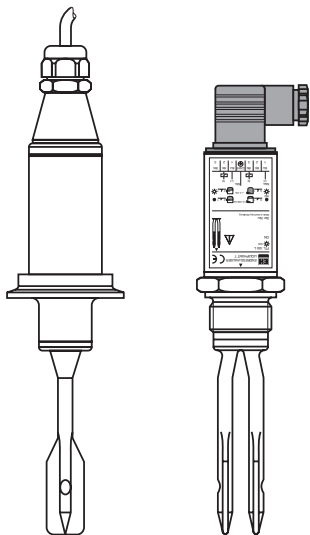


KA 047F/00/a6/11.02
016758-0000

liquiphant **FTL 330 L**



- 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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Achtung!

= verboten; führt zu fehlerhaftem Betrieb oder Zerstörung.



Caution!

= forbidden – leads to incorrect operation or destruction.



Attention !

= interdit - peut provoquer des dysfonctionnements ou la destruction.

es Índice

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nl Inhoud

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**¡Atención!**

= Prohibido, peligro de mal funcionamiento o de destrucción.

**Attenzione!**

= Vietato, pericolo di malfunzionamento o di distruzione.

**Opgelet!**

= verboden; leidt tot outieve werking of storing.

d Sicherheitshinweise

Der Liquiphant FTL 330 L darf nur als Füllstandgrenzscharter für Flüssigkeiten in nicht explosionsgefährdeten Bereichen verwendet werden. Bei unsachgemäßem Einsatz können Gefahren von ihm ausgehen.

Das Gerät darf **nur von qualifiziertem und autorisiertem Fachpersonal**

unter strenger Beachtung dieser Betriebsanleitung, der einschlägigen Normen, der gesetzlichen Vorschriften und der Zertifikate (je nach Anwendung) eingebaut, angeschlossen, in Betrieb genommen und gewartet werden.

In der Gebäudeinstallation ist ein Netzschalter für das Gerät leicht erreichbar in dessen Nähe zu installieren. Er ist als Trennvorrichtung für das Gerät zu kennzeichnen.

e Notes on Safety

The Liquiphant FTL 330 L is a level limit switch designed for use in non-hazardous areas. If used incorrectly it is possible that application-related dangers may arise. The level limit switch Liquiphant FTL 330 L 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. Install an easily accessible power switch in the proximity of the device.

Mark the power switch as a disconnecter for the device.

f Conseils de sécurité

Le Liquiphant FTL 330 L doit être exclusivement utilisé comme détecteur de niveau pour liquides en zones non explosibles. Il peut être source de danger en cas d'utilisation non conforme aux prescriptions.

L'appareil 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).

Installer un commutateur réseau à proximité immédiate de l'appareil, en veillant à ce qu'il soit facilement accessible. Marquer ce commutateur comme prise de coupure de l'appareil.

es Notas sobre seguridad

El Liquiphant FTL 330 L debe emplearse única y exclusivamente como detector de nivel con fluidos en zonas sin peligro de explosión. 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). Instalar un interruptor de fácil acceso en las proximidades del equipo. Identificar el interruptor como desconector del equipo.

i Note sulla sicurezza









Il Liquiphant FTL 330 L può essere utilizzato come sicurezza di troppo pieno, solo in aree sicure. 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. Installare un interruttore per l'alimentazione in prossimità del dispositivo. Marcare l'interruttore come disconnessione del dispositivo.

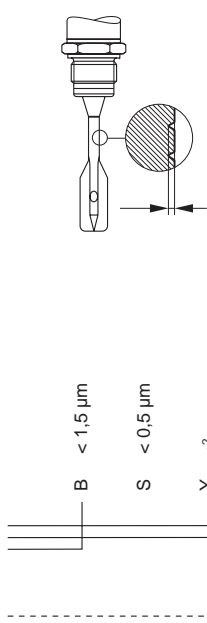
nl Veiligheidsinstructies

Gebruik de Liquiphant FTL 330 L alléén als niveauschakelaar voor vloeistoffen in niet explosiegevaarlijke gebieden. 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. Installeer een makkelijk bereikbare voedingschakelaar in de nabijheid van het instrument. Kenmerk de voedingschakelaar specifiek voor het instrument.

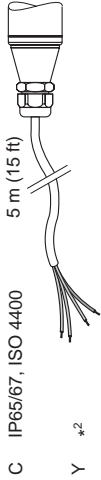
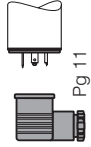
- d** Geräte-Identifikation
- e** Device Identification
- f** Dénomination
- es** Identificación del equipo
- i** Identificazione dello strumento
- nl** Instrument-identificatie

FTL 330 L-####
 Ser. No./In
 Made in Germ
 19...253 V

<p>C CSA, General Purpose</p> <p>D *1, WHG</p> <p>R *1</p> <p>Y *2</p>	<p>G G 1 A, BSP, 1.4571</p> <p>F Endress+Hauser, 1.4571</p> <p>U Triclamp 1½", ISO 2852, 1.4571</p> <p>T Triclamp 2", ISO 2852, 1.4571</p> <p>P DN 40, DIN 11851, 1.4571</p> <p>M DN 50, DIN 11851, 1.4571</p> <p>S DN 50, SMS, 1.4571</p> <p>D DN 65, DRD, 1.4571</p>	       
--	--	---



