

BEZBEDNOSNA TEHNOLOGIJA
ZA ZAŠTITU
ŽIVOTNE SREDINE

SAFETY AND
ENVIRONMENTAL
TECHNOLOGY

E.L.B.
FÜLLSTANDSGERÄTE

05-03-00E

Plovak prekidaci Bez žive



* obavezna nalepnica



* obligation to label

Float Switches Mercury free



VREMENSKI ROK ISTICE! Od 13. Avgusta 2005.godine, odnosno 1. jula 2006. živini prekidaci bice ZABRANJENI prema uputstvima EU i veća od 27.januara 2003. i amandmana 2003/108EG od 8. decembra 2003. Godine

(Dodatne informacije: www.elb-bensheim.de)

Plovak-prekidaci se koriste za prostu akviziciju ograncenja vrednosti. Plovak pluta na tecnoj površini kroz vecu gustinu tecnosti, i sprovodi operaciju ukljucivanja/iskljucivanja kada se plovak pomeri iz horizontalne pozicije. U plovak-prekidacima bez žive QFS... serije mikroprekidaci se koriste, i njima upravlja teg ili kugla, ili veza preko jezicka kojom upravlja magnet. **Živini prekidaci mogu se zameniti** odgovarajucim dizajnom **bez problema**. Takodje je moguca histereza ukljucivanja/iskljucivanja.

Osnovno polje primene je prilikom akvizicije limitnih nivoa (zaštita od preliivanja ili rada na suvo). Za min/max kontrolu pumpi odgovarajuca je kombinacija plovak-prekidaca sa nekoliko plovak-prekidaca. Plovak-prekidaci su fiksirani na cevi ili uz pomoc tegova. Naši plovak-prekidaci mogu se koristiti i u vodi i u agresivnim supstancama. Za ovako nešto potrebno je izabrati odgovarajuci materijal kablova.:

- Termoplastični gumeni kabl (TPK) se koristi za vodu, otpadne vode i uljane tecnosti, kao i blago agresivne tecnosti. za supstance koje sadrže ulje treba da se obezbedi PTFE prskalica.
- Silikon (SIL) za tecnosti za pranje na visokim temperaturama
- Teflon (FEP) za agresivne tecnosti (kiseline / baze)
- TPK kabl sa zaštitom od etilen-kopolimera (AEM) za razblažene kiseline i baze

Tela plovaka su napravljena od PE, PP, PVC, PTFE ili nerđajućeg celika V4A (1,4571).

Za ugradnju sa strane prstena / cilindra mesing i PVC kompresione žlezde navoji veza su dostupni. Kada se instalira više od 2" PVC kompresione žlezde navoji veza su neophodni jer ugradnja i podešavanje mora da se postigne uz pomoc G-902 tega.

- Niske cene održavanja sistema
- Visoka hemijska izdržljivost
- Odgovarajuci za korišćenje u tecnostima razlicite gustine
- Za temperature i do 150°C
- Malih dimenzija
- Instalacija kroz 1" moguca
- Korišćenje u kategoriji 2 (ex zona 1) sa ER-14... i KR-163/Ex

Detalji o sistemu

Za zaštitu veze koja podrazumeva zaštitu protiv slucajnih kontakata sa plovak-prekidacima QFS... i plovak-prekidacima koji predstavljaju kombinaciju QFSK... preporucujemo naše releje za zaštitu veze KR-164 (vidite sekciju 10). Pojacavac ukljucivanja / iskljucivanja ER-1... je takodje dat u sekciji 10. Plovak prekidaci mogu biti navodjeni preko suštinski bezbednih IExi releja ER-14...

THE TIME LIMIT EXPIRES! From August 13th, 2005 respectively July 1st, 2006 on mercury switches will be FORBIDDEN according to the EU directive and the council dated January 27th, 2003 and the amendment 2003/108/EG dated December 8th, 2003.

(For more information visit www.elb-bensheim.de)

Float switches are used for simple limit value acquisition. The float floats on the liquid surface through the higher density of the liquid, and acutates a switching operation when the float deviates from the horizontal position. In the mercury-free float switches of the QFS... series microswitches are used which are operated by a weight or with a ball, or reed contacts operated by a magnet.

