# Fluid Level Gauge
# Fluid Level Sensor
# Temperature Switch

## FSA / FSK / TS

up to NG1000; up to PN 0.5; T = -40 °C to +160 °C

## 1. DESCRIPTION

### 1.1. GENERAL

FSA fluid level gauges, FSK fluid level sensors and TS temperature switches are designed to monitor and control the level of operating fluid.

The flexible product range means that many combinations are possible:

- **FSA**: Range of eleven evenly spaced sizes.

  Visual thermometer with °C and °F scale.

  Temperature gauge which measures the temperature of the operating fluid in the tank in °C. Dual scale in °C and °F available on request.

  Simple standardised installation conditions.
- **FSA-IB**: shut-off of the fluid to the fluid level gauge via non-return valve.

  Display of the current level by simultaneously pressing the upper and lower buttons on the non-return valves.

  With the optional use of a thermometer, the current temperature of the fluid will also be shown.

  Certified by Bureau Veritas (BV approval) and by American Bureau of Shipping (ABS approval).
- **FSAR:** Fluid level gauge in round design with pipe connections on both sides.

  Thanks to the principle of communicating vessels, the gauge can be attached externally even at greater distances.
- **FSK:** Monitor the fluid level via an electrical signal.

  Range of eleven evenly spaced sizes.

  Simple standardised installation conditions.

  Switching contact (sizes 127-381) designed as optionally normally closed (type O), normally open (type C) or changing (type W) contact – as changing contact (W) in sizes 076 and 500-1000.

  Temperature gauge which measures the temperature of the operating fluid in the tank in °C and °F.

  Option: line marking on sight tube and float.

  Better visual fluid level monitoring possible with red float.
- **FSK-2SP**: Monitoring of the minimum or maximum fluid level.

  Two additional alternative switching points for size 254 and above.

  Optional: line markings on inspection tube.
- **FSK-V:** Switch points can be positioned variably, additional alternative switch points possible.

  Switching contact designed as changing contact, opens or closes at switching level.

  Riser tube made of glass.

  Optional, 3-pole AMP plug (Super Seal).

  Optional: line markings on inspection tube.
- **TS**: three nominal temperatures possible: 60 °C, 70 °C and 80 °C.

  Can be easily fitted into the FSA and FSK.

  Simple, standardised mounting (FSA/K).

  Non-corroding surfaces.
- **Accessories**

  **TFP 100:** Temperature sensor with a measurement range of -40 °C to +125 °C.

  Measuring resistor designed as 4-conductor with standardised electrical connection.

  **ABK / ABV:** These shut-off elements allow the connections to be blocked for maintenance work or for making changes to the display system (FSA/FSK), without any tank draining required.

## 1.2. FUNCTION

**FSA**

By using the FSA, the fluid level can be easily seen on the outside of the tank. The fluid enters the unit via the lower connection bore and is clearly visible in the tube. By selecting the right size, the particular fluid level can be monitored.

**FSK**

By using the FSK, the fluid level is monitored via an electrical switching signal. This switch signal can be used for a warning or to control the level. The fluid enters the unit via the lower connection bore and pushes a float up the tube. The float now shows the level of the fluid in the tank. If the level of the fluid drops again, the float will activate a switch contact. For the NO switch (type C) the circuit will then be closed, for the NC switch (type O) the circuit will be opened.

The special dual switching model (type W) offers two possibilities. It can be used either to close on contact or to open on contact.

**TS**

The TS is a very useful additional option to the FSA and FSK products. However, it also has a useful application as a separate accessory for systems.

Once fitted, the temperature sensor of the TS is surrounded by operating fluid. When the nominal temperature is reached, a contact opens and the circuit is broken.

This switching process can be used either as an alarm or to monitor the temperature.

When the temperature of the fluid drops by approx. 15 K, the circuit closes again.

**TFP**

Based on the principle of voltage drop, the sensor provides an electrical signal as a value for the temperature.

A constant measurement flow is fed to the temperature sensor. The voltage change is roughly proportional to the change in resistance caused by the temperature – the higher the temperature, the greater the resistance.

Measurement errors caused by longer feed lines are avoided by using the 4-conductor connection.

**ABK**

This stop cock specially designed for the FSA/FSK has a plug that is guided in a valve casing and that can be turned from the outside. Turning it by 90° closes the connection opening of the FSA/FSK.

It is operated by screwdriver, from the side, above or below depending on the position of the ABK.

**ABV**

Screwing the adjusting screw deeper into the valve casing closes the connection opening of the FSA/FSK (the screw can be loosened again subsequently).

The screw is adjusted by means of an allen key (AF width 3).

## 1.3. APPLICATION

Fluid level gauges FSA, fluid level sensors FSK and temperature switches TS are used to monitor and control levels of operating fluid.

Areas of application are for example: Machine tools, system engineering, tanks for hydraulic, lubricating and cutting oils, and gearboxes.

## 1.4. NOTES

The upper viscosity limit is 2,000 mm²/s. It is not possible to combine a TS temperature switch with an FT temperature gauge.

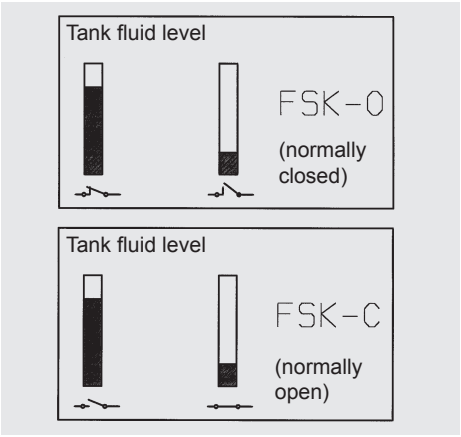
To ensure correct functioning, pressure, viscosity and temperature specifications must be observed.

**FSA/FSK**

In the standard design not suitable for use with glycol and fluids containing glycol – the special design SO14 is recommended as a solution variant in such cases.

**FSK**

Depending on the fluid level of the tank, the following switching logic applies for the fluid level monitor with NC and NO contacts.



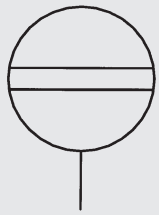

In each case the switching logic of the fluid level sensor starts with a full tank. For the NC version the switching contact opens when the fluid level drops below the switching level. Correspondingly, in the NO version, the switching contact closes when the fluid level drops below the switching level.

# 2. TECHNICAL CHARACTERISTICS

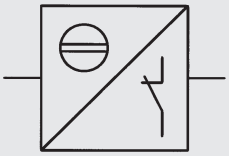
## 2.1. GENERAL

### 2.1.1 Designation and Symbol

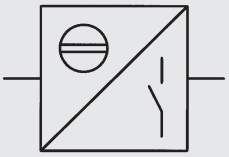
Fluid level gauge FSA



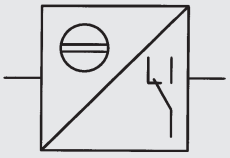
Fluid level sensor FSK



O - N/C contact

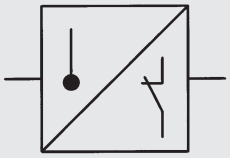


C - N/O contact



W - N/O or N/C contact

Temperature switch TS



### 2.1.2 Model code for FSA (also order example)

**FSA – 076 – 2 . X / FT200 / 12 ...**

**Designation**
FSA = fluid level gauge

**Nominal size** (≅ bolt centre spacing)
076; 127; 176; 254; 381

**Seal material**
1 = NBR (Perbunan)
2 = FKM (Viton)
5 = EPDM (on request)

**Series**
(specified by manufacturer)

**Additional thermometer function**
– = no additional function
T = thermometer in display tube
FF = prepared for temperature probe
FT 100 = temperature probe 100 mm
FT 200 = temperature probe 200 mm
FT 300 = temperature probe 300 mm
TS 60 = temperature switch nominal temperature 60 °C
TS 70 = temperature switch nominal temperature 70 °C
TS 80 = temperature switch nominal temperature 80 °C
TFP 100 = temperature probe -40 °C to +125 °C

**Installation conditions** (Banjo bolt thread)
12 = M12 (standard)
10 = M10 (not on TS)

**Special designs**
SO2 = with glass tube (round design), aluminium connectors
SO7 = frame, fastening bolts and nuts made from stainless steel*
SO8 = fastening bolts and nuts made from stainless steel*
SO14 = with glass tube, plastic connectors (PA)
SO19 = with green hollow ball, no contrast washer
SO32 = with glass tube (round design), aluminium connectors; frame, fastening bolts and nuts made from stainless steel*
SO65 = FSA – standard, but without fastening bolts or sealing washers
SO67 = FSA – standard, but without sealing washers
SO79 = with side viewing window