- 1 19 ... 253 V AC
 2 10 ... 55 V DC, PNP
 9 *²



*¹ ohne / without / sans / sin / senza / zonder
 *² andere / others / autres / otros / altri / andere

d **Behandlung**

Am Gehäuse anfassen,
nicht an der Schwinggabel

e **Handling**

Hold by the housing,
not by the sensor forks

f **Manipulation**

Tenir par le boîtier,
et **non** par la fourche

es **Modo de empleo**

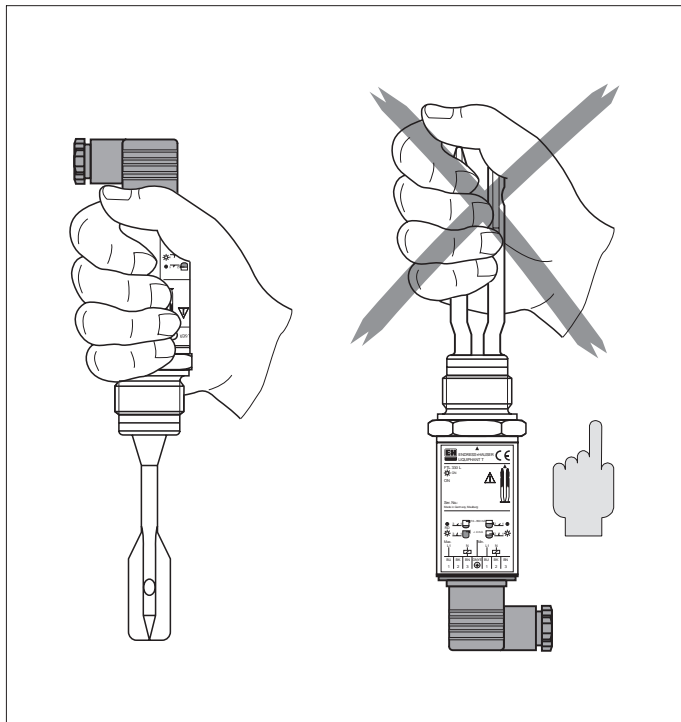
Coger por el cabezal,
no por las horquillas.

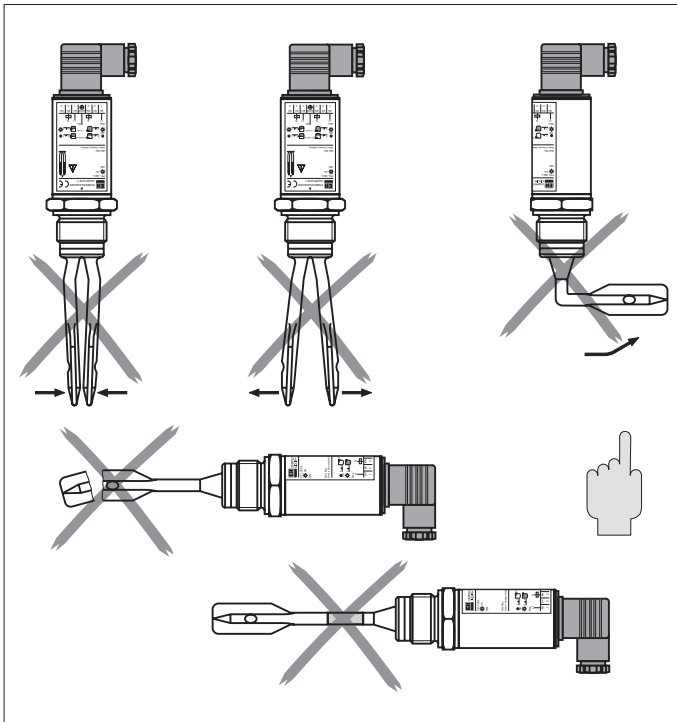
i **Accorgimenti**

Afferrare la custodia,
non i rebbi

nl **Behandeling**

De behuizing vastpakken,
niet de trilvork





d **Nicht** verbiegen
Nicht kürzen
Nicht verlängern

e Do **not** bend
Do **not** shorten
Do **not** lengthen

f **Ne pas** déformer
Ne pas raccourcir
Ne pas rallonger

es **No** torcer
No acortar
No alargar

i **Non** stringere o allungare
Non accorciare o allungare
Non piegare

nl **Niet** verbuigen
Niet inkorten
Niet verlengen

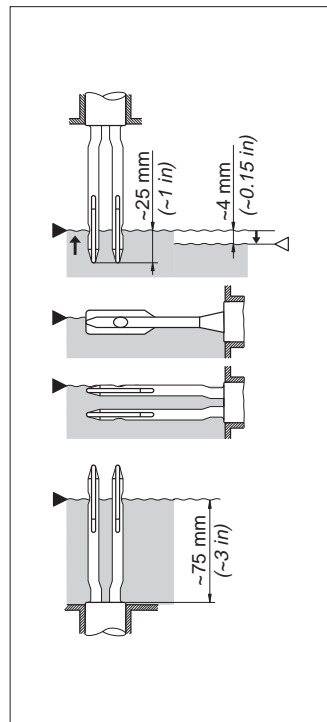
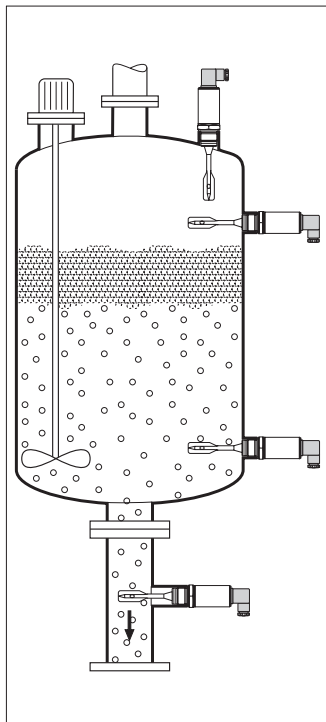
- d** Einbaubeispiele
- e** Mounting examples
- f** Exemples d'implantation
- es** Ejemplos de montaje
- i** Esempi di montaggio
- nl** Inbouwvoorbeelden