Mercury switches can be replaced by the appropriate Design **problem-free**. Also switching hysteresis are possible.

The main field of application is for the acquisition of limit levels (overflow and dry-running protection). For min-max control of pumps float switch combinations with several float switches are suitable. The float switches are fixed on a tube or with loading weights.

Our float switches can be used both in water and in aggressive media. For this a suitable cable material has to be selected.

- Thermoplastic rubber cable (TPK) is useable for water, waste water and oily liquids, as well as slightly aggressive liquids. For oil-containing media a PTFE nozzle should be provided.
- Silicone (SIL) for washing liquor at high temperatures
- Teflon (FEP) for aggressive liquids (acids/alkalies)
- TPK cable with an ethylene-copolymer coating (AEM) for dilute acids and alkalies

The float bodies are made of PE, PP, PVC, PTFE or stainless steel V4A (1.4571).

For side mounting of the sleeve/cylinder brass and PVC compression gland screw connections are available. When installing from above 2" PVC compression gland screw connections are required since fixing must be achieved through the G-902 loading weight.

- Low system costs
- High chemical resistance
- Suitable for use in liquids with different densities
- For temperatures up to 150 °C
- Small dimensions
- installation through 1" possible
- Use in category 2 (Ex-zone 1) with ER-14... and KR-163/Ex

System Details

For contact protection involving protection against accidental contact with float switches QFS... and float switch combinations QFSK... we recommend our contact protection relay KR-164 (see section 10). Switching amplifier ER-1... is also given under section 10. The float switches can be intrinsically safely operated with our IExi-relay ER-14...

SCHWIMMSCHALTER • FLOAT SWITCHES

Kljuc tipa Dodaci

Osnovne oznake tega
 Material teg
 Bez indikacija = PVC polivinilchlorid
 PP = Polipropilen
 PTFE = Politetrafluoretilen
 Otvor
 TPK = za TPK kabl
 FEP = za FEP kabl

G902

Kompresiona žleзда
 PVC = Polivinilchlorid
 MS = mesing
 PP = Polipropilen
 PTFE = Politetrafluoretilen

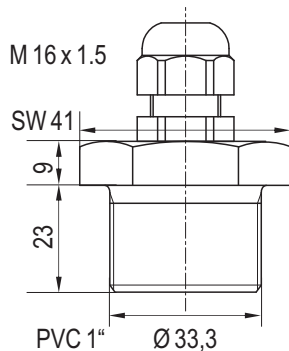
Navoj veze
 1/2" = G 1/2" (samo PVC)
 3/4" = G 3/4" (samo PVC)
 1" = G 1"
 1 1/2" = G 1 1/2" (samo PVC)
 2" = G 2"

Zaptivac (Ø)
 TPK = za TPK kabl
 FEP = za FEP kabl

G902

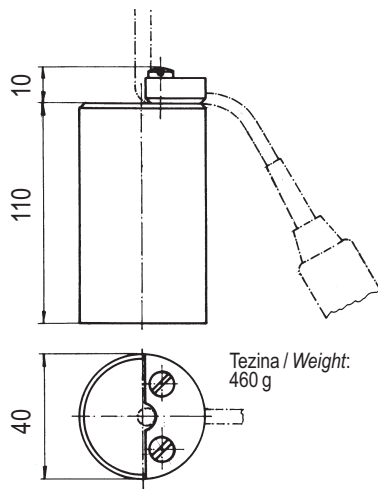
Dimenzioni crtez Dimensional Drawing

Kmpresiona zleзда
 Compression gland



Dimenzije u mm / Dimensioning in mm

Teg-902
 Loading weight G-902



Dimenzije u mm / Dimensioning in mm

Type Key Accessories

Basic designation loading weight
 Material weight
 without indication = PVC Polyvinylchloride
 PP = Polypropylene
 PTFE = Polytetrafluorethylene
 Eyelet
 TPK = for TPK cable
 FEP = for FEP cable

G902

Compression gland
 PVC = Polyvinylchloride
 MS = Brass
 PP = Polypropylene
 PTFE = Polytetrafluorethylene