* only for size M12

### 2.1.3 Model code for FSA-IB (also order example)

**FSA – 254 – 2 . 0 / T / 12 SO7/SO78 2xIB ...**

**Designation**
FSA = fluid level gauge

**Nominal size** (≅ bolt centre spacing)
076; 127; 176; 254; 381;
500; 600; 700; 800; 900; 1000

**Seal material**
1 = NBR (Perbunan)
2 = FKM (Viton)

**Design of riser tube**
0 = round

**Additional thermometer function**
- = no additional function
T = thermometer

**Installation conditions** (Banjo bolt thread)
12 = M12

**Special designs**
SO2 = with glass tube, aluminium connectors and round design
SO7 = frame, fastening bolts and nuts made from stainless steel
SO78 2xIB = with 2x bolts FSA/K-M12 V ISOLATOR bolt

**Certification**
BV = BV approval (sizes 076–1000)
ABS = ABS approval (sizes 076–381)

### 2.1.4 Model code for FSA 500-1000

(also order example)

**FSA - 1000 - 2 . 0 / - / 12 ... Ø19 ...**

**Designation**
FSA = fluid level gauge

**Nominal size** (≅ bolt centre spacing)
500; 600; 700; 800; 900; 1000

**Seal material**
1 = NBR (Perbunan)
2 = FKM (Viton)

**Design of riser tube**
0 = round

**Additional thermometer function**
– = no additional function
FT = temperature probe

**Installation conditions** (Banjo bolt thread)
12 = M12 (standard)

**Tank seal**
... = gasket (no entry required)
OR = O-ring

**Diameter of riser tube**
Ø19 = 19 mm

**Special designs**
SO2 = with glass tube (round design), aluminium connectors

### 2.1.5 Model code for FSAR

(also order example)

**FSAR - 137 - 1 . 0 / - / 12LR - 4SF ...**

**Designation**
FSAR = fluid level gauge with pipe connection

**Nominal size** (≅ indication range)
088; 137; 215; 342

**Seal material**
1 = NBR (Perbunan)
2 = FKM (Viton)

**Design of riser tube**
0 = round

**Additional functions**
- = hollow ball Ø10

**Installation conditions** (pipe connection)
12LR = 12LR on both sides

**Quantity of viewing windows**
4SF = viewable from 4 sides

**Design**
No details = no fastening nut
MUTTER = with fastening nut

### 2.1.6 Model code for FSK
(also order example)

**FSK - 127 - 2 . X / O / FT200 / 12 / ...**

**Designation**
FSK = Fluid level sensor

**Nominal size** (≅ bolt centre spacing)
127; 176; 254; 381

**Seal material**
2 = FKM (Viton)

**Series**
(specified by manufacturer)

**Switching function**

| | | |
|---|---|---|
| O | = normally closed | opens at the switching level |
| C | = normally open | closes at the switching level |
| W | = changing | opens or closes at the switching level (connector Z4 = standard) |

**Additional thermometer function**

| | |
|---|---|
| – | = no additional function |
| FT 100 | = thermometer probe 100 mm |
| FT 200 | = thermometer probe 200 mm |
| FT 300 | = thermometer probe 300 mm |
| TSL 60 | = temperature switch nominal temperature 60 °C |
| TSL 70 | = temperature switch nominal temperature 70 °C |
| TSL 80 | = temperature switch nominal temperature 80 °C |
| TFP 100 | = temperature probe -40 °C to +125 °C |

**Installation conditions** (Banjo bolt thread)

| | |
|---|---|
| 12 | = M12 (standard) |
| 10 | = M10 (not on TS) |

**Connector**

| | |
|---|---|
| No details | = 3-pole MPM (standard) |
| Z4 | = 4-pole Hirschmann (standard for changing contact) |
| SEW | = 4-pole M12x1 (sensor connector, horizontal) |
| SO75 | = 3-pole MPM, mounted at top (only size 127) |
| SES | = 4-pole M12x1 (sensor connector, vertical) |
| Form B | = special connection for device connector |

### 2.1.7 Model code for FSK-076 / FSK-2SP / FSK-V
(also order example)

**FSK - 127 – 1 . O / W / – / 12 / 2SP**

**Designation**

| | |
|---|---|
| FSK | = fluid level sensor |
| FSKV | = fluid level sensor with variable switching points |

**Nominal size** (≅ bolt centre spacing)
076; 127; 176; 254; 381

**Seal material**
1 = NBR (Perbunan)

**Series**
(specified by manufacturer)

**Switching function**
W = changing contact, opens or closes at switching level

**Additional thermometer function**
– = no additional function (standard)

**Installation conditions** (Banjo bolt thread)
12 = M12

**Switch points**
1SP = 1 switch points
2SP = 2 switch points (1x minimum, 1x maximum) (size 127 and above)
Additional switch points on request

**Connector**

| | |
|---|---|
| FSK-076-1SP: | 3-pole M8x1 male |
| FSK-2SP: | 5-pole M12x1 male |
| FSK-V: | 3-pole M8x1 male |

## 2.1.8 Model code for FSK 500-1000

(also order example)

**FSK - 1000 - 1 . 0 / W / - / 12 2SP Ø19 ... ...**

**Designation**
FSK = Fluid level sensor

**Nominal size** (≅ bolt centre spacing)
500; 600; 700; 800; 900; 1000

**Seal material**
1 = NBR (Perbunan)

**Series**
(determined by manufacturer)

**Switching function**
W = changing contact, opens or closes at switching level

**Additional thermometer function**
– = no additional function
FT = temperature probe

**Installation conditions** (Banjo bolt thread)
12 = M12 (standard)

**Switch points**
1SP = 1 switch point
2SP = 2 switch points (1x minimum, 1x maximum)
Additional switch points on request

**Diameter of riser tube**
Ø19 = 19 mm

**Connector**
No details = 3-pole M8x1 male (standard)

**Special designs**
SO2 = with glass tube (round design), aluminium connectors

## 2.1.9 Model code for TS

(also order example)

**TS – 70 / X / 12**

**Designation**
TS = temperature switch (for FSA)
TS-L = temperature switch long (for FSK)

**Nominal temperature**
60 = 60 °C
70 = 70 °C
80 = 80 °C

**Series**
(specified by manufacturer)

**Installation conditions** (Banjo bolt thread)
12 = M12 (standard)

2.1.10 **Type of construction**
The devices are designed to be mounted directly on to the operating fluid tank.

2.1.11 **Type of connection**
**FSA / FSK**
The device is mounted using two banjo bolts. The connection bores can be either threaded holes or through holes (Ø13, Ø11).

**FSAR**
The device is mounted via a 12LR pipe connection on both sides, piping clamp or retaining plate.

**TS**
The temperature switch can be fitted to the FSA/FSK in place of the lower banjo bolt.

2.1.12 **Mounting position**

**FSA** – vertically on the tank wall

**FSK** – vertically on the tank wall (connection plug at bottom of the tank)

**TS** – instead of lower banjo bolt M12 (FSA)

**TS-L** – instead of lower banjo bolt M12 (FSK)

**TFP** – instead of lower banjo bolt M12 (FSA/FSK)

2.1.13 **Weight**

| | | | |
|---|---|---|---|
| FSK076 | 0.22 kg | FSK500 | 0.69 kg |
| FSK127 | 0.21 kg | FSK600 | 0.79 kg |
| FSK176 | 0.23 kg | FSK700 | 0.85 kg |
| FSK254 | 0.26 kg | FSK800 | 0.93 kg |
| FSK381 | 0.30 kg | FSK900 | 1.00 kg |
| | | FSK1000 | 1.14 kg |
| FSA076 | 0.17 kg | FSA500 | 0.68 kg |
| FSA127 | 0.19 kg | FSA600 | 0.75 kg |
| FSA176 | 0.21 kg | FSA700 | 0.84 kg |
| FSA254 | 0.24 kg | FSA800 | 0.92 kg |
| FSA381 | 0.29 kg | FSA900 | 0.99 kg |
| | | FSA1000 | 1.13 kg |
| TS-... | 0.11 kg | | |
| TS-L-... | 0.13 kg | | |
| FT 200 | 0.03 kg | | |
| FT 300 | 0.04 kg | | |
| TFP 100 | 0.20 kg | | |

2.1.14 **Flow direction**
Any

2.1.15 **Ambient temperature**
-20 °C to +80 °C

**2.1.16 Materials**

**FSA / FSK**
- Connectors and tube in high quality synthetic material
- Housing frame made from aluminium (steel or stainless steel on request)
- Soft seals in Viton (FKM) or Perbunan (NBR)
- Bolts, nuts and washers in steel (zinc-plated)
- Plug connections in high quality synthetic material (FSK)