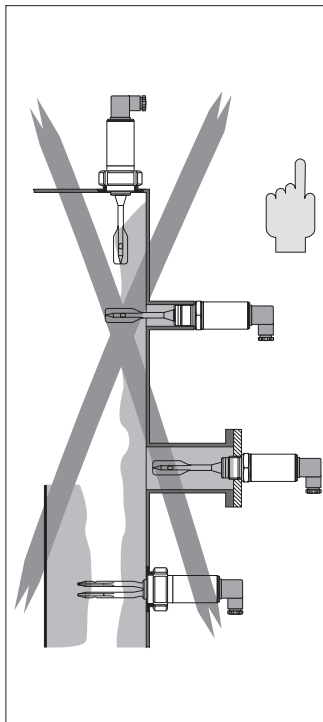
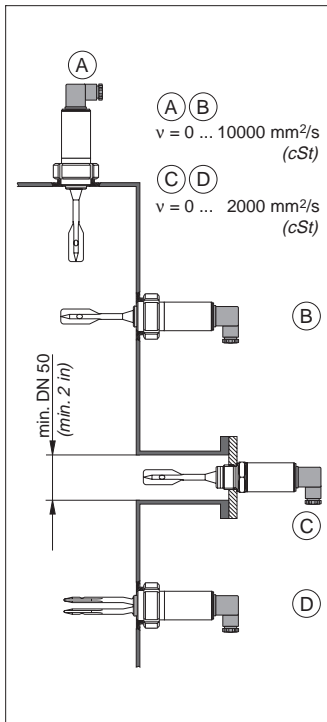


- d** Schaltpunkt
- e** Switchpoint
- f** Point de commutation
- es** Punto de conmutación
- i** Punto di commutazione
- nl** Schakelpunt



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





- d** Viskosität und Ansatzbildung berücksichtigen
- e** Take account of viscosity and build-up
- f** Tenir compte de la viscosité et du colmatage
- es** Tener en cuenta la viscosidad y la formación de adherencias
- i** Attenzione alla viscosità e ai depositi
- nl** Houdt rekening met de viscositeit en de vorming van aangroei

d Einbau

Prozeßanschluß G
G 1 A, DIN ISO 228/1

e Mounting

Process connection G
G 1 A, DIN ISO 228/1

f Montage

Raccord process G
G 1 A, DIN ISO 228/1

es Montaje

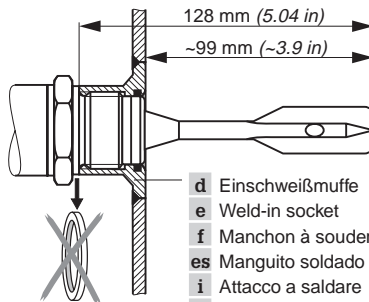
Conexión a proceso G
G 1 A, DIN ISO 228/1

i Montaggio

Attacco al processo G
G 1 A, DIN ISO 228/1

nl Inbouw

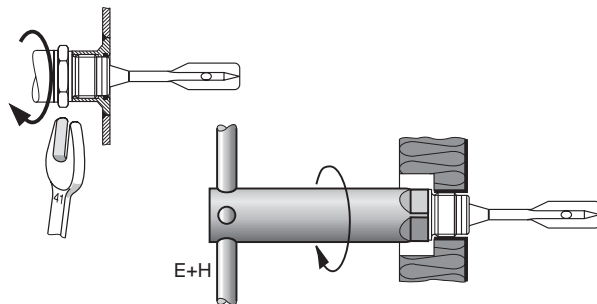
Procesaansluiting G
G 1 A, DIN ISO 228/1

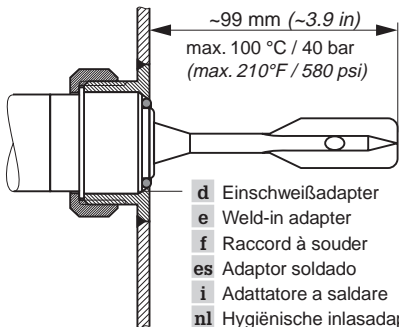


- d** Einschweißmuffe
 - e** Weld-in socket
 - f** Manchon à souder
 - es** Manguito soldado
 - i** Attacco a saldare
 - nl** Inlassok
- E+H 917969-1000

max. 150 °C / 25 bar
(max. 300°F / 360 psi)

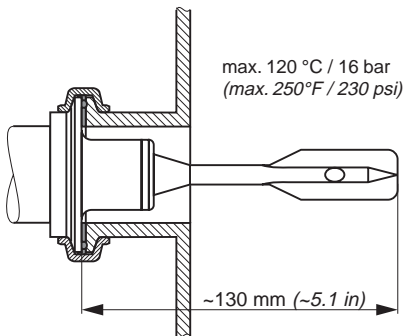
max. 100 °C / 40 bar
(max. 210°F / 580 psi)





frontbündig
flush mounting
montage affleurant
montaje enrasado
montaggio a filo flangia
direct aan proceszijde

- d** Einschweißadapter
- e** Weld-in adapter
- f** Raccord à souder
- es** Adaptor soldado
- i** Adattatore a saldare
- nl** Hygiënische inlasadapter
E+H 942329-0001



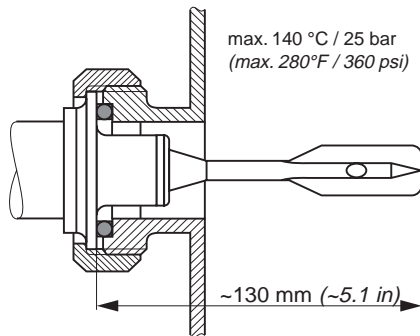
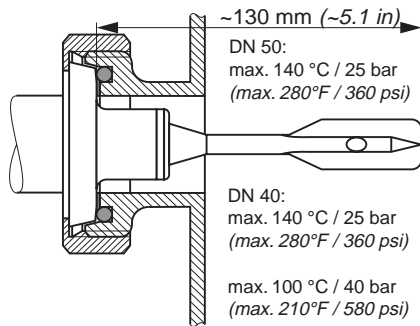
max. 120 °C / 16 bar
(max. 250 °F / 230 psi)

