et sécurité
augmentée
R = charge extérieure

- es** Considere reglamentaciones
nacionales
Ex d = versión ADF
EEx de = versión ADF y seguridad
aumentada
R = carga externa

- i** Osservare le norme nazionali!
Ex d = versione antideflagrante
EEx de = versione antideflagrante
a sicurezza aumentata
R = carico esterno

- nl** Nationale voorschriften in acht
nemen!
Ex d = bescherming tegen
ontsteking (BTO)
EEx de = BTO drukvaste behuizing
en verhoogde zekerheid
R = externe belasting



- d** Einbaubeispiele
- e** Mounting examples
- f** Exemples d'implantation
- es** Ejemplos de montaje
- i** Esempi di installazione
- nl** Inbouwvoorbeelden



- d** Schaltpunkt
- e** Switchpoint
- f** Point de commutation
- es** Punto de conmutación
- i** Punto di commutazione
- nl** Schakelpunt



- d** Schalthysterese
- e** Switching hysteresis
- f** Hystérésis
- es** Histéresis de conmutación
- i** Isteresi
- nl** Schakelhysterese

d Einbaubeispiele in
Abhängigkeit von der
Viskosität ν der Flüssigkeit

e Mounting examples
depending on liquid
viscosity ν

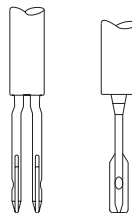
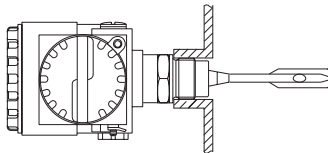
f Exemples d'implantation
dépendant de la viscosité ν
du liquide

es Ejemplos de montaje
dependiendo de la
viscosidad ν del líquido

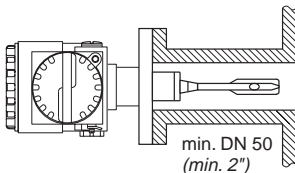
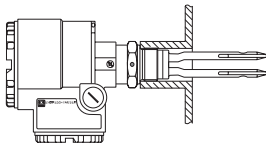
i Esempi di installazione
dipendenti dalla viscosità ν
del liquido

nl Inbouwvoorbeelden
afhankelijk van de
viscositeit ν van de vloeistof

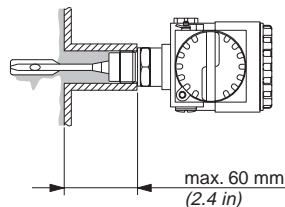
$\nu = 0 \dots 10000 \text{ mm}^2/\text{s}$
($\nu = 0 \dots 10000 \text{ cSt}$)

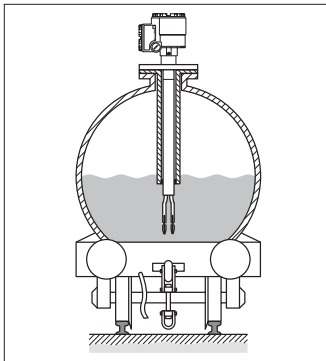


$\nu = 0 \dots 2000 \text{ mm}^2/\text{s}$
($\nu = 0 \dots 2000 \text{ cSt}$)

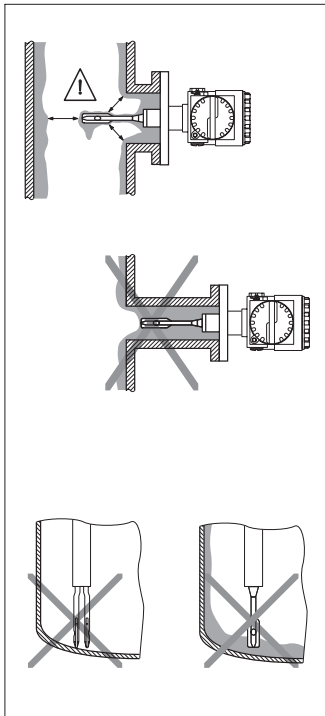


$\nu > 2000 \text{ mm}^2/\text{s}$
($\nu > 2000 \text{ cSt}$)



