

# Pressure Switch

## FF 1...300 GL

GL certified





## The GL certified ABB Pressure Switches

Pressure Switches FF 1...300 GL



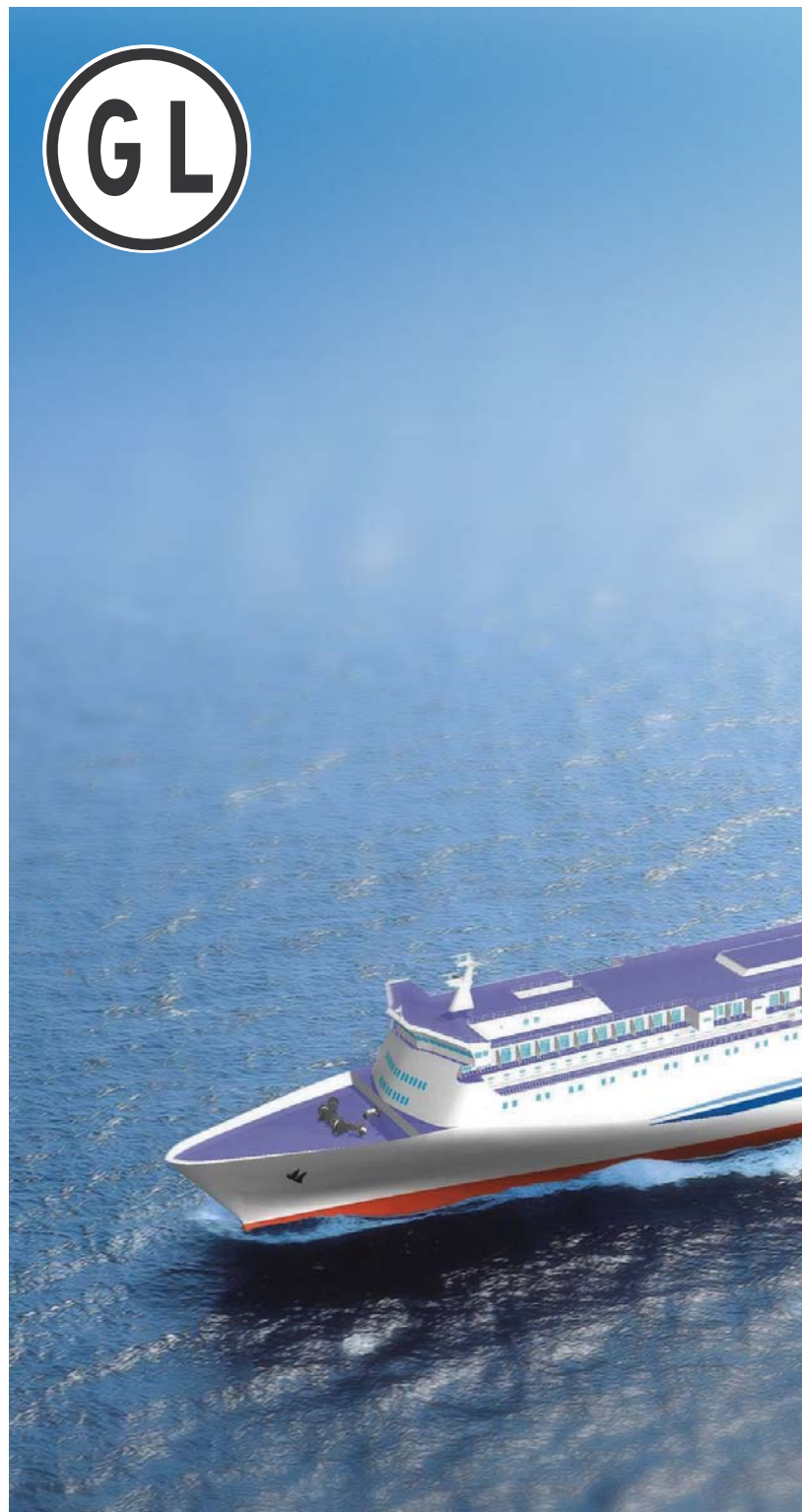
### 40 years pressure switches – a thoroughly proven product by ABB STOTZ-KONTAKT

The FF pressure switch design is based on 40 years of know-how and is an example for consequent quality oriented development. This long experience allows us to produce and deliver perfectly and reliably working devices.