Connection thread
 1/2" = G 1/2" (PVC only)
 3/4" = G 3/4" (PVC only)
 1" = G 1"
 1 1/2" = G 1 1/2" (PVC only)
 2" = G 2"

Gasket (Ø)
 TPK = for TPK cable
 FEP = for FEP cable

G902

Kompresiona zleзда
 Compression gland

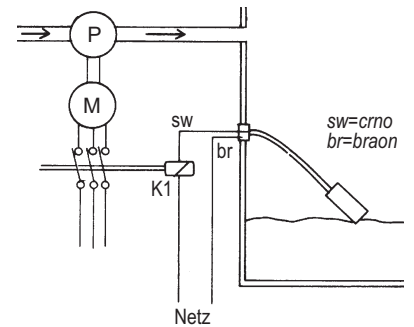


Teg G-902
 Loading weight G-902

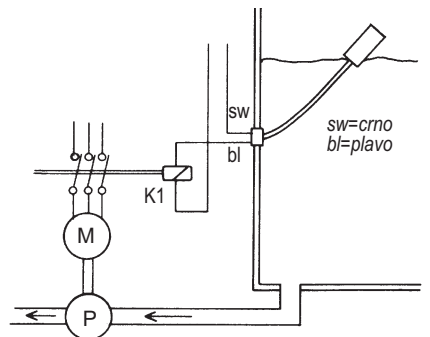


Primer primene Example Application

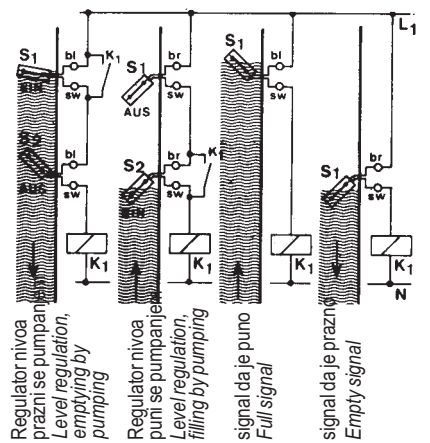
Primer primene „pumpa je puna”
 Example Application “Pump full”



Primer primene „pumpa je prazna”
 Example Application “Pump empty”



Primeri veza Connection Examples



Signali jezgra kabla:
 Crno-braon = otvara se kada pluta
 Crno-plavo = zatvara se kada pluta

Assignment of the cable cores
 Black/brown = opening when floating
 Black/blue = closing when floating

QFS-10

| | |
|------------------------|------------------------------------|
| Materijal | PE cilindar |
| Sistem ukljućivanja | Kontakt jezicka |
| Kapacitet ukljućivanja | Max. 1A, 60 VA, 230VAC |
| Histereza ukljućivanja | Približno 95/110mm (TPK)/(FEP) |
| Ugao ukljućivanja | Približno +25° / -25° |
| Temperatura | Max. 80°C (FEP) Max. 60°C (TPK) |
| Precnik | 25mm |
| Opciono | Namur prikljućak 1/12 kΩ |

QFS-11

| | |
|------------------------|------------------------------------|
| Materijal | PE kugla |
| Sistem ukljućivanja | Kontakt jezicka (samo NO/NC) |
| Kapacitet ukljućivanja | Max. 1A, 60 VA, 230VAC |
| Histereza ukljućivanja | Približno 95/110mm (TPK)/(FEP) |
| Ugao ukljućivanja | Približno +20° / -20° |
| Temperatura | Max. 80°C (FEP) Max. 60°C (TPK) |
| Precnik | 90mm |
| Opciono | Namur prikljućak 1/12 kΩ |

QFS-14

| | |
|------------------------|------------------------------------|
| Materijal | PE cilindar |
| Sistem ukljućivanja | Kontakt jezicka |
| Kapacitet ukljućivanja | Max. 1A, 60 VA, 230VAC |
| Histereza ukljućivanja | Približno 95/110mm (TPK)/(FEP) |
| Ugao ukljućivanja | Približno +20° / -20° |
| Temperatura | Max. 80°C (FEP) Max. 60°C (TPK) |
| Precnik | 50mm |
| Opciono | Namur prikljućak 1/12 kΩ |