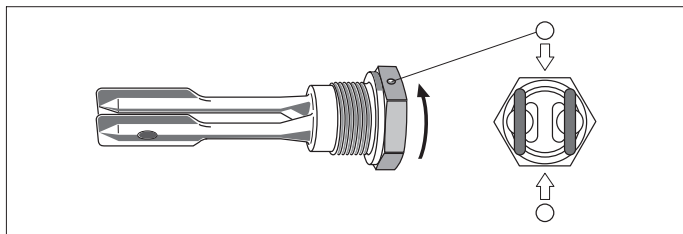
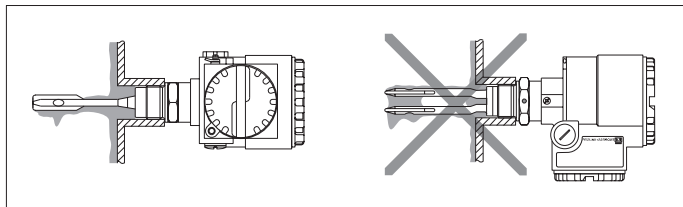


- d** FTL 366 bei starker dynamischer Belastung abstützen
- e** In cases of high dynamic forces, support FTL 366
- f** En cas d'importantes contraintes latérales, étayer le tube
- es** FTL 366 debe apoyarse en caso de cargas dinámicas altas
- i** Supportare il tubo in caso di forti spinte laterali
- nl** FTL 366 bij zware mechanische belasting verstevigen

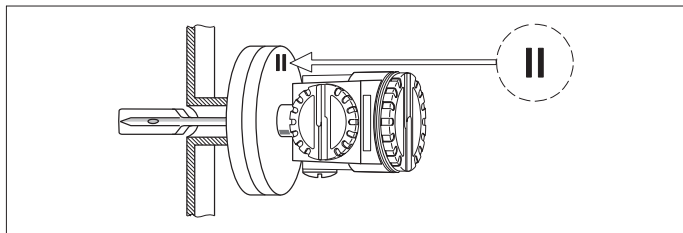


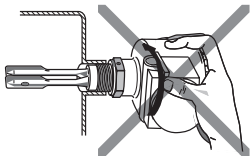
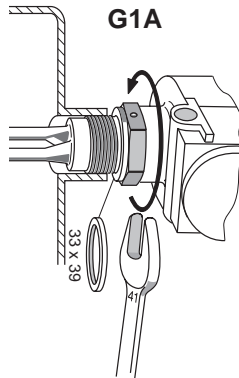
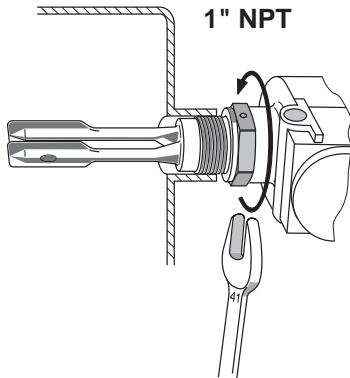
- d** Schwinggabel darf Behälterwand nicht berühren. Ansatzbildung berücksichtigen
- e** Fork must not touch tank wall. Build-up considerations
- f** Ne pas faire toucher les lames aux parois. Tenir compte du colmatage
- es** La horquilla no debe tocar la pared del depósito. Considere incrustación
- i** I rebbi non devono toccare le pareti del serbatoio. Tenere in considerazione eventuali depositi
- nl** Vork mag tankwand niet raken. Rekening houden met aangroei!

- d** Einbau
- e** Installation
- f** Montage
- es** Instalación
- i** Installazione
- nl** Inbouw



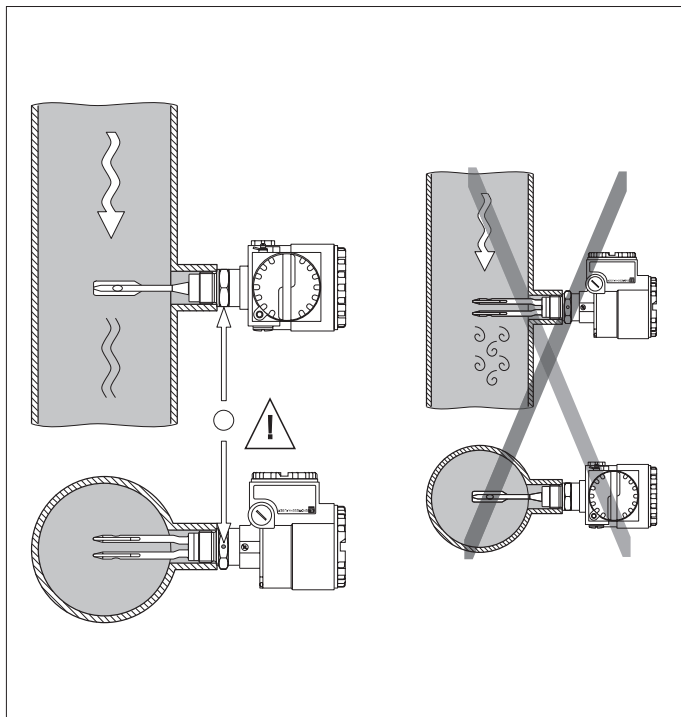
- d** Schwinggabel ausrichten:
Markierung beachten
- e** Orientation of fork tines:
Note marking
- f** Repérage de la position
des lames vibrantes:
voir repères
- es** Orientación de la horquilla :
Atención a la marca
- i** Orientamento dei rebbi:
Notare i segni
- nl** Vork uitrichten:
oriëntatie m.b.v. de markering