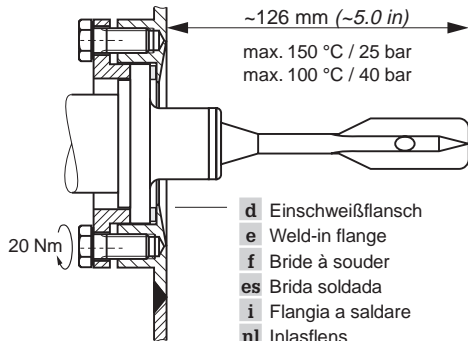
- d** Prozeßanschluß F
Endress + Hauser
- e** Process connection F
Endress + Hauser
- f** Raccord process F
Endress + Hauser
- es** Conexión a proceso F
Endress + Hauser
- i** Attacco al processo F
Endress + Hauser
- nl** Procesaansluiting F
Endress + Hauser

- d** Prozeßanschluß U, T
Triclamp 1½", 2", ISO 2852
- e** Process connection U, T
Triclamp 1½", 2", ISO 2852
- f** Raccord process U, T
Triclamp 1½", 2", ISO 2852
- es** Conexión a proceso U, T
Triclamp 1½", 2", ISO 2852
- i** Attacco al processo U, T
Triclamp 1½", 2", ISO 2852
- nl** Procesaansluiting U, T
Triclamp 1½", 2", ISO 2852

- d** Prozeßanschluß P, M
DN 40, DN 50, DIN 11851
- e** Process connection P, M
DN 40, DN 50, DIN 11851
- f** Raccord process P, M
DN 40, DN 50, DIN 11851
- es** Conexión a proceso P, M
DN 40, DN 50, DIN 11851
- i** Attacco al processo P, M
DN 40, DN 50, DIN 11851
- nl** Procesaansluiting P, M
DN 40, DN 50, DIN 11851

- d** Prozeßanschluß S
SMS, DN 51 (2")
- e** Process connection S
SMS, DN 51 (2")
- f** Raccord process S
SMS, DN 51 (2")
- es** Conexión a proceso S
SMS, DN 51 (2")
- i** Attacco al processo S
SMS, DN 51 (2")
- nl** Procesaansluiting S
SMS, DN 51 (2")





- d** Einschweißflansch
- e** Weld-in flange
- f** Bride à souder
- es** Brida soldada
- i** Flangia a saldare
- nl** Inlasflens

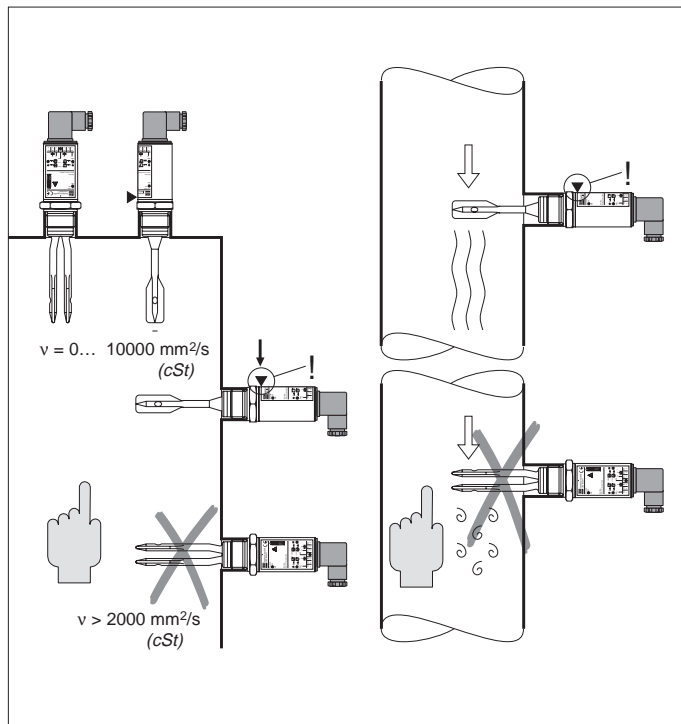
E+H 916743-0000

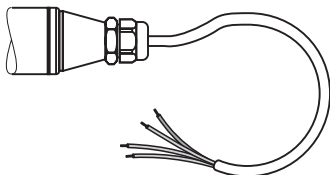
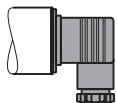
(max. 300 °F /
360 psi)

(max. 210 °F /
580 psi)

- d** Prozeßanschluß D
DRD, DN 65
- e** Process connection D
DRD, DN 65
- f** Raccord process D
DRD, DN 65
- es** Conexión a proceso D
DRD, DN 65
- i** Attacco al processo D
DRD, DN 65
- nl** Procesaansluiting D
DRD, DN 65

- d** Schwinggabel ausrichten
Markierung ▼ beachten
- e** Align sensor forks
Note mark ▼
- f** Orienter la fourche
Tenir compte du repère ▼
- es** Orientación de las horquillas
Atención a la marca ▼
- i** Orientare la forcella.
Osservare il contrassegno ▼
- nl** Trilvork uitrichten
Let op de markering ▼





d	Nummer	=	Farbe
e	Number	=	Colour
f	Numéro	=	Couleur
es	Número	=	Color
i	Numero	=	Colore
nl	Nummer	=	Kleur