FF pressure switches meet today's state of the art and fulfill every single demand that can be posed by modern applications. The ingenious construction without linkages or pivot points and with only a few moving parts offers many excellent features.

Pressure switches FF1...300 GL are certified to GL (Germanischer Lloyd). The certification number is 40137 - 01 HH. With 7 pressure ranges from 1 to 300 bar they cover almost any needs of the shipbuilding industry.

Use this advantage and benefit from the quality and the reliability of the FF pressure switches.





### Characteristics of the FF Pressure Switches

- Very little movement of sensing element, long life rate
- Measuring system without friction, no wear or tear: no scheduled maintenance needed
- Micro Switch with instrument quality, precise set point repeatability
- Adjustments of set point and hysteresis (dead band) are individual without interference and therefore quick and simple
- Rugged construction, high material quality, fine silver or gold plated contact material
- Various approvals available



**Type Approval Certificate** Germanischer Lloyd

This is to certify that the undersigned product(s) has/have been tested in accordance with the relevant requirements of the GL Type Approval System.

Certificate No: **40 137 - 01 998**  
 Company: **ABB STOTZ-KONTAKT GmbH**  
 Epplheimer Straße 82  
 D-69123 Heidelberg

Product Description: **Pressure Switch, Series FF**  
 Type: **FF 1, FF 6, FF 10, FF 16, FF 40, FF 100, FF 300**

Environmental Category: **D**

Technical Data / Range of Application:  
 Diaphragm / Diaphragm-Piston pressure switches  
 Standard with adjustable hysteresis, optional with constant hysteresis

Type	Pressure range (Bar)	Test pressure (Bar)
FF 1	0.2 to 1.5	9
FF 6	1.0 to 6	9
FF 10	1.0 to 10	25
FF 16	2.0 to 16	25
FF 40	4.0 to 40	60
FF 100	20 to 100	200
FF 300	20 to 300	400

Output: 1 dry (SPDT) switch contact (GH, M, RL, RH or RL)  
 Rating: typical 0.5 A 24 V DC, 10 A 250 V AC  
 Diaphragm material standard = PTFE (optional: Teflon or Viton)  
 Process fitting: G 3/8", G 1/2"  
 Degree of protection: IP 65

Test Standard: **GL-Regulations for the Performance of Type Tests**

Documents: **Test Reports: BPSV No. 4017801 of 28-02-01, RMS 03-020002 of 16-02-2001**  
 Manufacturer's catalogue and data sheets  
 Technical Drawings: ECO-2000-6, 911-0070, A36172, A26189

Remarks: **None**

Valid until: **2006-03-09**

Page: **1 of 1**

File No: **LD 01**

Hamburg, **2003-02-26**

Type Approval Symbol **GL**

**Germanischer Lloyd**  
 J. Wittburg  
 G. Lesniowski

This certificate is issued on the basis of "Regulations for the Performance of Type Tests, Part E, Procedure"



# FF Pressure Switch FF 1...300 GL

Diaphragm and Piston switches – GL certified



## Characteristics

The FF pressure switch can be used for both pressure monitoring and control tasks. If the pressure at the compressed air supply reaches the set point, the micro switch closes the normally open contact 1-4, and the normally closed contact is opened. Contact 1-2 is not closed until the pressure has dropped by the set hysteresis value. Set point and hysteresis may be adjusted independently of one another, the scales only serving for orientation. A precise adjustment is only possible with suitable test equipment (e.g. a manometer).