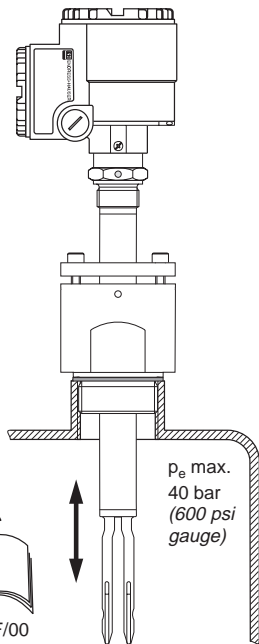




- d** FTL einschrauben
- e** Mounting FTL
- f** Montage du FTL
- es** Instalación del FTL
- i** Montaggio dell' FTL
- nl** FTL inschroeven

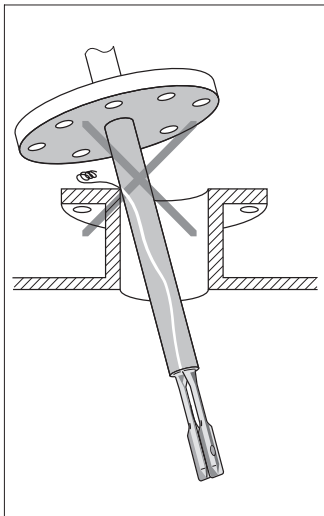
- d** Ausrichten in Rohren
- e** Orientation in pipes
- f** Montage et positionnement sur une tuyauterie
- es** Montaje y orientación en tuberías
- i** Orientamento in tubazioni
- nl** Opstelling in leidingen



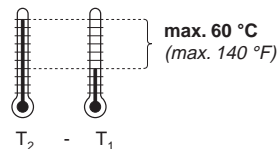
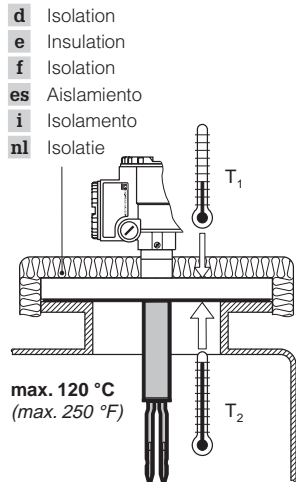


- d** FTL 366 mit Schiebemuffe
- e** FTL 366 with sliding sleeve
- f** FTL 366 avec manchon coulissant
- es** FTL 366 con manguito deslizante
- i** FTL 366 con manicotto di scorrimento
- nl** FTL 366 met schuifmof

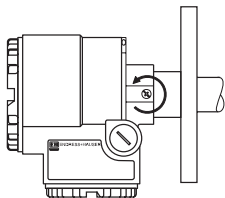
- d** FTL mit ECTFE-(HALAR®)-Beschichtung
Temperatur beachten!
- e** FTL with ECTFE (HALAR®) coating
Note temperature
- f** FTL avec revêtement ECTFE (HALAR®),
Respecter la température
- es** FTL con revestimiento de ECTFE (HALAR®)
¡Preste atención a la temperatura!
- i** FTL con rivestimento in ECTFE (HALAR®)
Tenere conto della temperatura!
- nl** FTL met ECTFE-(HALAR®)-bekleding
Rekening houden met max. temperatuur!



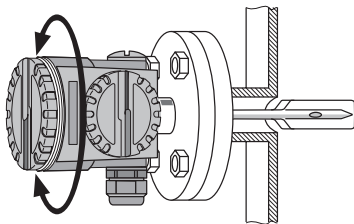
- d** Nicht zerkratzen!
- e** Don't scratch!
- f** Eviter de rayer le revêtement!
- es** No rayar!
- i** Non graffiare il rivestimento!
- nl** Niet beschadigen!



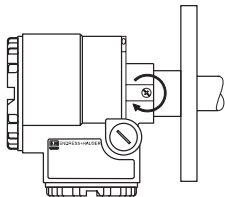
①.



②.