**FSA-IB**
- Housing frame, bolts and nuts made of stainless steel
- Riser tube made of glass Ø19

**FSAR**
- Frame made of aluminium
- Riser tube made of glass or plastic

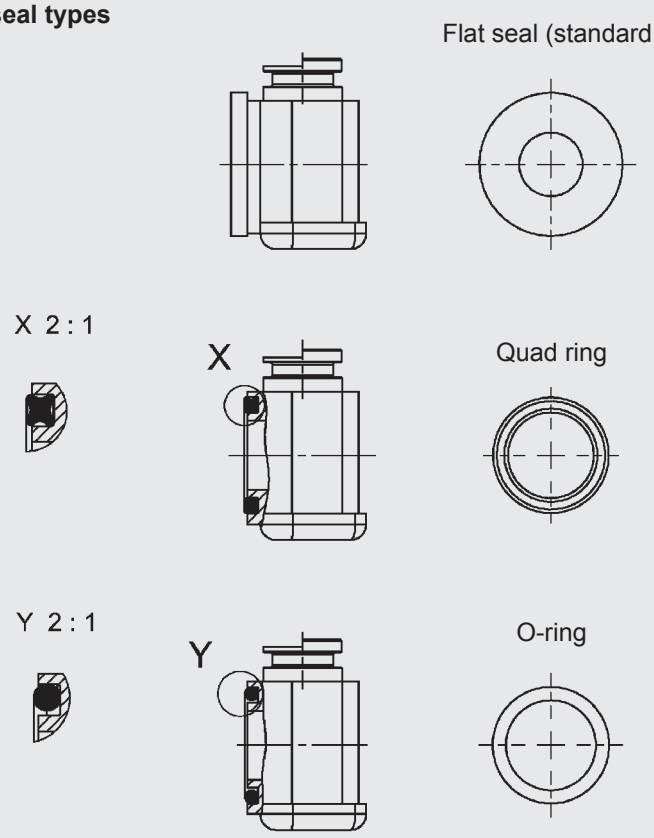
**FSA / FSK 500 - 1000**
- Connectors made of aluminium
- Float gauge made from NBR

**FSK-2SP**
- Connectors made of aluminium / polyamide
- Frame made of aluminium
- Riser tube made of glass Ø19

**FSK-V**
- Housing frame made of stainless steel
- Connectors made of aluminium / polyamide
- Riser tube made of glass Ø19

**TS / TS-L / TFP**
- Housing with temperature sensor, washer and nut in steel (zinc-plated)
- Plug connections in high quality synthetic material

2.1.17 **FSA seal types**



## 2.2. HYDRAULIC DATA

2.2.1 **Nominal pressure**
max. 0.5 bar

2.2.2 **Operating fluids**
Mineral oil to DIN 51524 Part 1 and 2, water-oil emulsions and synthetic fluids, such as hydraulic fluids based on phosphate ester.

(other fluids on request)

2.2.3 **Temperature of operating fluid**
-20 °C to +80 °C

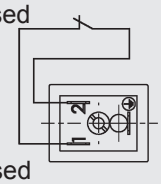
2.2.4 **Range of thermometer scale FSA / FSK**
Thermometer T for FSA :
+ 20 °C to + 80 °C

Thermometer FT for FSA / FSK :
0 °C to + 100 °C

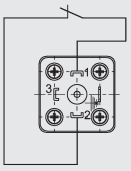
## 2.3. ELECTRICAL CHARACTERISTICS FSK

2.3.1 **Electrical functions**

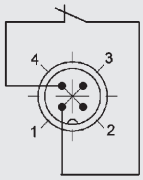
Type O / normally closed



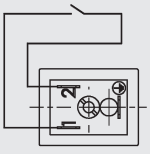
Type O / normally closed
(plug Z4 and type B)



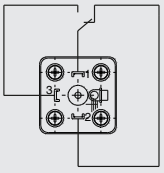
Type O / normally closed
(plug - SEW)



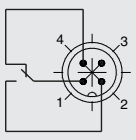

Type C / normally open



Type W / change over
(connector Z4 and type B)



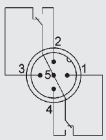
Type W / change over
(plus - SEW)




### FSK–2SP

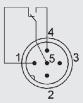
Type W / change over
As delivered, switching point at bottom activated by magnetic field.

Size 127, 254, 381

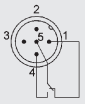



| Float setting \ Contact assignment | bottom | top |
|---|---|---|
| Minimum | 5 - 4 | 5 - 3 |
| Maximum | 5 - 1 | 5 - 2 |

Size 176



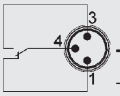

| Float setting \ Contact assignment | top |
|---|---|
| Maximum | 5 - 4 |




| Float setting \ Contact assignment | bottom |
|---|---|
| Minimum | 5 - 4 |

### FSK–V

Type W / change over




| Float setting \ Contact assignment | bottom | top |
|---|---|---|
| Minimum | 3 - 4 | 1 - 4 |
| Maximum | 1 - 4 | 3 - 4 |

NOTICE: With only one reed contact, the switch point is at the top or at the bottom.

2.3.2 **Contact load**
max. 8 W

2.3.3 **Switching voltage**
1-48 V AC/DC

2.3.4 **Switching current**
max. 0.2 A

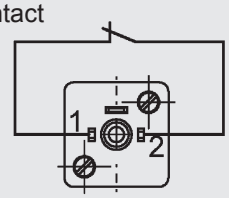
2.3.5 **Protection class**
IP 65

2.3.6 **Viscosity range**
max. 2000 mm²/s

## 2.4. ELECTRICAL CHARACTERISTICS TS / TS-L

2.4.1 **Electrical function**

N/C contact




2.4.2 **Switching power**
2.5 A/50 V - 10,000 switching operations
0.5 A/50 V - 100,000 switching operations

2.4.3 **Minimum switching current**
50 mA

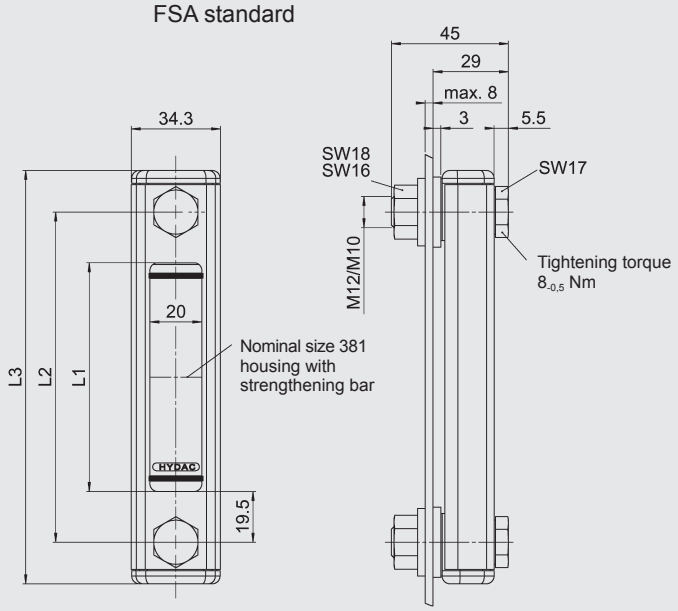
2.4.4 **Switching tolerance**
± 5 K

2.4.5 **Switching hysteresis**
Normally closed
60 °C – 10-15 K
70 °C – 10-15 K
80 °C – 10-20 K