1 = BU blau, blue, bleu, azul, blu, blauw

2 = BK schwarz, black, noir, negro, nero, zwart

3 = BN braun, brown, brun, marron, marrone, bruin

 (PE) = GNYE grün/gelb, green/yellow, vert/jaune, verde/amarillo, verde/giallo, groen/geel

d **Anschluß**
Stecker oder Kabel

e **Connection**
Plug or cable

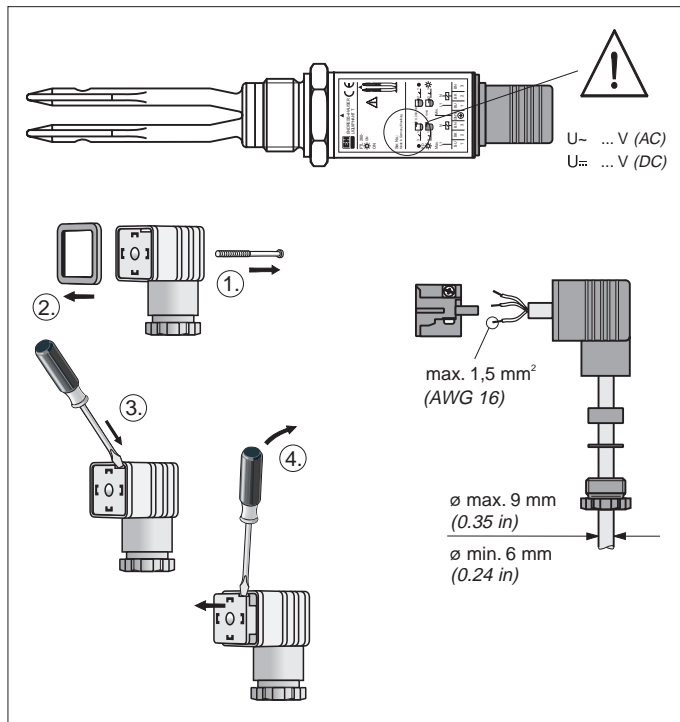
f **Raccordement**
Connecteur ou câble

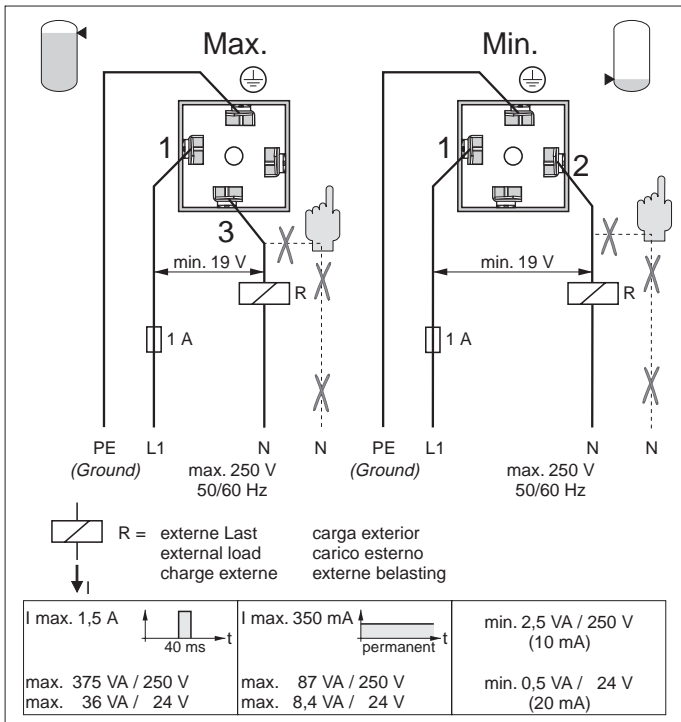
es **Conexiones**
Conector o cable

i **Collegamenti**
Connettore o cavo

nl **Aansluiting**
Connector of kabel

- d** Spannung beachten
Leitung in Kabeldose
einführen
- e** Note voltage rating
Insert cable into plug housing
- f** Noter la tension
Insérer le câble dans
le bôitier
- es** Atención al voltaje
Intensar el cable en
el conector
- i** Attenzione alla tensione
Inserire il cavo nel connettore
della custodia
- nl** Controleer de
voedingsspanning
Leidt de kabel in de
connector





d Wechselstromvariante anschließen

Max. = Maximum-Sicherheitsschaltung
Min. = Minimum-Sicherheitsschaltung

e Connection AC version

Max. = max. fail-safe mode
Min. = min. fail-safe mode

f Raccordement variante tension alternative

Max. = sécurité maximum
Min. = sécurité minimum

es Conectar las variantes de corriente alterna

Máx. = Conexión de seguridad máxima
Mín. = Conexión de seguridad mínima

i Collegamento della versione in corrente alternata

Max. = Sicurezza di massimo
Min. = Sicurezza di minimo

nl Wisselstroomvarianten aansluiten

Max. = max. veiligheidsschakeling
Min. = min. veiligheidsschakeling (ruststroomprincipe)