QFS-20

| | |
|------------------------|---|
| Materijal | Kugla od nerdjajuceg celika 1,4571 Metalno crevo 1,4404/1,4031 |
| Sistem ukljućivanja | Kontakt jezicka |
| Kapacitet ukljućivanja | Max. 1A, 60 VA, 230VAC |
| Histereza ukljućivanja | Približno 100mm |
| Ugao ukljućivanja | Približno +20° / -20° |
| Temperatura | Max. 150°C |
| Precnik | 132mm |

QFS-21

| | |
|------------------------|--|
| Materijal | Cilindar od nerdjajuceg celika 1,4571 Metalno crevo 1,4404/1,4031 |
| Sistem ukljućivanja | Kontakt jezicka |
| Kapacitet ukljućivanja | Max. 1A, 60 VA, 230VAC |
| Histereza ukljućivanja | Približno 100mm |
| Ugao ukljućivanja | Približno +20° / -20° |
| Temperatura | Max. 150°C |
| Precnik | 80mm |

QFS-50, QFS-60

| | |
|-------------------------------|---|
| Materijal | QFS-50: PTFE sa mehovima QFS-60: PTFE bez mehova |
| Sistem ukljućivanja | Kontakt jezicka ili mikroprekidac |
| Kapacitet ukljućivanja | Kontakt jezicka max. 1A, 60 VA, 230 VAC Mikroprekidac max. 1.5A, 250 VA, 250 VAC |
| Histereza ukljućivanja | Približno 100mm |
| Ugao ukljućivanja | Približno +20° / -20° |
| Temperatura | 150°C |
| Precnik | 55mm |

QFS-10

| | |
|----------------------|--------------------------------------|
| Material | PE cylinder |
| Switching system | reed contact |
| Switching capacity | max. 1A, 60 VA, 230 VAC |
| Switching hysteresis | approx. 95/110 mm (TPK) / (FEP) |
| Switching angle | approx. +20° / -20° |
| Temperature | max. 80 °C (FEP) max. 60 °C (TPK) |
| Diameter | 25 mm |
| Optional | Namur switching 1 / 12 kΩ |

QFS-11

| | |
|----------------------|--------------------------------------|
| Material | PE ball |
| Switching system | reed contact (NC / NO only) |
| Switching capacity | max. 1A, 60 VA, 230 VAC |
| Switching hysteresis | approx. 95/110 mm (TPK) / (FEP) |
| Switching angle | approx. +20° / -20° |
| Temperature | max. 80 °C (FEP) max. 60 °C (TPK) |
| Diameter | 90 mm |
| Optional | Namur switching 1 / 12 kΩ |

QFS-14

| | |
|----------------------|--------------------------------------|
| Material | PE cylinder |
| Switching system | reed contact |
| Switching capacity | max. 1A, 60 VA, 230 VAC |
| Switching hysteresis | approx. 95/110 mm (TPK) / (FEP) |
| Switching angle | approx. +20° / -20° |
| Temperature | max. 80 °C (FEP) max. 60 °C (TPK) |
| Diameter | 50 mm |
| Optional | Namur switching 1 / 12 kΩ |