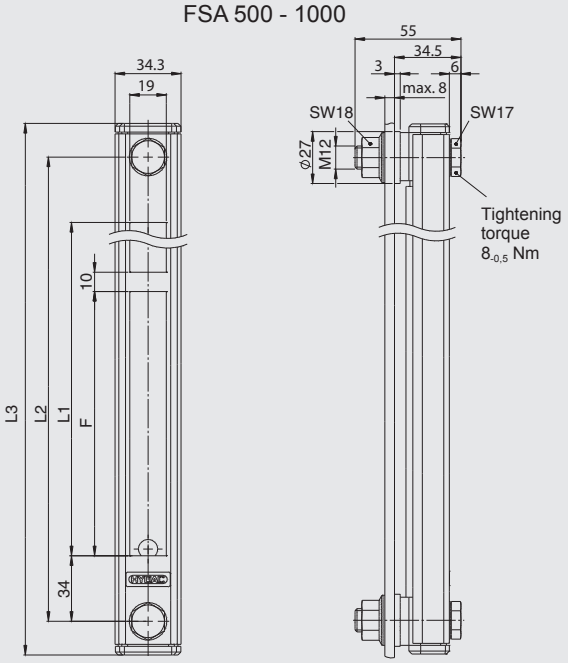
# 3. DIMENSIONS

## 3.1. FLUID LEVEL GAUGE FSA

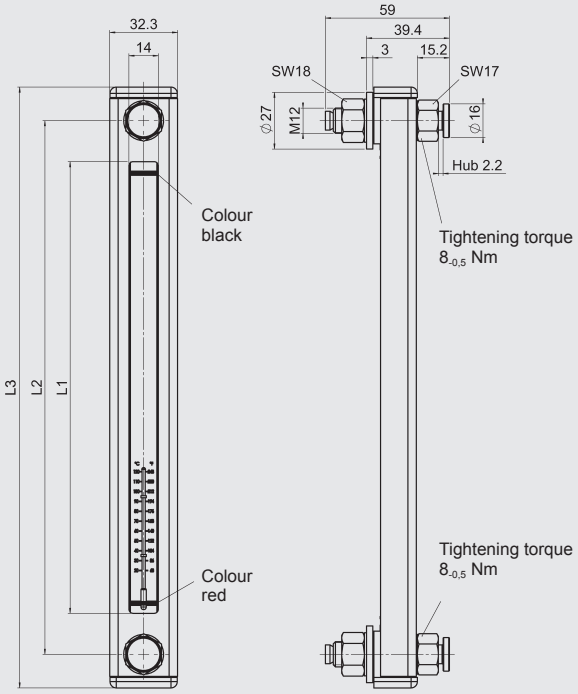
FSA standard




FSA 500 - 1000

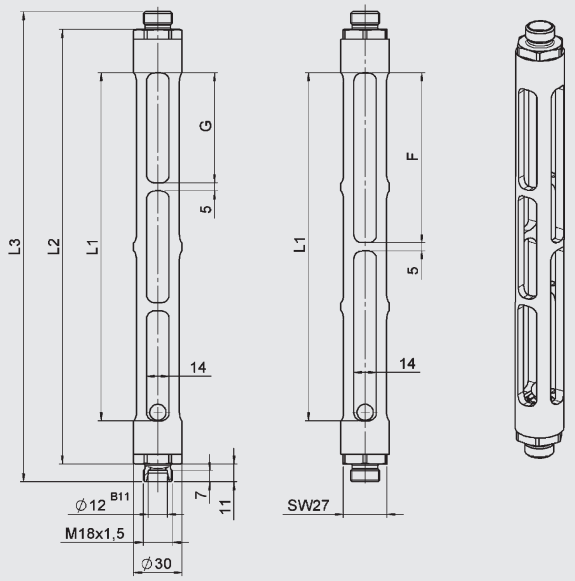



FSA-IB (with non-return valve)

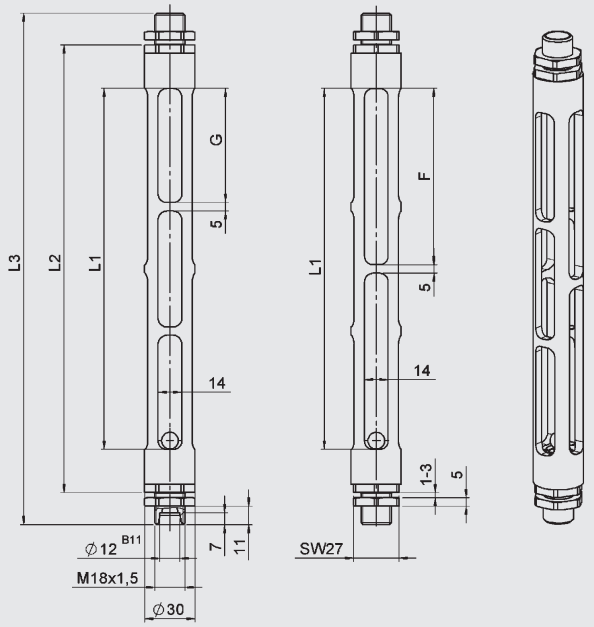



| **Nominal size =** centre distance of bolts | **L1** [mm] | **L2** [mm] | **L3** [mm] | **F** [mm] | **Quantity F** |
|---|---|---|---|---|---|
| 76 | 37 | 76 | 108 | - | - |
| 127 | 88 | 127 | 159 | - | - |
| 175 | 137 | 176 | 208 | - | - |
| 254 | 215 | 254 | 286 | - | - |
| 381 | 342 | 381 | 413 | - | - |
| 500 | 432 | 500 | 535 | 137 | 3 |
| 600 | 532 | 600 | 635 | 170 | 3 |
| 700 | 632 | 700 | 735 | 150 | 4 |
| 800 | 732 | 800 | 835 | 175 | 4 |
| 900 | 832 | 900 | 935 | 158 | 5 |
| 1000 | 932 | 1000 | 1035 | 147 | 6 |

FSAR without fastening nut

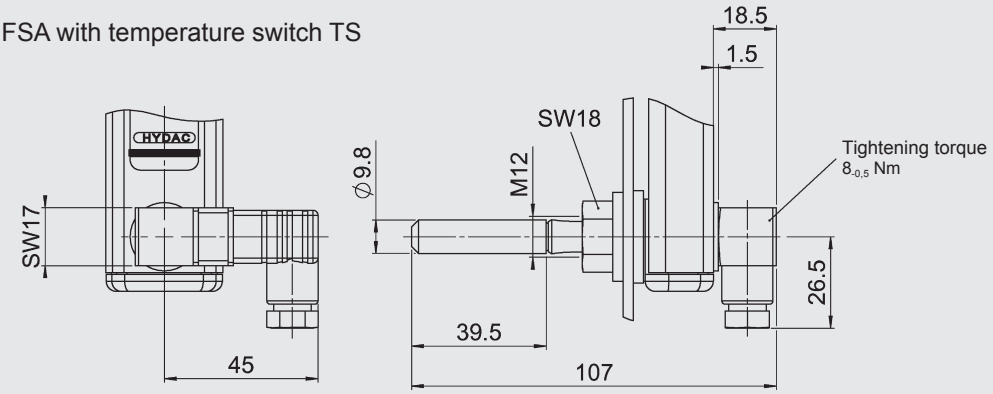



FSAR with fastening nut

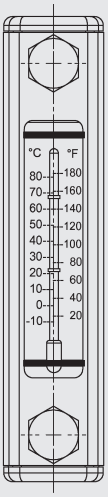



| Design | Nominal size = centre distance of bolts | L1 [mm] | L2 [mm] | L3 [mm] | F [mm] | G [mm] |
|---|---|---|---|---|---|---|
| **Without nut** | FSAR-088 | 88 | 141.5 | 163.5 | 88 | 88 |
| | FSAR-137 | 137 | 190.5 | 212.5 | 137 | 137 |
| | FSAR-215 | 215 | 268.5 | 290.5 | 2x 105 | 3x 68 |
| | FSAR-342 | 342 | 395.5 | 417.5 | 3x 110.5 | 4x 82 |
| **With nut** | FSAR-088 | 88 | 139.5 | 177.5 | 88 | 88 |
| | FSAR-137 | 137 | 188.5 | 226.5 | 137 | 137 |
| | FSAR-215 | 215 | 266.5 | 304.5 | 2x 105 | 3x 68 |
| | FSAR-342 | 342 | 393.5 | 431.5 | 3x 110.5 | 4x 82 |