d Gleichstromvariante anschließen

Max. = Maximum-

Min. = Minimum-

Sicherheitschaltung

e Connection DC version

Max. = max. fail-safe mode

Min. = min. fail-safe mode

f Raccordement variante tension continue

Max. = sécurité maximum

Min. = sécurité minimum

es Conectar las variantes de corriente continua

Máx. = Conexión de seguridad máxima

Mín. = Conexión de seguridad mínima

i Collegamento della versione in corrente continua

Max. = Sicurezza di massimo

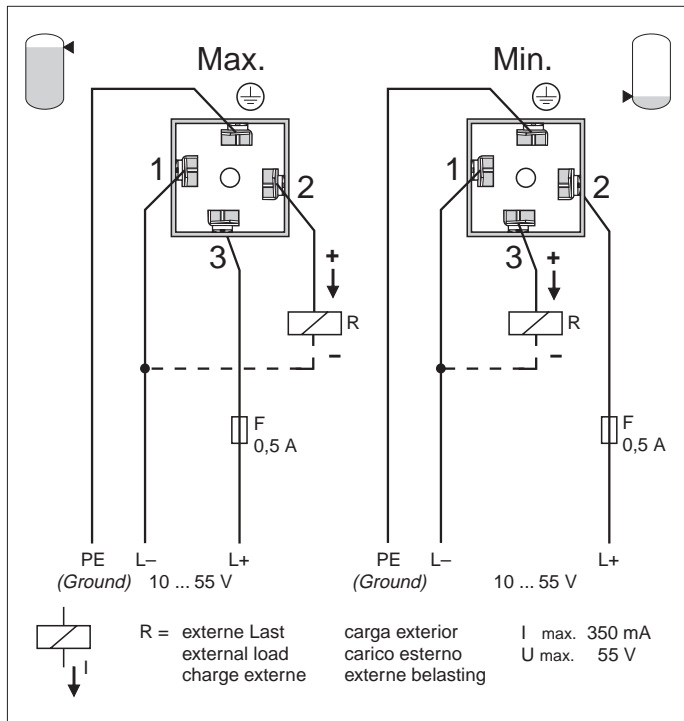
Min. = Sicurezza di minimo

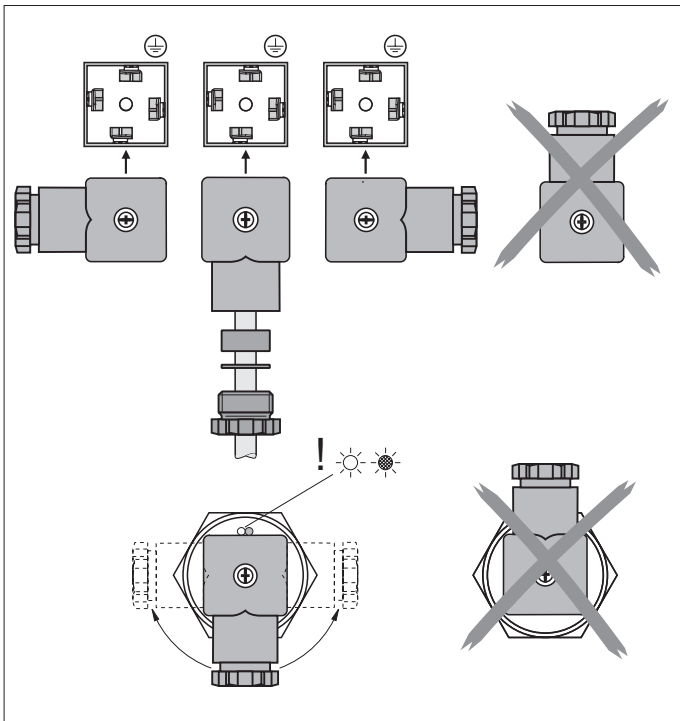
nl Gelijkstroomvarianten aansluiten

Max. = max. veiligheidsschakeling

Min. = min. veiligheidsschakeling

(ruststroomprincipe)





- d** Kabeldose zusammenbauen und festschrauben
- e** Assemble plug and screw tight
- f** Assembler et visser le boîtier de raccordement
- es** Ensamblar y atornillar las cajas de conexiones
- i** Montare il vano connessioni avvitandolo a fondo
- nl** Connector samenbouwen en vastschroeven

d Funktion

Max. und Min. =
Sicherheitschaltung

e Function

Max. and Min. = fail-safe
mode

f Fonction

Max. et Min. =
commutation de sécurité

es Funcionamiento


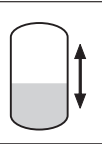
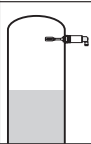
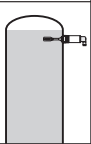
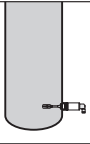

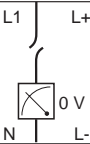
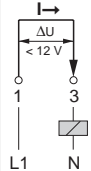
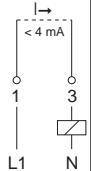
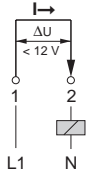
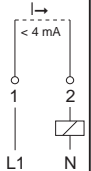
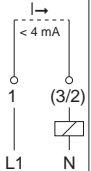
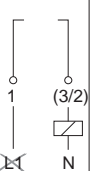
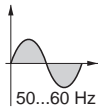
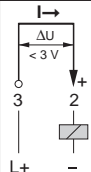
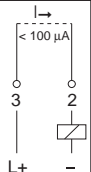
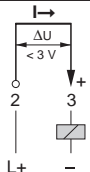
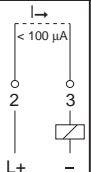
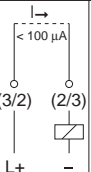
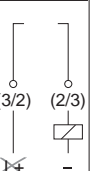
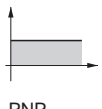
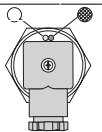