- 7 pressure ranges up to 300 bar
- adjustment of set point and hysteresis
- high set point repeatability
- 1 SPDT contact; gold plated contacts optional
- robust housing
- Approvals: no. of certification: 40 137 - 01 HH

## Ordering details

Type	Pressure range	Order No.
FF- 1-G <sup>3</sup> / <sub>8</sub> -GL	0,5 - 1,5 bar	F 013601 003
FF- 6-G <sup>3</sup> / <sub>8</sub> -GL	1 - 6 bar	F 013602 003
FF- 10-G <sup>3</sup> / <sub>8</sub> -GL	2 - 10 bar	F 013606 003
FF- 16-G <sup>3</sup> / <sub>8</sub> -GL	4 - 16 bar	F 013603 003
FF- 40-G <sup>3</sup> / <sub>8</sub> -GL	6 - 40 bar	F 013604 003
FF- 160-G <sup>3</sup> / <sub>8</sub> -GL	20 - 160 bar	F 013607 003
FF- 300-G <sup>3</sup> / <sub>8</sub> -GL	30 - 300 bar	F 013605 003

## Technical data

### Process connection

Fitting

Alu die castings, material 230,

resistant to seawater

G3/8", optional: G1/2"

Perbunan, optional: Viton, Teflon

diaphragm: 40 bar, piston: 300 bar

diaphragm: 60 bar, piston: 450 bar

Connection thread  
Diaphragm material  
Working pressure max.  
Proof pressure

### Standard micro switch (with an adjustable hysteresis)

Operating voltage (AC) max.	480 V
Operating current (at 250V AC)	15 A
Operating current (at 480V AC)	6 A
Operating voltage (DC) max.	125 V
Operating current (at 24V DC)	5 A
Operating current (at 25V DC)	0,4 A

### Micro switch with gold contacts

Operating voltage (AC) max.	125 V
Operating current (at 125V AC)	1 A
Operating voltage (DC) max.	24 V
Operating current (at 24V DC)	1 A

### Mikro switch with hand reset

Operating voltage (AC) max.	480 V
Operating current (at 250V AC)	10 A
Operating current (at 480V AC)	3 A
Operating voltage (DC) max.	125 V
Operating current (at 125V DC)	1 A (0,5 A at fixed hysteresis)
Operating current (at 125V DC)	0,4 A

### Enclosure

Material under part

Alu die casting

Material 230,

resistant to seawater

Makrolon UL-V0, self-extinguishing

with injection-moulded seal

131,5mm / 96,2mm / 87mm

Cable gland M20\*1,5

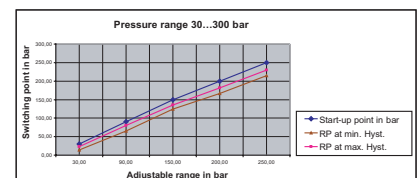
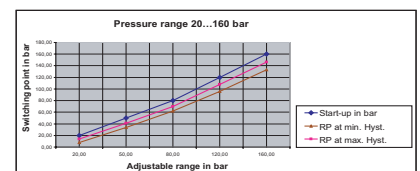
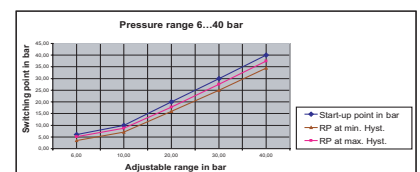
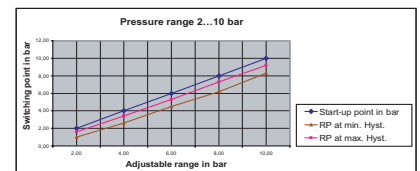
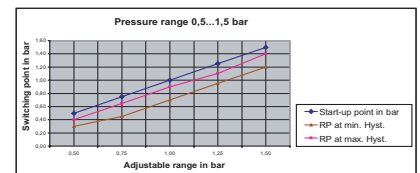
Cable tie (Polyamide)

Cover

Dimensions: Height / Width/ Depht  
IP 65 version  
Cable arrestor

### General data

Weight	approx. 0,8kg
Ambient/process temperature limits	-30...+70°C
Switching frequency	1800 / h
Vibration	2...15Hz
Amplitude	+/-1,6mm, 25...100Hz, 4g