③.



d Kabeleinführung ausrichten

e Cable gland orientation

f Positionnement de l'entrée de câble

es Prensaestopa

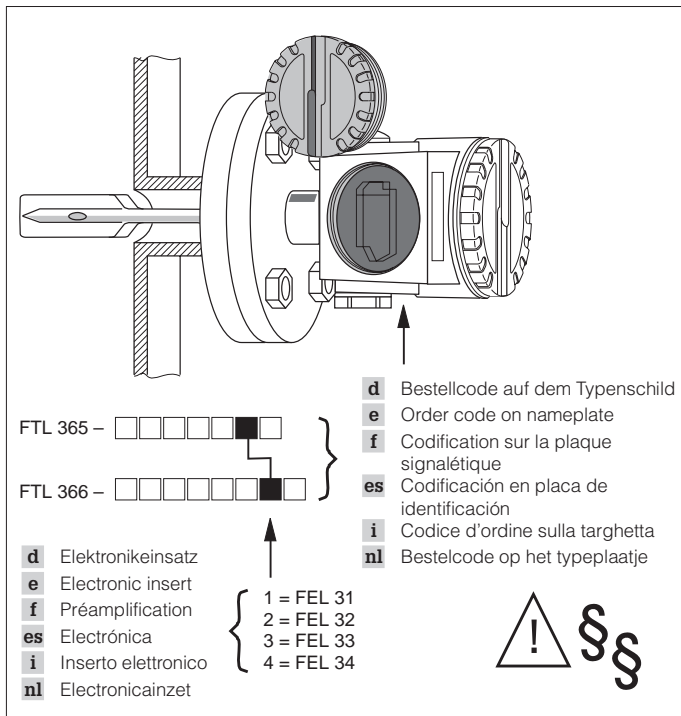
i Posizionamento del passacavo

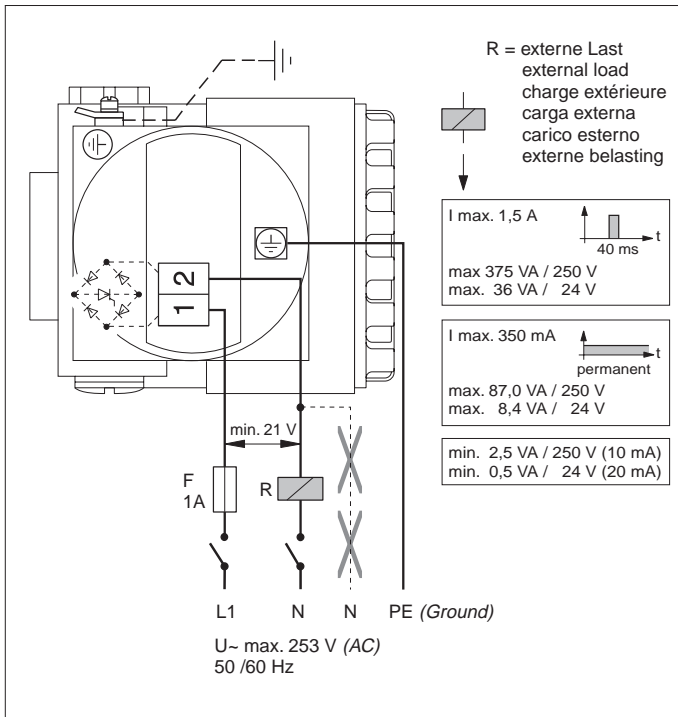
nl Kabelinvoer uitrichten

d Anschluß
e Connections
f Raccordement
es Conexiones
i Collegamenti
nl Aansluiting

d Anschlußraum öffnen
e Open the terminal chamber
f Ouvrir le compartiment de raccordement
es Abrir la caja de conexiones
i Aprire la camera terminale
nl Aansluitruimte openen

d Nationale Anschlußvorschriften beachten!
e Note national regulations for connections!
f Câblage selon les lois et règles en vigueur!
es Considere reglamentaciones nacionales sobre conexionado!
i Osservare le norme nazionali sul collegamento!
nl Nationale voorschriften in acht nemen!