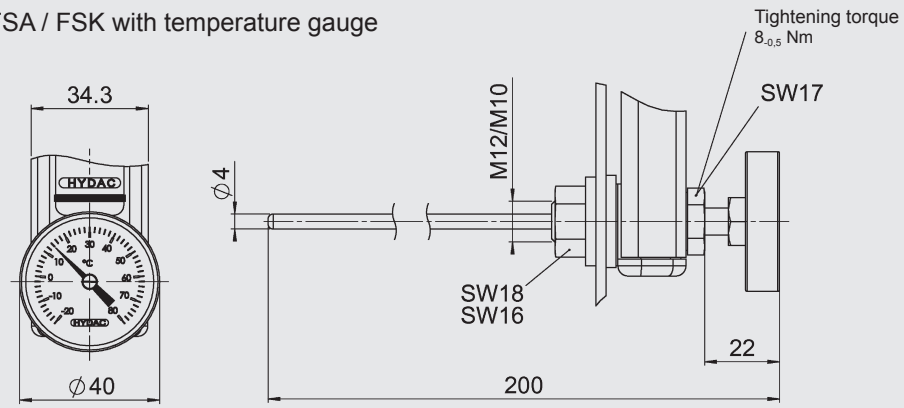
FSA with temperature switch TS




FSA with temperature gauge

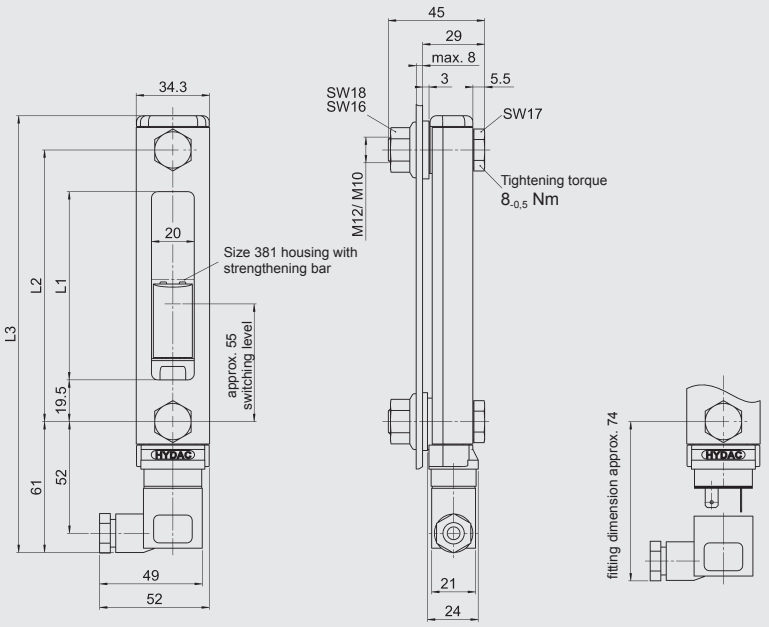



FSA / FSK with temperature gauge

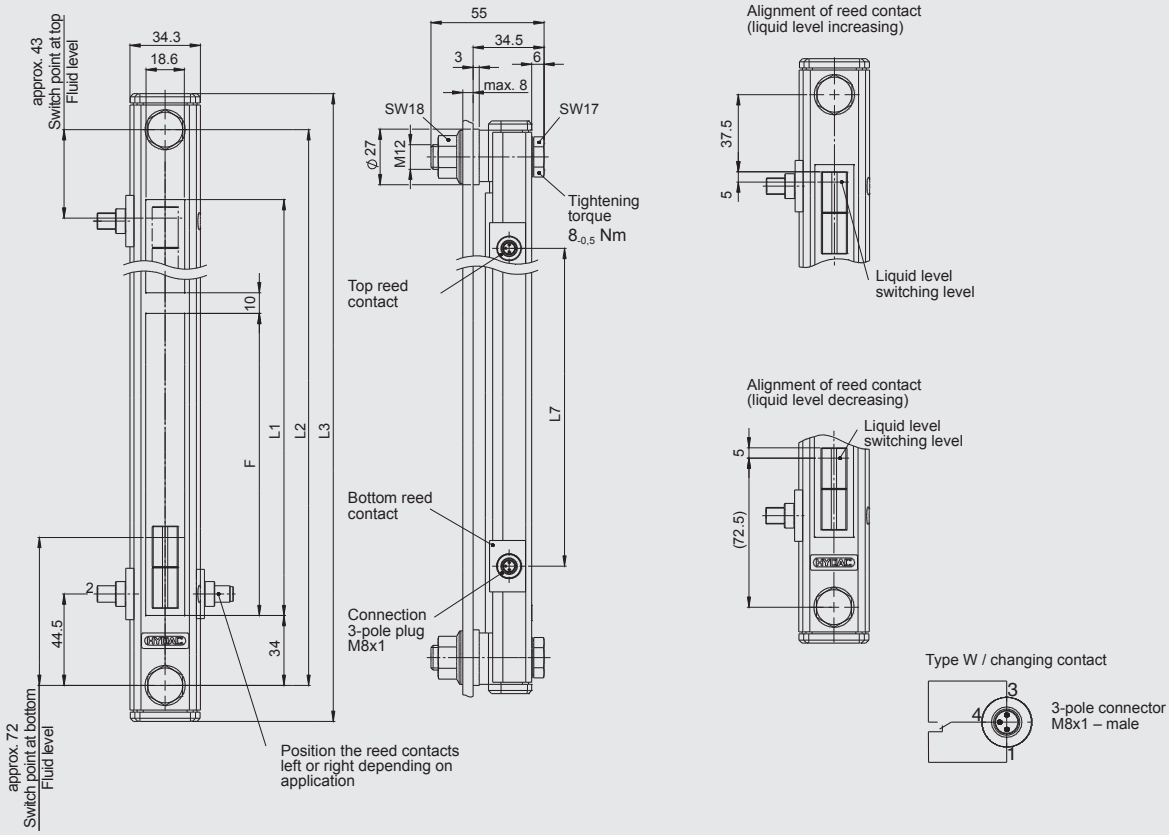


## 3.2. FLUID LEVEL SENSOR FSK

FSK standard

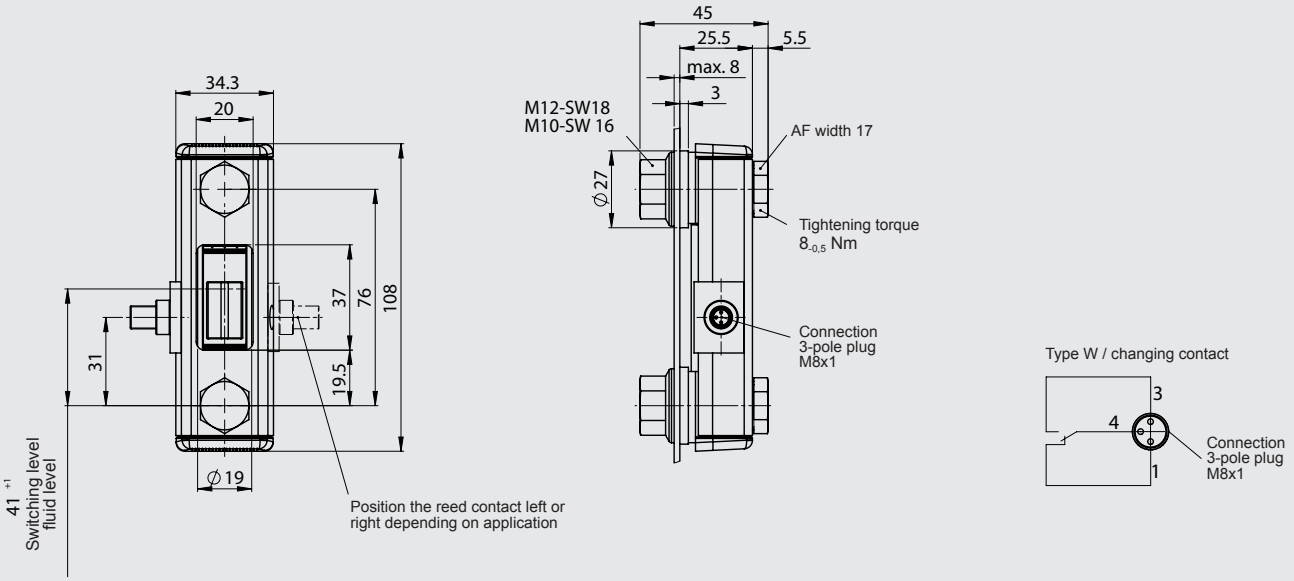



FSK 500 - 1000

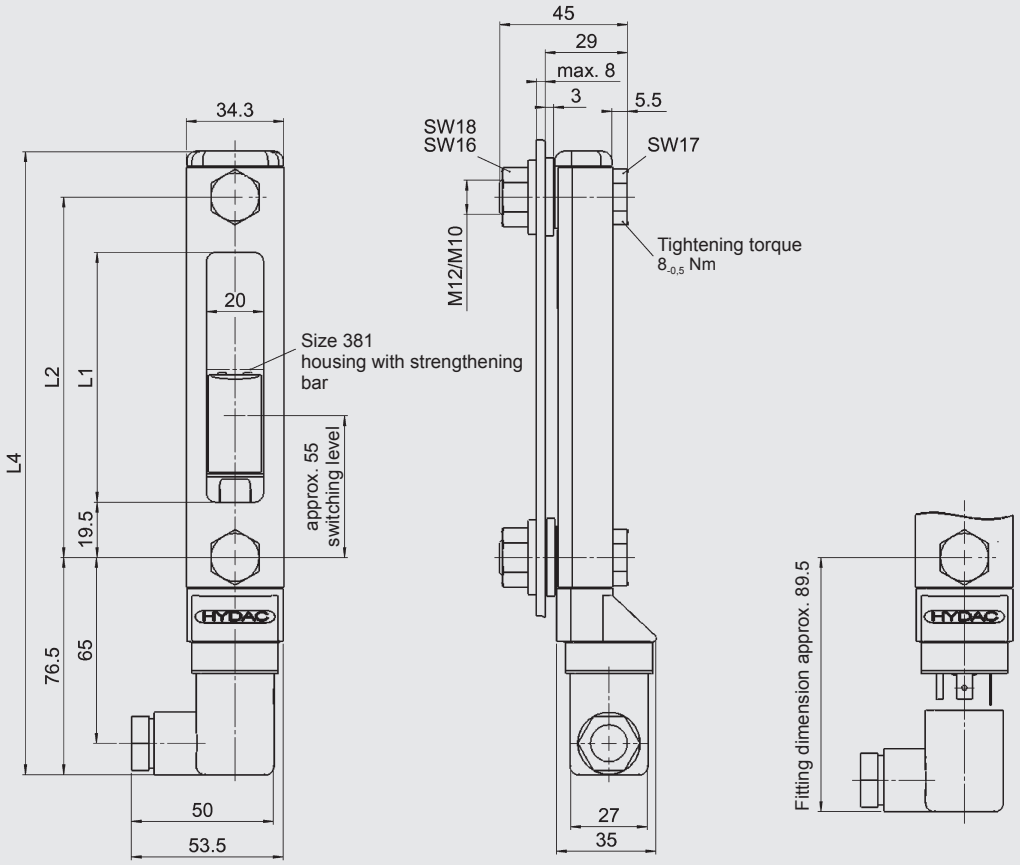



| Nominal size = centre distance of bolts | L1 [mm] | L2 [mm] | L3 [mm] | L7 [mm] | F [mm] | Quantity F |
|---|---|---|---|---|---|---|
| 127 | 88 | 127 | 204 | 203 | - | - |
| 176 | 137 | 176 | 253 | 252 | - | - |
| 254 | 215 | 254 | 331 | 330 | - | - |