# ABB Pressure Switches

The product program



## Pressure Switch FF 1...300 EEx I

Diaphragm and piston switches, ATEX certified



## Pressure Switch FF 1...40 VdS

Diaphragm switch, VdS approved



## Pressure Switch FF 1...300

Diaphragm and piston switches



## Electronic Pump Watcher

with integrated dry run protection

FP 2

with or without cables



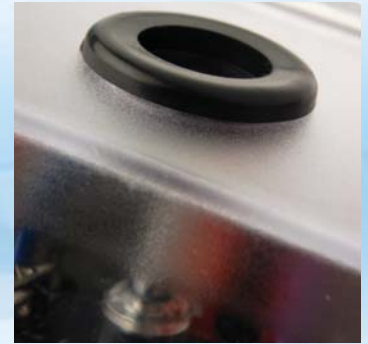
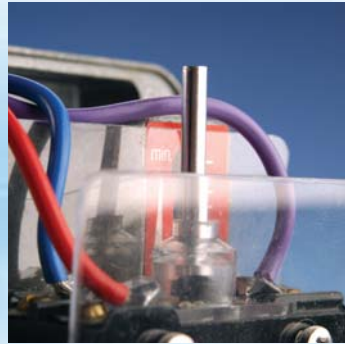
## 2- and 3-pole Pressure Switch 1...12 bar

FF51 / FF53



# Pressure Switch FF 1...300 GL

Order list for all GL certified pressure switches



Type of pressure switch	Pressure range	Order No.	Remarks
<b>FF-1-G3/8-GL</b>	<b>0,5...1,5 bar</b>	<b>F013601003</b>	<b>adjustable hysteresis, connection R3/8 inside</b>
FF-1-G3/8-G-GL	0,5...1,5 bar	F013601013	adjustable hysteresis, connection R3/8 inside, gold contacts
FF-1-G3/8-RH-GL	0,5...1,5 bar	F013601023	with hand reset, connection R3/8 inside,
FF-1-G3/8-M-GL	0,5...1,5 bar	F013601043	fixed hysteresis, connection R3/8 inside,
FF-1-G3/8-H-GL	0,5...1,5 bar	F013601053	fixed low hysteresis, connection R3/8 inside
FF-1-G1/2-GL	0,5...1,5 bar	F013601103	adjustable hysteresis, connection R1/2 inside
FF-1-G1/2-G-GL	0,5...1,5 bar	F013601113	adjustable hysteresis, connection R1/2 inside, gold contacts
FF-1-G1/2-RH-GL	0,5...1,5 bar	F013601123	with hand reset, connection R1/2 inside,
FF-1-G1/2-M-GL	0,5...1,5 bar	F013601143	fixed hysteresis, connection R1/2 inside,
FF-1-G1/2-H-GL	0,5...1,5 bar	F013601153	fixed low hysteresis, connection R1/2 inside,
FF-1-G3/8-DR-GL	0,5...1,5 bar	F013601403	adjustable hysteresis, connection R3/8 inside with restrictor
FF-1-G3/8-DR-G-GL	0,5...1,5 bar	F013601413	adjustable hysteresis, connection R3/8 inside, gold contacts, restrictor
FF-1-G3/8-DR-RH-GL	0,5...1,5 bar	F013601423	with hand reset, connection R3/8 inside, with restrictor
FF-1-G3/8-DR-M-GL	0,5...1,5 bar	F013601443	fixed hysteresis, connection R3/8 inside, with restrictor
FF-1-G3/8-DR-H-GL	0,5...1,5 bar	F013601453	fixed low hysteresis, connection R3/8 inside, with restrictor
FF-1-G1/2-DR-GL	0,5...1,5 bar	F013601503	adjustable hysteresis, connection R1/2 inside, with restrictor
FF-1-G1/2-DR-G-GL	0,5...1,5 bar	F013601513	adjustable hysteresis, connection R1/2 inside, gold contacts, restrictor
FF-1-G1/2-DR-RH-GL	0,5...1,5 bar	F013601523	with hand reset, connection R1/2 inside, with restrictor
FF-1-G1/2-DR-M-GL	0,5...1,5 bar	F013601543	fixed hysteresis, connection R1/2 inside, with restrictor
FF-1-G1/2-DR-H-GL	0,5...1,5 bar	F013601553	fixed low hysteresis, connection R1/2 inside, with restrictor