- d** Anschluß
- e** Connections
- f** Raccordement
- es** Conexiones
- i** Collegamenti
- nl** Aansluiting

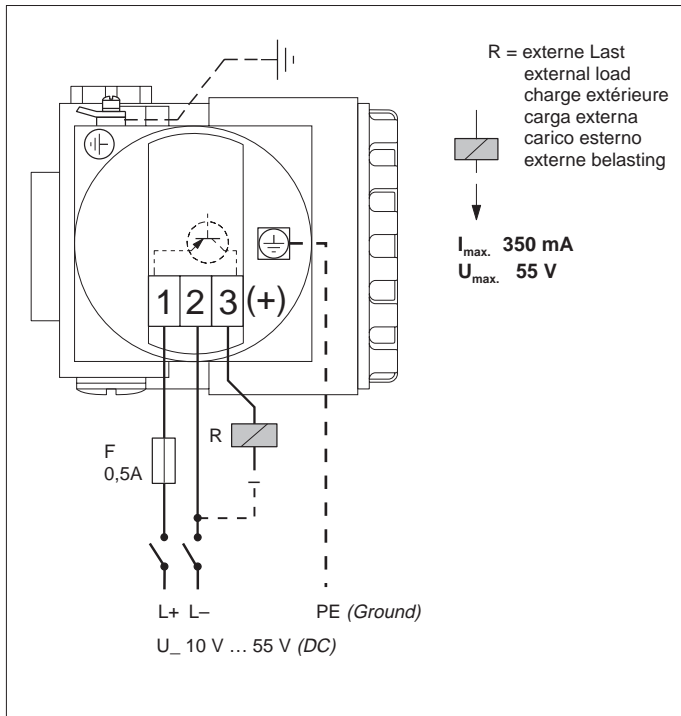
FEL 31

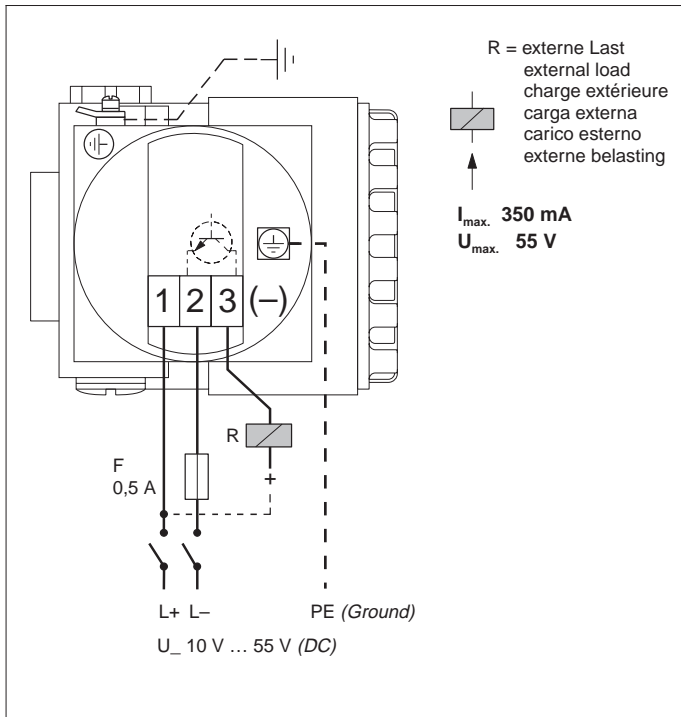
- d** Zweidraht-
Wechselstromanschluß
- e** Two-wire
AC connection
- f** Raccordement 2 fils
pour courant alternatif
- es** Conexión a dos hilos
para corriente alterna
- i** Collegamento bifilare AC
- nl** 2-draads wissel-
spanningsaansluiting

- d** Anschluß
- e** Connections
- f** Raccordement
- es** Conexiones
- i** Collegamenti
- nl** Aansluiting

FEL 32

(PNP)





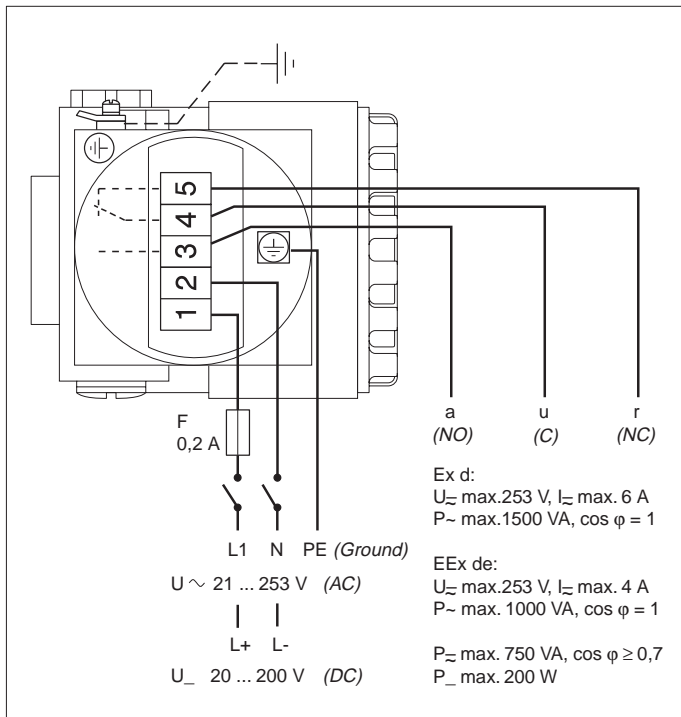
- d** Anschluß
- e** Connections
- f** Raccordement
- es** Conexiones
- i** Collegamenti
- nl** Aansluiting