Conexión de seguridad
máxima y mínima

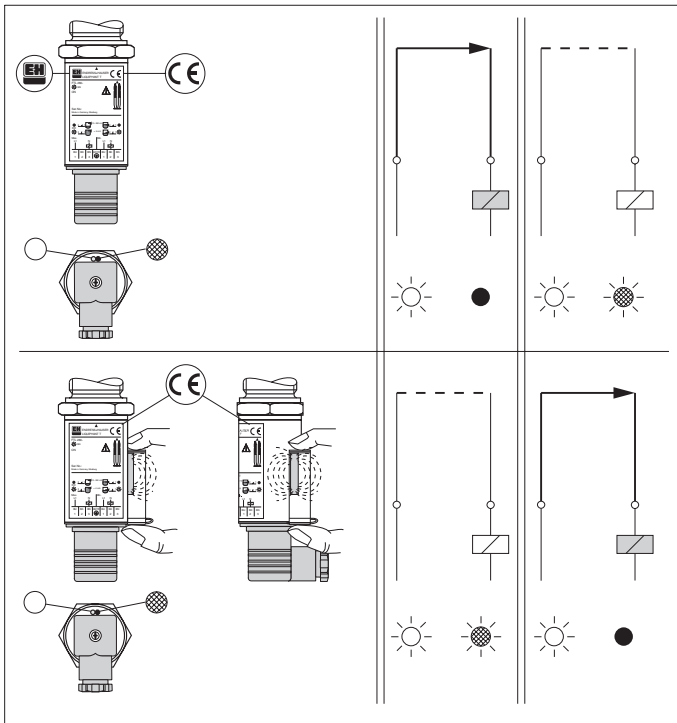
i Funzionamento

Sicurezza di massimo e di
minimo

nl Functie

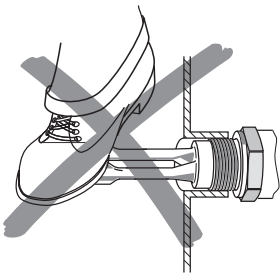
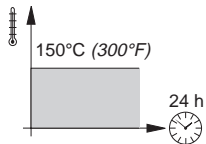
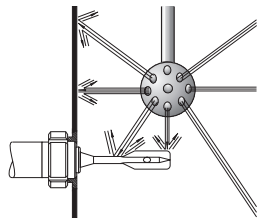
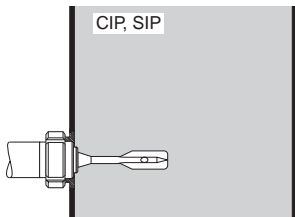
Max. en Min. =
veiligheidsschakeling
(ruststroomprincipe)

	Max.		Min.		\perp			
					Störung Fault Défaut Fallo Guasto Storing			
$U \sim$ (AC)								
	L1 1	N 3	L1 1	N 3	L1 1	N (3/2)	L1 1	N (3/2)
$U \rightleftharpoons$ (DC)								
	L+ 3	- 2	L+ 3	- 2	L+ 2	- 3	L+ (3/2)	- (2/3)
								
<p>○ = grün / green / vert / verde / verde / groen ● = rot / red / rouge / rojo / rosso / rood</p>								



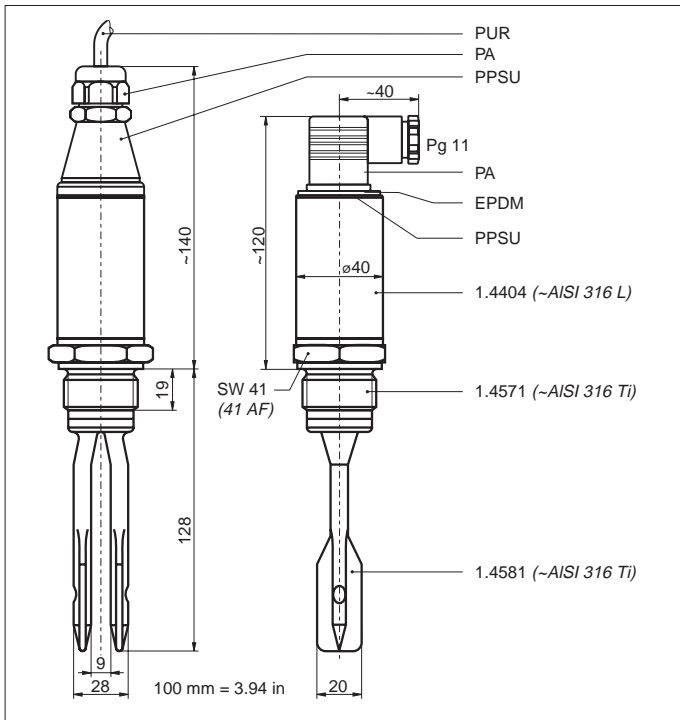
- d Test**
mit Prüfmagnet
- e Test**
with test magnet
- f Test**
avec aimant de contrôle
- es Comprobación**
Prueba magnética
- i Test**
Test magnetico
- nl Test**
met testmagneet

- d** Reinigung
- e** Cleaning
- f** Nettoyage
- es** Limpieza
- i** Pulizia
- nl** Reiniging



- 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

Abmessungen in mm und Werkstoffe

e Technical Data

Dimensions in mm and materials

f Caractéristiques techniques

Dimensions en mm et matériaux

es Datos técnicos

Dimensiones en mm y materiales

i Dati tecnici

Dimensioni in mm e materiali

nl Technische gegevens

Afmetingen in mm en materialen

d Umgebungstemperatur T_U
Betriebstemperatur T_B
Betriebsdruck p_e

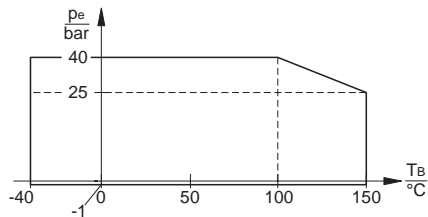
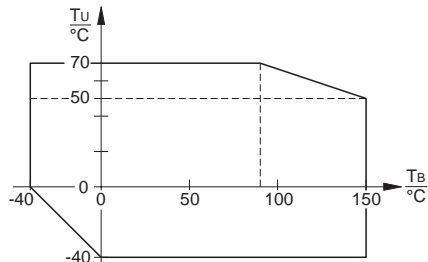
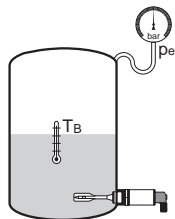
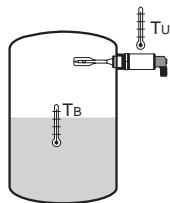
e Ambient temperature T_U
Operating temperature T_B
Operating pressure p_e

f Température ambiante T_U
Température de service T_B
Pression de service p_e

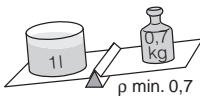
es Temperatura ambiente T_U
Temperatura de trabajo T_B
Presión de trabajo p_e

i Temperatura ambiente T_U
Temperatura d'esercizio T_B
Pressione d'esercizio p_e

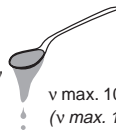
nl Omgevingstemperatuur T_U
Procestemperatuur T_B
Procesdruk p_e