QFS-20

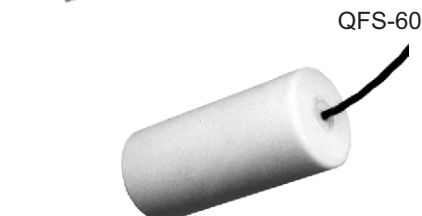
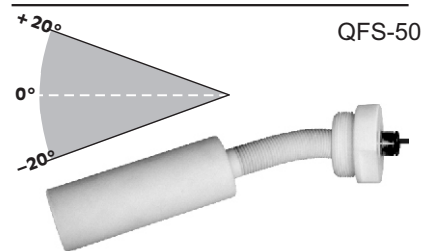
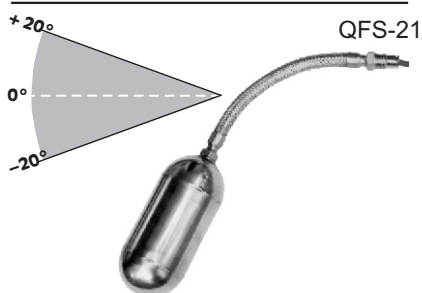
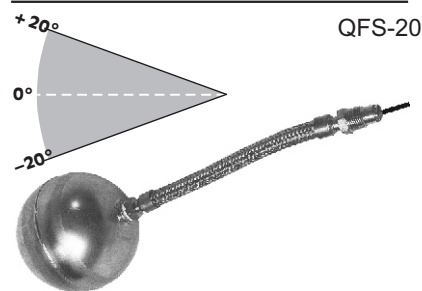
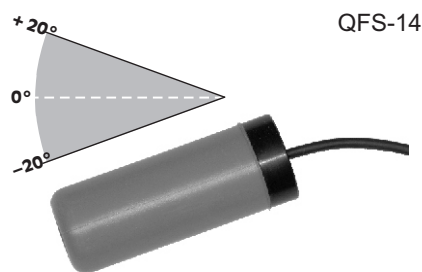
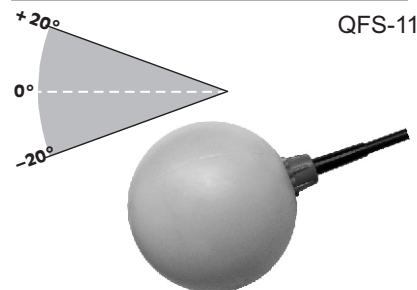
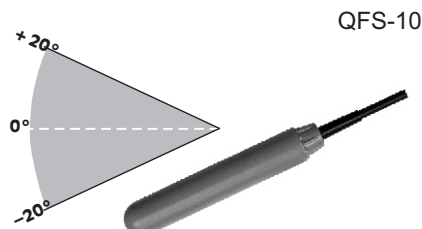
| | |
|----------------------|--|
| Material | stainless steel ball 1.4571 metallic hose 1.4404 / 1.4031 |
| Switching system | reed contact |
| Switching capacity | max. 1A, 60 VA, 230 VAC |
| Switching hysteresis | approx. 100 mm |
| Switching angle | approx. +20° / -20° |
| Temperature | max. 150 °C |
| Diameter | 132 mm |

QFS-21

| | |
|----------------------|--|
| Material | stainless steel cylinder 1.4571 metallic hose 1.4404 / 1.4031 |
| Switching system | reed contact |
| Switching capacity | max. 1A, 60 VA, 230 VAC |
| Switching hysteresis | approx. 100 mm |
| Switching angle | approx. +20° / -20° |
| Temperature | max. 150 °C |
| Diameter | 80 mm |

QFS-50, QFS-60

| | |
|----------------------|---|
| Material | QFS-50: PTFE with bellows QFS-60: PTFE without bellows |
| Switching system | reed contact or micro switch |
| Switching capacity | <i>Reed contact</i> max. 1 A, 60 VA, 230 VAC <i>micro switch</i> max. 1.5 A, 250 VA, 250 VAC |
| Switching hysteresis | approx. 100 mm |
| Switching angle | approx. +20° / -20° |
| Temperature | 150 °C |
| Diameter | 55 mm |



QFS-30, QFS-31, QFS-34

Materijal

| | |
|--------|-------------|
| QFS-30 | PP cilindar |
| QFS-31 | PP kugla |
| QFS-34 | PE cilindar |

Temperatura

| | |
|--------|------|
| QFS-30 | 85°C |
| QFS-31 | 85°C |
| QFS-34 | 80°C |

Precnik

| | |
|--------|------|
| QFS-30 | 29mm |
| QFS-31 | 90mm |
| QFS-34 | 50mm |

Sistem za ukljucivanje
Opciono

mikroprekidac
Sa integrisanim
kontra-tegom

QFS-30, QFS-31, QFS-34

Material

| | |
|--------|-------------|
| QFS-30 | PP-cylinder |
| QFS-31 | PP-ball |
| QFS-34 | PE-cylinder |