FEL 33

(NPN)

- d** Anschluß
- e** Connections
- f** Raccordement
- es** Conexiones
- i** Collegamenti
- nl** Aansluiting

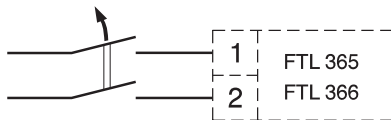
FEL 34



- d** Allstromanschluß
- e** Universal connection
- f** Raccordement courant alternatif ou continu
- es** Conexiónado universal para corriente alterna o continua
- i** Collegamento universale
- nl** Universele spanningsaansluiting

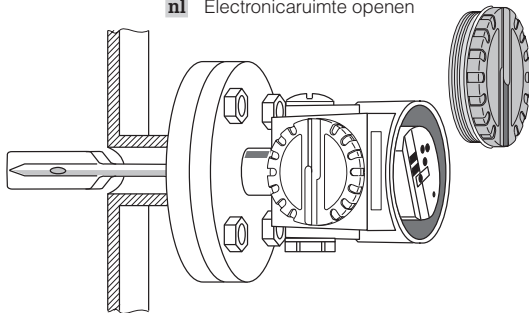
①.

- d** Netz aus
- e** Power off
- f** Courant coupé
- es** Fallo de alimentación
- i** Senza alimentazione
- nl** Voedingspanning uit



②.

- d** Elektronikraum öffnen
- e** Open the electronic chamber
- f** Ouvrir le boîtier dell' électronique
- es** Abrir la caja de la eletrónica
- i** Aprire la camera dell' elettronica
- nl** Electronicaaruimte openen