Type of pressure switch	Pressure range	Order No.	Remarks
<b>FF-6-G3/8-GL</b>	<b>1...6 bar</b>	<b>F013602003</b>	<b>adjustable hysteresis, connection R3/8 inside</b>
FF-6-G3/8-G-GL	1...6 bar	F013602013	adjustable hysteresis, connection R3/8 inside, with gold contacts
FF-6-G3/8-RH-GL	1...6 bar	F013602023	with hand reset, connection R3/8 inside
FF-6-G3/8-M-GL	1...6 bar	F013602043	fixed hysteresis, connection R3/8 inside
FF-6-G3/8-H-GL	1...6 bar	F013602053	fixed low hysteresis, connection R3/8 inside
FF-6-G1/2-GL	1...6 bar	F013602103	adjustable hysteresis, connection R1/2 inside
FF-6-G1/2-G-GL	1...6 bar	F013602113	adjustable hysteresis, connection R1/2 inside, with gold contacts
FF-6-G1/2-RH-GL	1...6 bar	F013602123	with hand reset, connection R1/2 inside
FF-6-G1/2-M-GL	1...6 bar	F013602143	fixed hysteresis, connection R1/2 inside
FF-6-G1/2-H-GL	1...6 bar	F013602153	fixed low hysteresis, connection R1/2 inside
FF-6-G3/8-DR-GL	1...6 bar	F013602403	adjustable hysteresis, connection R3/8 inside, with restrictor
FF-6-G3/8-DR-G-GL	1...6 bar	F013602413	adjustable hysteresis, connection R3/8 inside, gold contacts, restrictor
FF-6-G3/8-DR-RH-GL	1...6 bar	F013602423	with hand reset, connection R3/8 inside, with restrictor
FF-6-G3/8-DR-M-GL	1...6 bar	F013602443	fixed hysteresis, connection R3/8 inside, with restrictor
FF-6-G3/8-DR-H-GL	1...6 bar	F013602453	fixed low hysteresis, connection R3/8 inside, with restrictor
FF-6-G1/2-DR-GL	1...6 bar	F013602503	adjustable hysteresis, connection R1/2 inside, with restrictor
FF-6-G1/2-DR-G-GL	1...6 bar	F013602513	adjustable hysteresis, connection R1/2 inside, gold contacts, restrictor
FF-6-G1/2-DR-RH-GL	1...6 bar	F013602523	with hand reset, connection R1/2 inside, with restrictor
FF-6-G1/2-DR-M-GL	1...6 bar	F013602543	fixed hysteresis, connection R1/2 inside, with restrictor
FF-6-G1/2-DR-H-GL	1...6 bar	F013602553	fixed low hysteresis, connection R1/2 inside, with restrictor

**bold typeface = on stock**



Type of pressure switch	Pressure range	Order No.	Remarks
<b>FF-10-G3/8-GL</b>	<b>2...10 bar</b>	<b>F013606003</b>	<b>adjustable hysteresis, connection R3/8 inside</b>
FF-10-G3/8-G-GL	2...10 bar	F013606013	adjustable hysteresis, connection R3/8 inside, with gold contacts
FF-10-G3/8-RH-GL	2...10 bar	F013606023	with hand reset, connection R3/8 inside
FF-10-G3/8-M-GL	2...10 bar	F013606043	fixed hysteresis, connection R3/8 inside
FF-10-G3/8-H-GL	2...10 bar	F013606053	fixed low hysteresis, connection R3/8 inside
FF-10-G1/2-GL	2...10 bar	F013606103	adjustable hysteresis, connection R1/2 inside
FF-10-G1/2-G-GL	2...10 bar	F013606113	adjustable hysteresis, connection R1/2 inside, with gold contacts
FF-10-G1/2-RH-GL	2...10 bar	F013606123	with hand reset, connection R1/2 inside
FF-10-G1/2-M-GL	2...10 bar	F013606143	fixed hysteresis, connection R1/2 inside
FF-10-G1/2-H-GL	2...10 bar	F013606153	fixed low hysteresis, connection R1/2 inside
FF-10-G3/8-DR-GL	2...10 bar	F013606403	adjustable hysteresis, connection R3/8 inside, with restrictor
FF-10-G3/8-DR-G-GL	2...10 bar	F013606413	adjustable hysteresis, connection R3/8 inside, gold contacts, restrictor
FF-10-G3/8-DR-RH-GL	2...10 bar	F013606423	with hand reset, connection R3/8 inside, with restrictor
FF-10-G3/8-DR-M-GL	2...10 bar	F013606443	fixed hysteresis, connection R3/8 inside, with restrictor
FF-10-G3/8-DR-H-GL	2...10 bar	F013606453	fixed low hysteresis, connection R3/8 inside, with restrictor
FF-10-G1/2-DR-GL	2...10 bar	F013606503	adjustable hysteresis, connection R1/2 inside, with restrictor
FF-10-G1/2-DR-G-GL	2...10 bar	F013606513	adjustable hysteresis, connection R1/2 inside, gold contacts, restrictor
FF-10-G1/2-DR-RH-GL	2...10 bar	F013606523	with hand reset, connection R1/2 inside, with restrictor
FF-10-G1/2-DR-M-GL	2...10 bar	F013606543	fixed hysteresis, connection R1/2 inside, with restrictor
FF-10-G1/2-DR-H-GL	2...10 bar	F013606553	fixed low hysteresis, connection R1/2 inside, with restrictor