| 381 | 342 | 381 | 458 | 457 | - | - |
| 500 | 432 | 500 | 535 | 411 | 137 | 3 |
| 600 | 532 | 600 | 635 | 511 | 170 | 3 |
| 700 | 632 | 700 | 735 | 611 | 150 | 4 |
| 800 | 732 | 800 | 835 | 711 | 175 | 4 |
| 900 | 832 | 900 | 935 | 811 | 158 | 5 |
| 1000 | 932 | 1000 | 1035 | 911 | 147 | 6 |

## FSK 076

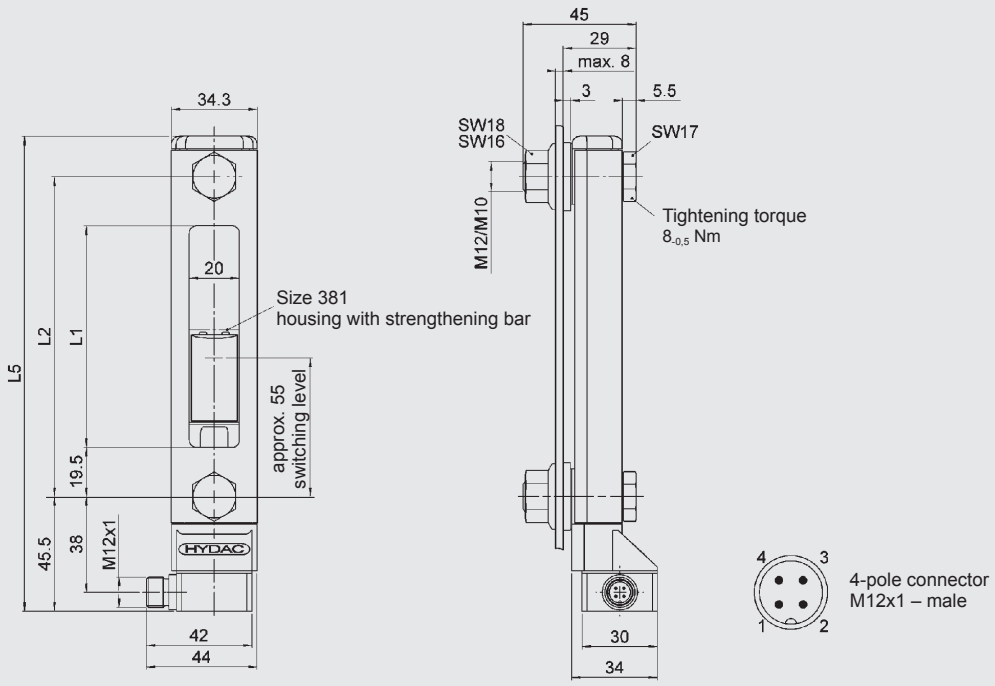



## FSK plug Z4

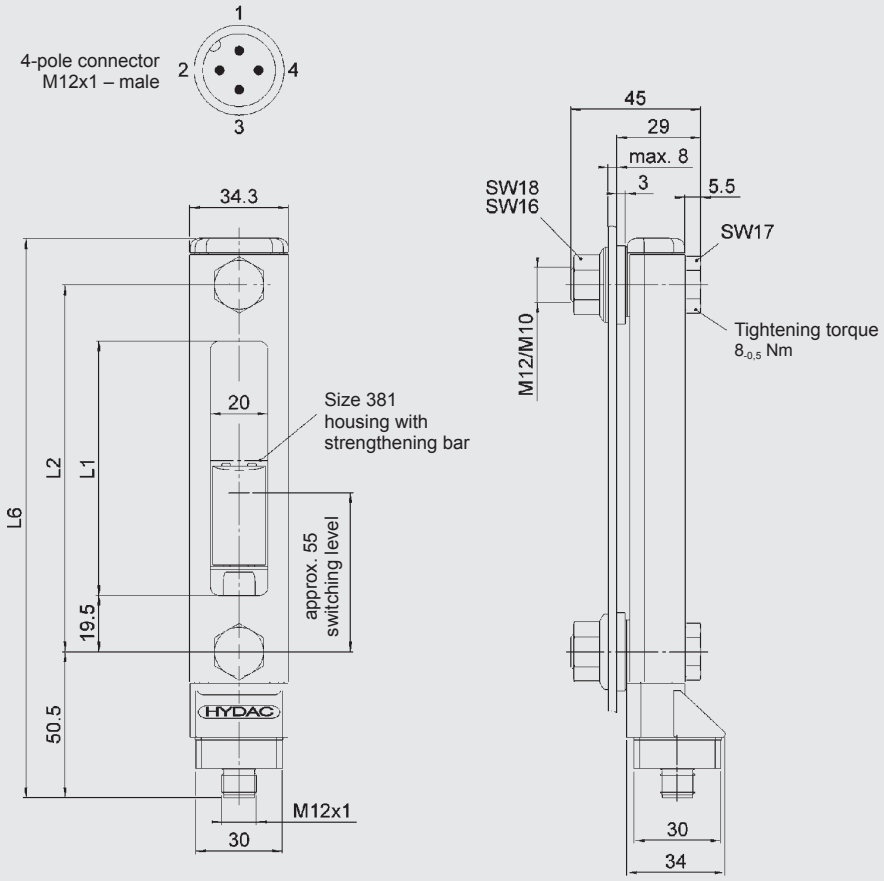



| **Nominal size =** centre distance of bolts | **L1** [mm] | **L2** [mm] | **L3** [mm] |
|---|---|---|---|
| 127 | 88 | 127 | 219.5 |
| 176 | 137 | 176 | 268.5 |
| 254 | 215 | 254 | 346.5 |
| 381 | 342 | 381 | 473.5 |