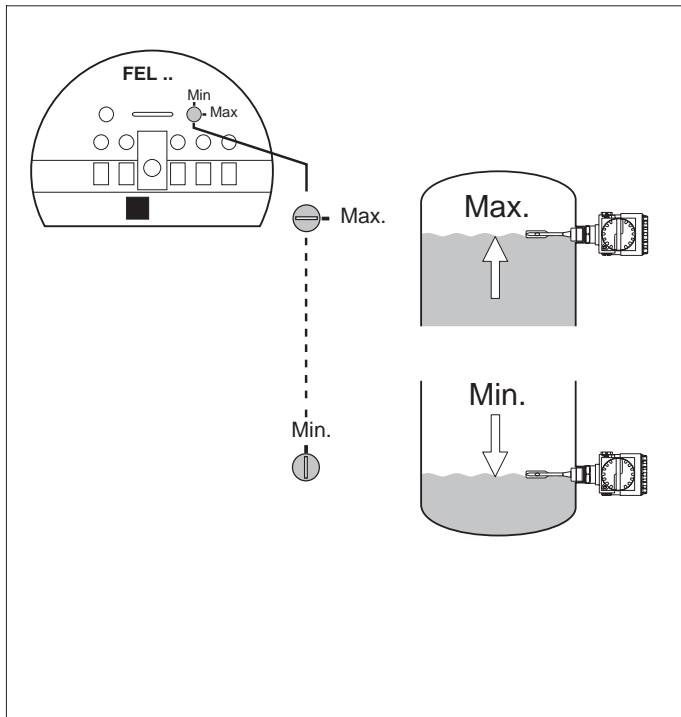


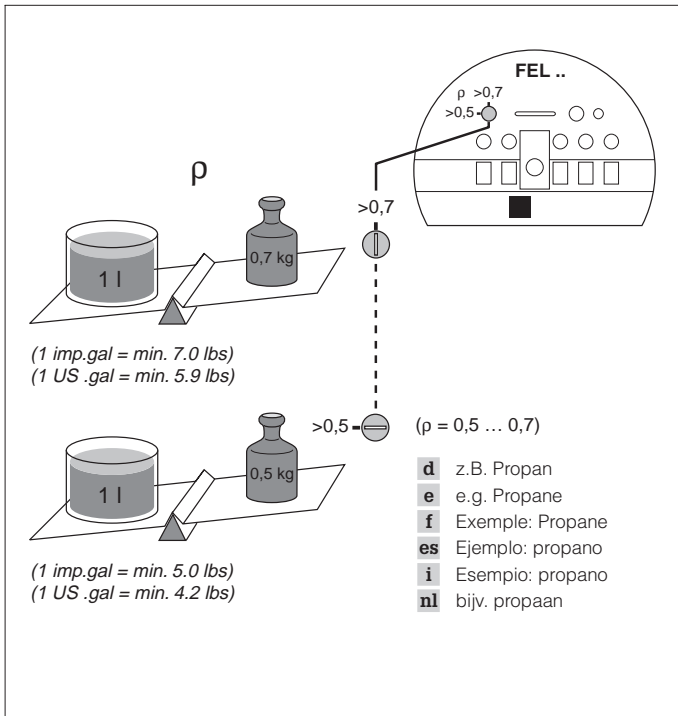
- d** Einstellungen
- e** Setting-up
- f** Réglage
- es** Ajuste
- i** Messa in funzione
- nl** Instellingen



- d** Nationale Vorschriften beachten!
- e** Note national regulations!
- f** Respecter les lois et règles en vigueur!
- es** Considere reglamentaciones nacionales!
- i** Osservare le norme nazionali!
- nl** Nationale voorschriften in acht nemen!

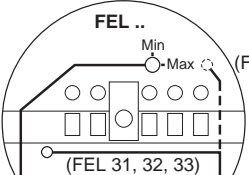
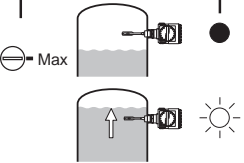



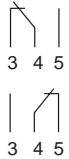
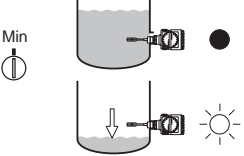



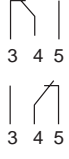
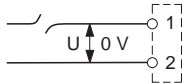




- d** Minimum-/Maximum-Sicherheitsschaltung einstellen
- e** Setting minimum/maximum »fail safe« mode
- f** Commutateur Minimum/maximum
- es** Conmutador de seguridad mín./máx.
- i** Selezione della modalità di sicurezza min./max.
- nl** Minimum/maximum veiligheidschakeling instellen

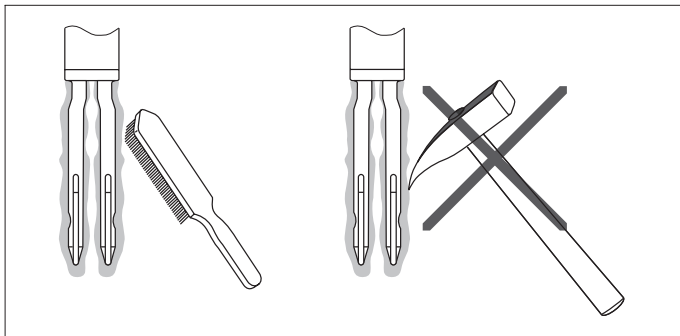




- d** Dichte der Flüssigkeit einstellen.
Dichte ρ gemessen in g/cm^3 oder in kg/l
- e** Setting for liquid density.
Density ρ measured in g/cm^3 or in kg/l
- f** Réglage selon densité du liquide.
Unité de mesure de la densité ρ : g/cm^3 ou kg/l
- es** Ajuste para la densidad de líquidos.
La densidad ρ medida en g/cm^3 o en kg/l .
- i** Messa in funzione secondo la densità del liquido.
Densità ρ misurata in g/cm^3 o in kg/l .
- nl** Dichtheid van de vloeistof instellen.
Dichtheid ρ gemeten in g/cm^3 of in kg/l .

- d** Test, Funktion
- e** Test, Funktion
- f** Test, Fonction
- es** Prueba, Funcionamiento
- i** Test, Funzione
- nl** Test, Functie

	FEL 31	FEL 32	FEL 33	FEL 34
				
				
				



d **Wartung**

Dicke Krusten entfernen

e **Maintenance**

Removal of thick encrustation

f **Entretien**

Enlever les dépôts et incrustations

es **Mantenimiento**

Eliminación de adherencias

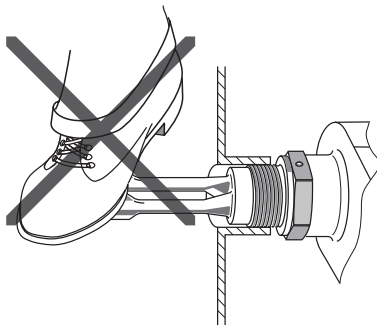
i **Manutenzione**

Rimozione di depositi scarsi

nl **Onderhoud**

Aangroei verwijderen

- d** **Nicht** besteigen!
- e** **Don't** use as a step
- f** **Ne pas** marcher sur les lames vibrantes!
- es** **No** usar como peldaño!
- i** **Non** calpestare!
- nl** **Niet** op staan!