Type of pressure switch	Pressure range	Order No.	Remarks
<b>FF-16-G3/8-GL</b>	<b>4...16 bar</b>	<b>F013603003</b>	<b>adjustable hysteresis, connection R3/8 inside</b>
FF-16-G3/8-G-GL	4...16 bar	F013603013	adjustable hysteresis, connection R3/8 inside, with gold contacts
FF-16-G3/8-RH-GL	4...16 bar	F013603023	with hand reset, connection R3/8 inside
FF-16-G3/8-M-GL	4...16 bar	F013603043	fixed hysteresis, connection R3/8 inside
FF-16-G3/8-H-GL	4...16 bar	F013603053	fixed low hysteresis, connection R3/8 inside
FF-16-G1/2-GL	4...16 bar	F013603103	adjustable hysteresis, connection R1/2 inside
FF-16-G1/2-G-GL	4...16 bar	F013603113	adjustable hysteresis, connection R1/2 inside, with gold contacts
FF-16-G1/2-RH-GL	4...16 bar	F013603123	with hand reset, connection R1/2 inside
FF-16-G1/2-M-GL	4...16 bar	F013603143	fixed hysteresis, connection R1/2 inside
FF-16-G1/2-H-GL	4...16 bar	F013603153	fixed low hysteresis, connection R1/2 inside
FF-16-G3/8-DR-GL	4...16 bar	F013603403	adjustable hysteresis, connection R3/8 inside, with restrictor
FF-16-G3/8-DR-G-GL	4...16 bar	F013603413	adjustable hysteresis, connection R3/8 inside, gold contacts, restrictor
FF-16-G3/8-DR-RH-GL	4...16 bar	F013603423	with hand reset, connection R3/8 inside, with restrictor
FF-16-G3/8-DR-M-GL	4...16 bar	F013603443	fixed hysteresis, connection R3/8 inside, with restrictor
FF-16-G3/8-DR-H-GL	4...16 bar	F013603453	fixed low hysteresis, connection R3/8 inside, with restrictor
FF-16-G1/2-DR-GL	4...16 bar	F013603503	adjustable hysteresis, connection R1/2 inside, with restrictor
FF-16-G1/2-DR-G-GL	4...16 bar	F013603513	adjustable hysteresis, connection R1/2 inside, gold contacts, restrictor
FF-16-G1/2-DR-RH-GL	4...16 bar	F013603523	with hand reset, connection R1/2 inside, with restrictor
FF-16-G1/2-DR-M-GL	4...16 bar	F013603543	fixed hysteresis, connection R1/2 inside, with restrictor
FF-16-G1/2-DR-H-GL	4...16 bar	F013603553	fixed low hysteresis, connection R1/2 inside, with restrictor