FSK sensor connection SEW-M12x1 horizontal

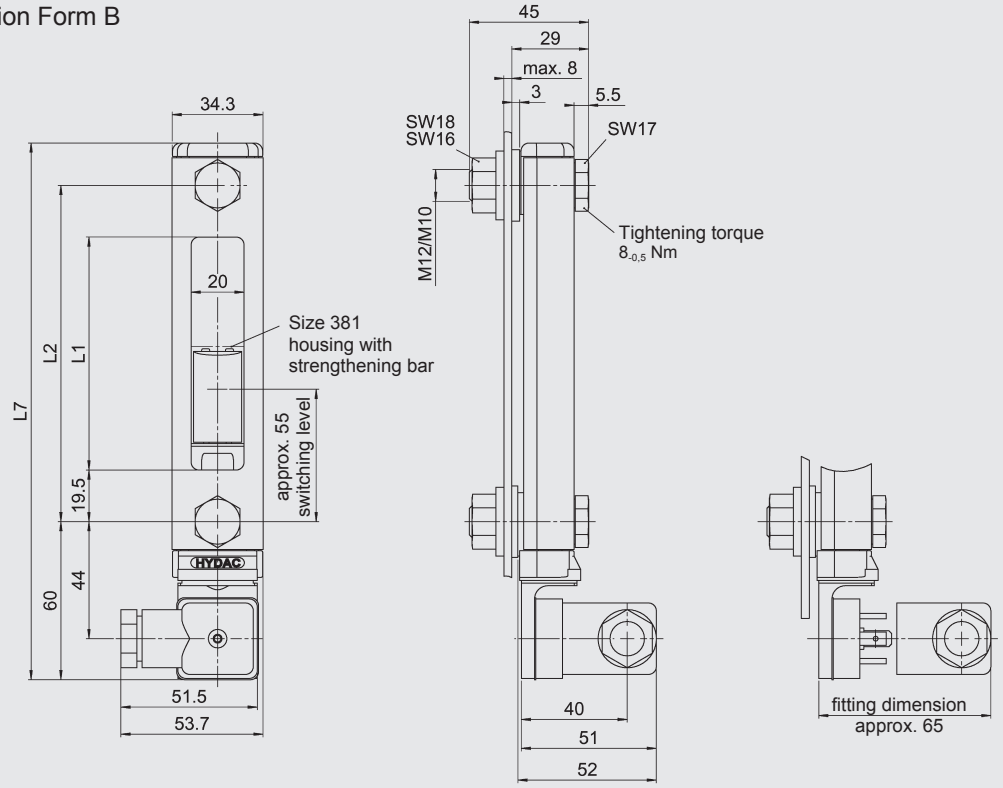



FSK sensor connection SES-M12x1 vertical



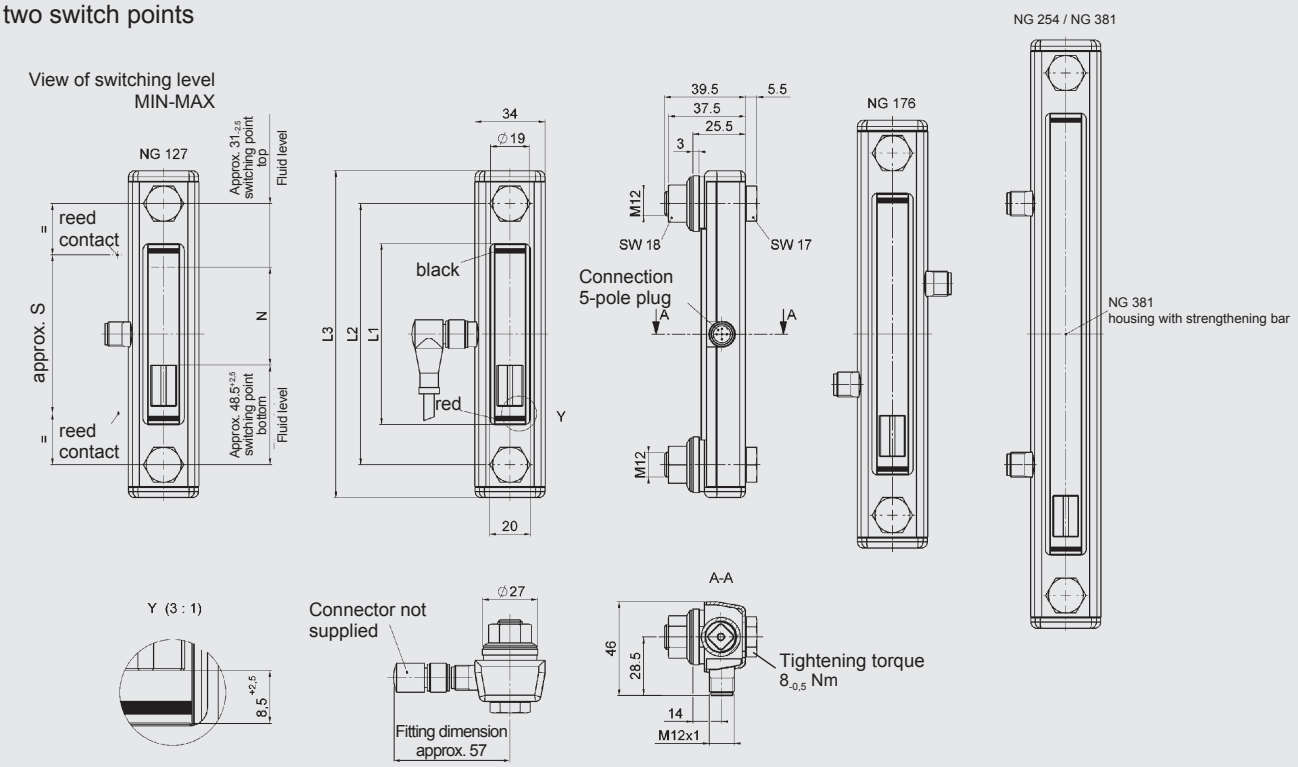

| **Nominal size =** centre distance of bolts | **L1** [mm] | **L2** [mm] | **L5** [mm] | **L6** [mm] |
|---|---|---|---|---|
| 127 | 88 | 127 | 188.5 | 193.5 |
| 176 | 137 | 176 | 237.5 | 242.5 |
| 254 | 215 | 254 | 315.5 | 320.5 |
| 381 | 342 | 381 | 442.5 | 447.5 |

## FSK male connection Form B



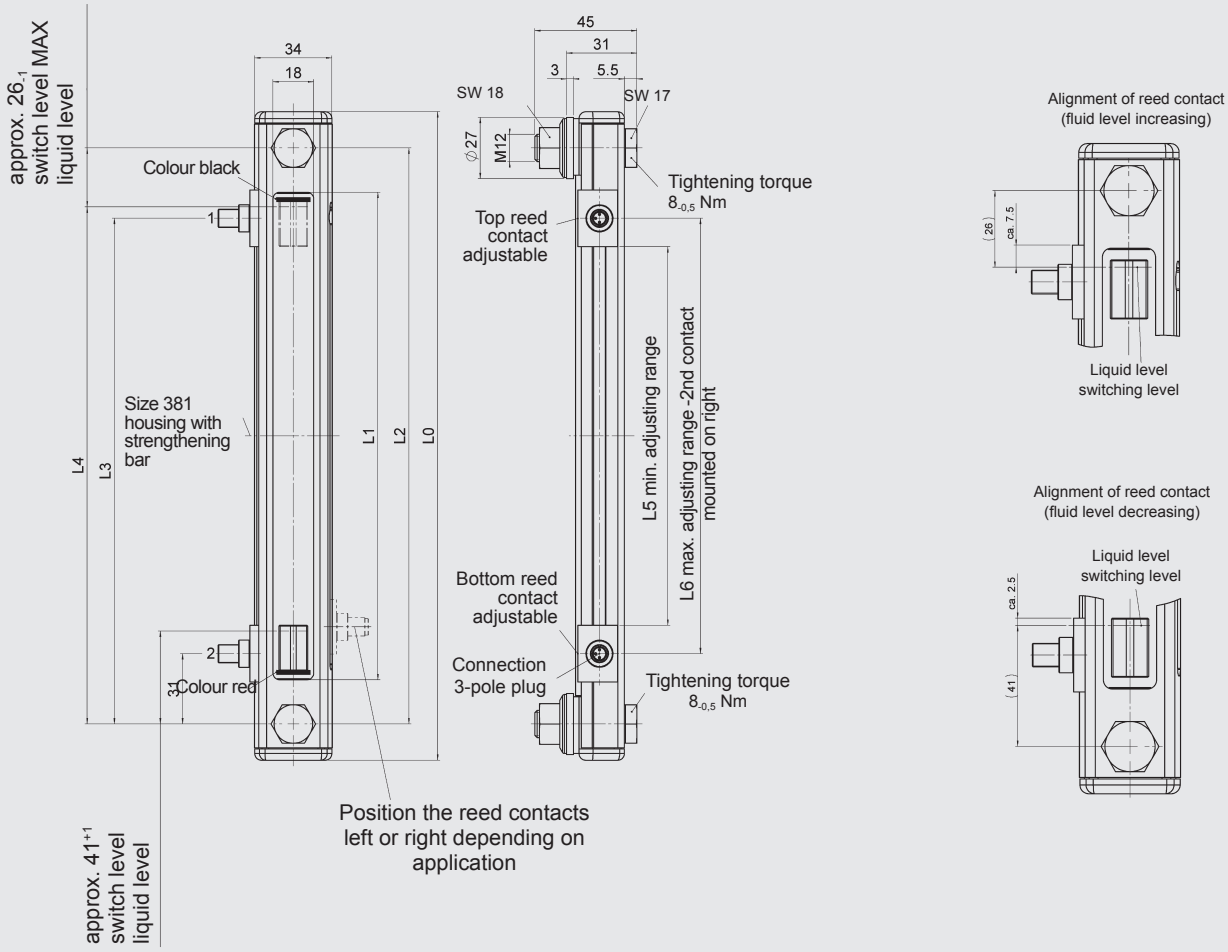

| **Nominal size =** centre distance of bolts | **L1** [mm] | **L2** [mm] | **L7** [mm] |
|---|---|---|---|
| 127 | 88 | 127 | 203 |
| 176 | 137 | 176 | 252 |
| 254 | 215 | 254 | 330 |
| 381 | 342 | 381 | 457 |