d Technische Daten

Umgebungstemperatur T_1
 Betriebstemperatur T_2
 Betriebsdruck p_e

e Technical Data

Ambient temperature T_1
 Operating temperature T_2
 Operating pressure p_e

f Caractéristiques techniques

Température ambiante
 pour le boîtier T_1
 Température dans le réservoir T_2
 Pression de service p_e

es Datos técnicos

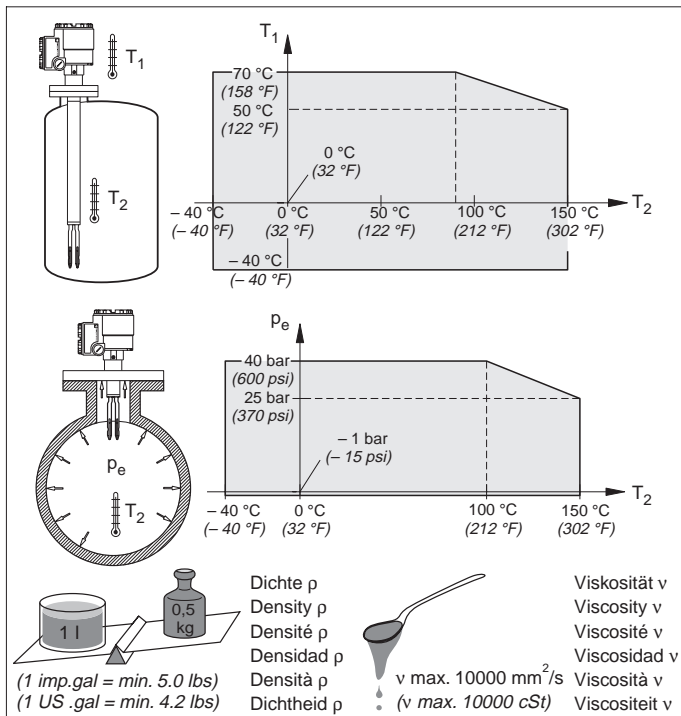
Temperatura ambiente T_1
 Temperatura de servicio T_2
 Presión de servicio p_e

i Dati tecnici

Temperatura ambiente T_1
 Temperatura di lavoro T_2
 Pressione di lavoro p_e

nl Technische gegevens


Omgevingstemperatuur T_1
 Procestemperatuur T_2
 Procestdruk p_e



TI 186F

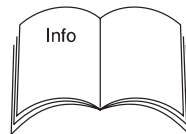
- d** Technische Information
- e** Technical information
- f** Informations techniques
- es** Información técnica
- i** Informazioni Tecniche
- nl** Technische informatie

XA 059F

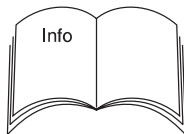
CE  II 1/2 G, EEx de

- d** Sicherheitshinweise
- e** Safety instructions
- f** Conseils de sécurité
- es** Instrucciones de seguridad
- i** Istruzioni di sicurezza
- nl** Veiligheidsinstructies

- d** Ergänzende Dokumentation
- e** Supplementary Documentation
- f** Documentation complémentaire
- es** Documentación adicional
- i** Documentazione supplementare
- nl** Aanvullende documentatie



- d** Ergänzende Dokumentation
- e** Supplementary Documentation
- f** Documenta complémentaire
- es** Documentación adicional
- i** Documentazione supplementare
- nl** Aanvullende documentatie



KA 100F/00/a6

- d** Einbauanleitung für den Liquiphant FTL 366 mit Schiebemuffe
- e** Mounting instructions for the Liquiphant FTL 366 with sliding sleeve
- f** Conseils de montage du Liquiphant FTL 366 avec manchon coulissant
- es** Instrucciones de montaje para el Liquiphant FTL 366 con manguito deslizante
- i** Manuale operativo dell' FTL 366 con manicotto di scorrimento
- nl** Inbedrijfstellingsvoorschriften voor de Liquiphant FTL 366 met schuifmof

ZE 092F/00/a3

- d** Konformitätsbescheinigung (CENELEC)
- e** Certificate of conformity (CENELEC)
- f** Certificat de conformité (CENELEC)
- es** Certificado de conformidad (CENELEC) (d, e, f)
- i** Certificato di conformità (CENELEC) (d, e, f)
- nl** Conformiteitscertificaat (CENELEC) (d, e, f)

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