Dichte ρ
Density ρ
Densité ρ
Densidad ρ
Densità ρ
Dichtheid ρ

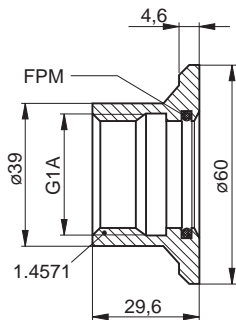


Viskosität v
Viscosity v
Viscosité v
Viscosidad v
Viscosità v
Viskositeit v

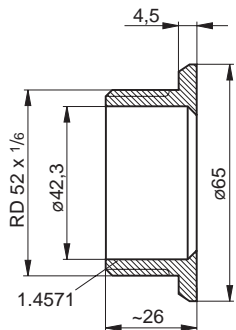


v max. 10000 mm²/s
(v max. 10000 cSt)

$$x \text{ } ^\circ\text{C} = (1.8 \cdot x + 32) \text{ } ^\circ\text{F}$$
$$1 \text{ bar} = 14.5 \text{ psi}$$



- d** Einschweißmuffe für Prozeßanschluß G
- e** Weld-in socket for process connection G
- f** Manchon à souder pour raccord process G
- es** Manguito soldado para conexión a proceso G
- i** Attacco a saldare per attacco al processo G
- nl** Inlassok voor procesaansluiting G
E+H 917969-1000



- d** Einschweißadapter für Prozeßanschluß F
- e** Weld-in adapter for process connection F
- f** Raccord à souder pour raccord process F
- es** Adaptor soldado para conexión a proceso F
- i** Adattatore a saldare per attacco al processo F
- nl** Hygiënische inlasadapter voor procesaansluiting F
E+H 942329-0001

- d** **Zubehör**
Ersatzteile
Abmessungen in mm

- e** **Accessories**
Spare parts
Dimensions in mm

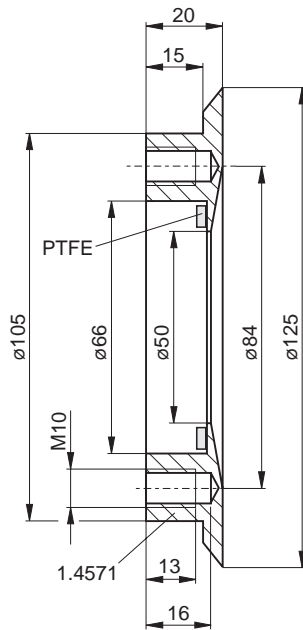
- f** **Accessoires**
Pièces de rechange

- es** **Accesorios y repuestos**
Dimensiones en mm

- i** **Accessori e ricambi**
Dimensioni in mm

- nl** **Toebehoren**
Reserve-onderdelen
Afmetingen in mm

100 mm = 3.94 in



- d** Einschweißflansch für Prozeßanschluß D
- e** Weld-in flange for process connection D
- f** Bride à souder pour raccord process D
- es** Brida soldada para conexión a proceso D
- i** Flangia a saldare per attacco al processo D
- nl** DRD inlasflens voor procesaansluiting D

E+H 916743-0000

- d** FPM-O-Ring für Einschweißmuffe G
- e** FPM O-ring for weld-in socket G
- f** Joint torique FPM pour manchon à souder G
- es** Junta en FPM para manguito soldado G
- i** O-ring in FPM per attacco a saldare G
- nl** FPM O-ring voor inlasadapter G

E+H 013 543-0000

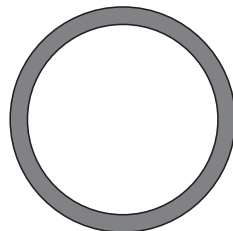
- d** MVQ-Dichtung für Prozeßanschluß F
- e** MVQ seal for process connection F
- f** Joint MVQ pour raccord process F
- es** Sello en MVQ para conexión a proceso F
- i** Guarnizione in MVQ per attacco al processo F
- nl** MVQ-afdichting voor procesaansluiting F

E+H 942 816-0000

- d** PTFE-Flachring für Einschweißflansch D
- e** PTFE flat ring for weld-in flange D
- f** Joint plat PTFE pour bride à souder D
- es** Junta plana en PTFE para brida soldada D
- i** Guarnizione piatta in PTFE per flangia a saldare D
- nl** Vlakke PTFE-afdichtring voor inlasflens D

E+H 916 783-0000

- d** Dichtungen
- e** Seals
- f** Joints
- es** Juntas
- i** Guarnizioni
- nl** Afdichtingen

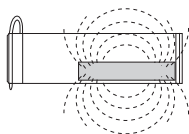


- d** Für Montage und Test
- e** For mounting and test
- f** Pour montage et test
- es** Para montaje y comprobación
- i** Accessori di montaggio e verifica
- nl** Voor montage en test



E+H 942667-0000

- d** Steckschlüssel SW 41 für Prozeßanschluß G
- e** Socket spanner 41 AF for process connection G
- f** Clé de 41
- es** Llave de fijación SW 41
- i** Chiave a tubo SW 41
- nl** Pijpsleutel SW 41

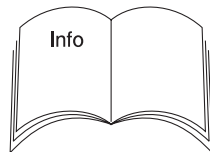


E+H 016920-0000

- d** Prüfmagnet
- e** Test magnet
- f** Aimant de contrôle
- es** Imán
- i** Magnete di controllo
- nl** Testmagneet

- d** TI 245F/00/de Technische Information für
den Füllstandgrenzschalter Liquiphant FTL 330 L
- e** TI 245F/00/en Technical Information for
level limit switch Liquiphant FTL 330 L
- f** TI 245F/14/fr Information technique
Décteur de niveau Liquiphant FTL 330 L
- es** TI 245F/23/es Información técnica sobre
el detector límite Liquiphant FTL 330 L
- i** TI 245F/16/it Informazioni tecniche per
l'interruttore di livello Liquiphant FTL 330 L
- nl** TI 245F/15/nl Technische Informatie voor
de niveauschakelaar Liquiphant FTL 330 L

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



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