## FSK with two switch points



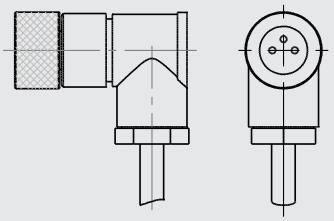

| Type | **Size =** centre distance of bolts | **L1** [mm] | **L2** [mm] | **L3** [mm] | **N** [mm] | **Approx. S** [mm] |
|---|---|---|---|---|---|---|
| FSK-127-1.0/W/-/12/2SP | 127 | 88 | 127 | 159 | 47.5 | 77 |
| FSK-176-1.0/W/-/12/2SP | 176 | 137 | 176 | 208 | 96.5 | 126 |
| FSK-254-1.0/W/-/12/2SP | 254 | 215 | 254 | 286 | 174.5 | 204 |
| FSK-381-1.0/W/-/12/2SP | 381 | 342 | 381 | 413 | 301.5 | 331 |

## FSK with variable switch points

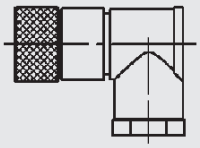



| Type | Nominal size | L0 | L1 | L2 | L3 | L4 | L5 | L6 |
|---|---|---|---|---|---|---|---|---|
| FSKV-127 | 127 | 159 | 88 | 127 | 96 | 101 | 40 | 65 |
| FSKV-176 | 176 | 208 | 137 | 176 | 145 | 150 | 89 | 114 |
| FSKV-254 | 254 | 286 | 215 | 254 | 223 | 228 | 167 | 192 |
| FSKV-381 | 381 | 413 | 342 | 381 | 350 | 355 | 294 | 319 |

## Angled connector M8x1 for FSKV



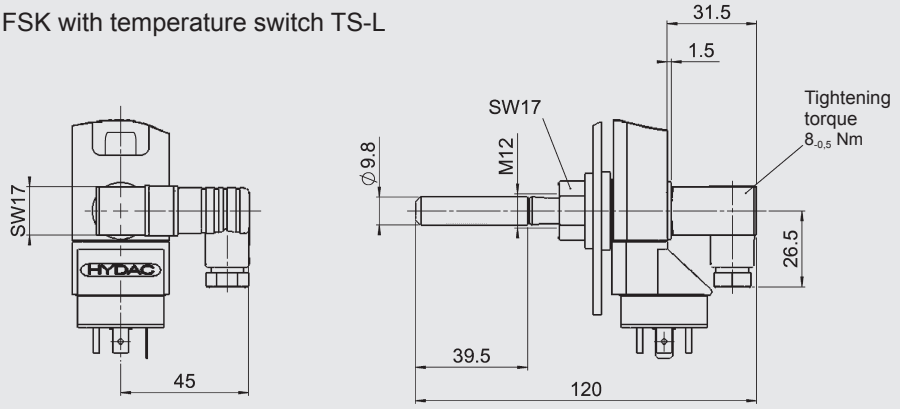
not adjustable with cable L = 2 m



adjustable without cable

| Order no.: | 6105865 | 6105866 |
|---|---|---|

FSK with temperature switch TS-L

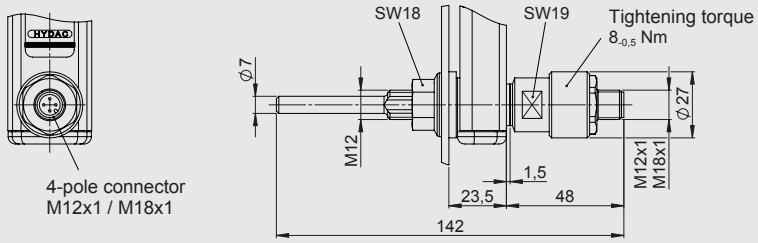



### 3.3. TEMPERATURE SWITCH TS / TS-L

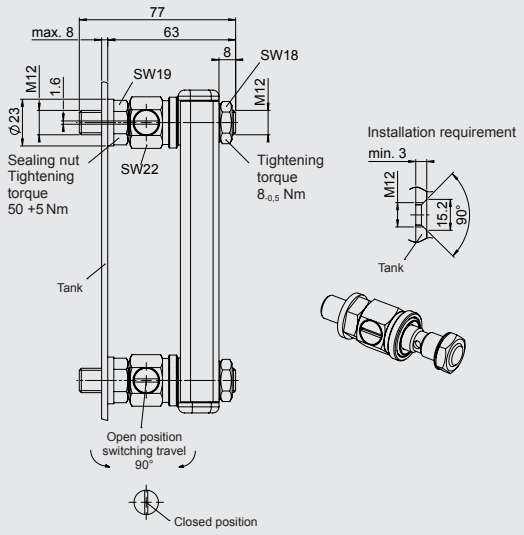
See FSA with TS fitted
See FSK with TS-L fitted

### 3.4. ACCESSORIES

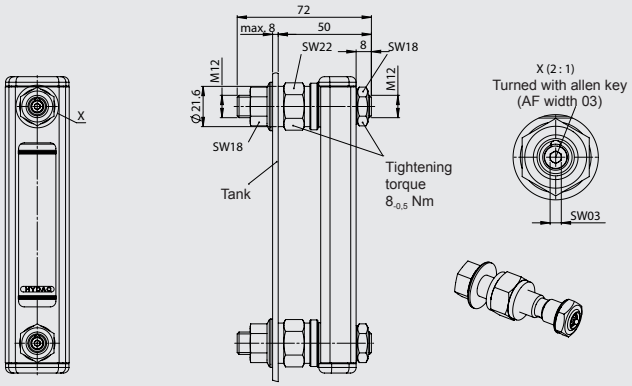
Temperature sensor TFP




ABK

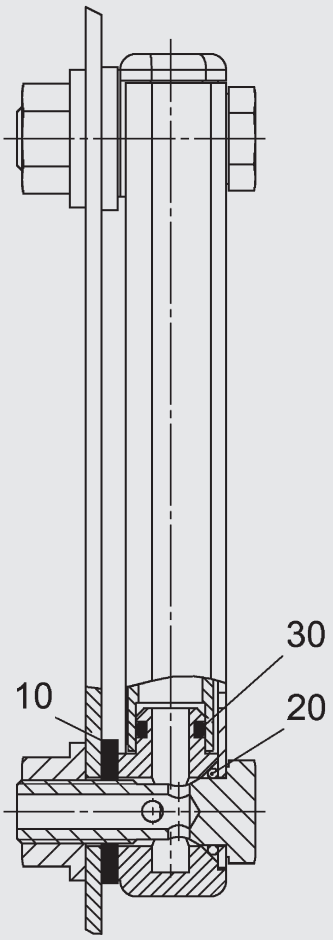



ABV




## 4. SPARE PARTS

### 4.1. SEAL KIT




| Seal kit | Order no.= Part number |
|---|---|
| FSA - 76 - 381 - 1.X /- /12 NBR | 704 616 |
| FSA - 76 - 381 - 2.X /- /12 FKM | 704 627 |
| FSA - 76 - 381 - 1.X /- /10 NBR | 3248767 |
| FSA - 76 - 381 - 2.X /- /10 FKM | 3395614 |

## NOTICE

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Users bear the responsibility in all cases for determining the product's suitability in the specific application. Quantified values for product characteristics are average values for a new product that undergo a time deterioration process.

Errors and technical changes excepted.

**HYDAC Accessories GmbH**
Hirschbachstr. 2
**66280 Sulzbach/Saar**
Tel.: +49 (0)6897 - 509-01
Fax: +49 (0)6897 - 509-1009
Internet: www.hydac.com
E-Mail: info@hydac.com