Type of pressure switch	Pressure range	Order No.	Remarks
<b>FF-40-G3/8-GL</b>	<b>6...40 bar</b>	<b>F013604003</b>	<b>adjustable hysteresis, connection R3/8 inside</b>
FF-40-G3/8-G-GL	6...40 bar	F013604013	adjustable hysteresis, connection R3/8 inside, with gold contacts
FF-40-G3/8-RH-GL	6...40 bar	F013604023	with hand reset, connection R3/8 inside
FF-40-G3/8-M-GL	6...40 bar	F013604043	fixed hysteresis, connection R3/8 inside
FF-40-G3/8-H-GL	6...40 bar	F013604053	fixed low hysteresis, connection R3/8 inside
FF-40-G1/2-GL	6...40 bar	F013604103	adjustable hysteresis, connection R1/2 inside
FF-40-G1/2-G-GL	6...40 bar	F013604113	adjustable hysteresis, connection R1/2 inside, with gold contacts
FF-40-G1/2-RH-GL	6...40 bar	F013604123	with hand reset, connection R1/2 inside
FF-40-G1/2-M-GL	6...40 bar	F013604143	fixed hysteresis, connection R1/2 inside
FF-40-G1/2-H-GL	6...40 bar	F013604153	fixed low hysteresis, connection R1/2 inside
FF-40-G3/8-DR-GL	6...40 bar	F013604403	adjustable hysteresis, connection R3/8 inside, with restrictor
FF-40-G3/8-DR-G-GL	6...40 bar	F013604413	adjustable hysteresis, connection R3/8 inside, gold contacts, restrictor
FF-40-G3/8-DR-RH-GL	6...40 bar	F013604423	with hand reset, connection R3/8 inside, with restrictor
FF-40-G3/8-DR-M-GL	6...40 bar	F013604443	fixed hysteresis, connection R3/8 inside, with restrictor
FF-40-G3/8-DR-H-GL	6...40 bar	F013604453	fixed low hysteresis, connection R3/8 inside, with restrictor
FF-40-G1/2-DR-GL	6...40 bar	F013604503	adjustable hysteresis, connection R1/2 inside, with restrictor
FF-40-G1/2-DR-G-GL	6...40 bar	F013604513	adjustable hysteresis, connection R1/2 inside, gold contacts, restrictor
FF-40-G1/2-DR-RH-GL	6...40 bar	F013604523	with hand reset, connection R1/2 inside, with restrictor
FF-40-G1/2-DR-M-GL	6...40 bar	F013604543	fixed hysteresis, connection R1/2 inside, with restrictor
FF-40-G1/2-DR-H-GL	6...40 bar	F013604553	fixed low hysteresis, connection R1/2 inside, with restrictor

Type of pressure switch	Pressure range	Order No.	Remarks
<b>FF-160-G3/8-GL</b>	<b>20...160 bar</b>	<b>F013607003</b>	<b>adjustable hysteresis, connection R3/8 inside</b>
FF-160-G3/8-G-GL	20...160 bar	F013607013	adjustable hysteresis, connection R3/8 inside, with gold contacts
FF-160-G3/8-RH-GL	20...160 bar	F013607023	with hand reset, connection R3/8 inside
FF-160-G3/8-M-GL	20...160 bar	F013607043	fixed hysteresis, connection R3/8 inside
FF-160-G3/8-H-GL	20...160 bar	F013607053	fixed low hysteresis, connection R3/8 inside

Type of pressure switch	Pressure range	Order No.	Remarks
<b>FF-300-G3/8-GL</b>	<b>30...300 bar</b>	<b>F013605003</b>	<b>adjustable hysteresis, connection R3/8 inside</b>
FF-300-G3/8-G-GL	30...300 bar	F013605013	adjustable hysteresis, connection R3/8 inside, with gold contacts
FF-300-G3/8-RH-GL	30...300 bar	F013605023	with hand reset, connection R3/8 inside
FF-300-G3/8-M-GL	30...300 bar	F013605043	fixed hysteresis, connection R3/8 inside
FF-300-G3/8-H-GL	30...300 bar	F013605053	fixed low hysteresis, connection R3/8 inside





# The GL certified ABB Pressure Switches

Pressure Switches FF 1...300 GL



**ABB**  
03/04  
Type: FF-1-G3/8-GL  
Electrobleichbereich: 0.3-1.5 bar  
Adjustable range: 0.3-1.5 bar  
Pressure: 9 bar  
Part No: F013601003  
Serial No: K412100.8/003  
EL. Safety/lock/EL. rating: 24/5 VDC



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