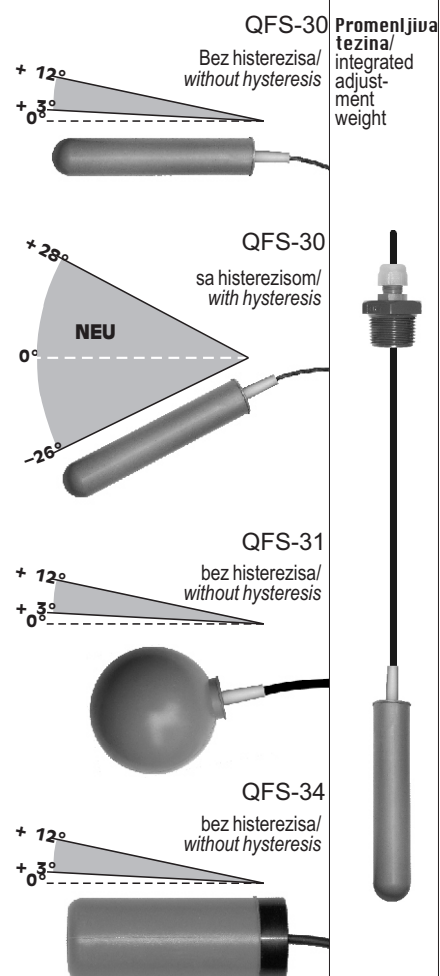
Temperature

| | |
|--------|-------|
| QFS-30 | 85 °C |
| QFS-31 | 85 °C |
| QFS-34 | 80 °C |

Diameter

| | |
|--------|-------|
| QFS-30 | 29 mm |
| QFS-31 | 90 mm |
| QFS-34 | 50 mm |

Switching system micro switch
Optional with integrated
counterweight



Veze ukljucivanja / Switching contacts

| Sistem za ukljucivanje Switching system | Struja ukljucenja Switching current | Napon ukljucenja Switching voltage | Kapacitet ukljuc. Switching capacity | histerezis Switching hysteresis (approx.) | ugao ukljucenja Switching angle (approx.) |
|---|--|---------------------------------------|---|--|--|
| 0 = srebrna veza Silver contact | 20 mA ... 1,5 A | 24...250 V AC 24...150 V DC | 350 VA 60 W | ca. 25 / 35 mm (TPK) / (FEP) * ca. 130 / 155 mm (TPK) / (FEP) | ca. +12° / +3° * ca. +28° / -26° |
| 1 = zlatna veza Gold contact | 1 mA ... 100 mA | 5...250 V AC 5...150 V DC | 5 VA 5 W | ca. 25 / 35 mm (TPK) / (FEP) * ca. 130 / 155 mm (TPK) / (FEP) | ca. +12° / +3° * ca. +28° / -26° |
| 2 = univerzalni μ -prekidac universal μ -switch | 1 mA ... 1,5 A | 5...250 V AC 5...150 V DC | 300 VA 60 W | ca. 25 / 35 mm (TPK) / (FEP) * ca. 130 / 155 mm (TPK) / (FEP) | ca. +12° / +3° * ca. +28° / -26° |
| 3 = Rid-relej Reed contact | 1 mA ... 1 A | 4...250 V AC/DC | 60 VA 60 W | ca. 100 mm | ca. +20° / -20° |
| 4 = Namur-prekidac Namur switching (1 k Ω / 12 k Ω) | samo za vezu sa KR-163... Ili drugim „Namur“-rejelom only for the connection at KR-163... or other "Namur" relays | | | ca. 100ca. | ca. +20° / -20° |
| 5 = srebrna veza Silver contact | 20 mA ... 3 A | 24...250 V AC 24...150 V DC | 700 VA 60 W | ca. 25/35 mm (TPK) / (FEP) * ca. 130 / 155 mm (TPK) / (FEP) | ca. +12° / +3° * ca. +28° / -26° |

* = sa dodatnim histerezisom / with additional hysteresis

Subject to change without prior notice, errors excepted.

Zadržano pravo izmene bez najave.