



FF 4 Pressure Controls 0.11 to 250 bar Technical Data

Document Nr.: A3.5.017/E 3
Replaces doc.: A3.5.017/E 2
Date: 08.04.2002

Features

- Large space for cable mounting
- Easy to adjust
- Separate screw for upper and lower switching-point setting
- Accurate scale
- Transparent, UV-resistant cover
- Protection class: IP65
- Worldwide approvals
- High repeatability of set switch-points

Applications

- Air compressors
- Water pumps
- Booster pumps
- Fire-fighting equipment
- Oil supply equipment
- High-pressure cleaning apparatus



FF 4
Pressure Controls 0.11 to 250 bar

ALCO FF 4 series of pressostats are suitable for a wide range of industrial and commercial applications. Their functions, as pressure switches, limiters or cut-outs can be utilized for:

- Monitoring and controlling the pressure of liquid or gaseous media in pipelines, tanks, vats, pressure vessels and apparatus.
- Duties in process control, cooling, pneumatics and hydraulics.
- Pressure monitoring of cooling circuits and lubrication systems on various types of machinery.
- Automatic switching of pump and compressor motors for supplying water to dwellings, booster pumps, fire-fighting equipment and on compressed air systems.

Mode of operation

The pressure of the monitored medium operates against a flat diaphragm, bellows or a plunger (depending on pressure range). A system of levers and springs works on a snap-action cascade switch of high resistance to vibration, ensuring flutter-free switching.

Low pressure on the diaphragm closes contact 1-2. This can be used as a "RUN" signal for a pump or compressor motor.

If pressure exceeds the upper switching-point, contact 1-2 opens and contact 1-4 closes. The applied motor will be switched off. Contact 1-4 is often used to indicate the "off" condition.

Contact 1-2 will close again, when the pressure on the diaphragm has decreased below the set lower switch-point.

Included in standard units:

- Rubber grommet with hole for cable entry
- Nylon strap to secure cable
- Installation and operating instructions

Upper and lower switch points can be adjusted independently of each other using a screwdriver. The two switch points are indicated on the scale inside the unit.

Construction

Pressure connection, pressure sensing element, switch mechanism and electrical terminals are fitted on a silumin base. Scale and switch are protected against environmental effects by an impact-resistant, transparent polycarbonate cover, which is creepage resistant (CTI 200/100M) and can be lead-sealed.

New: Pressure connector "Y", made out of plastic for demineralized water applications.

Options upon request

- Gold plated contacts
- Cable gland Pg 13,5 for higher protection IP 65
- Indicator lamp for switching condition
- Viton diaphragm for aggressive media
- Manual reset
- GL -approved versions
- UL-/CSA-approved versions
- Throttle section H138-043 for FF 4-2 to FF 4-32
- Other pressure connectors. Contact your local ALCO CONTROLS wholesaler for availability
- Special screw for lead seal cover



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Date: 12.06.2002

Type	Part Code Nr.	Upper switch point adjustable from ... to bar	Lower switch point adjustable from ... to bar	Smallest differential at lower ... higher end of range	max. operating pressure bar	max. test pressure bar	Standard settings bar
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Pressure controls with perbunan diaphragm
for mineral oils, water and air.

VDE 0660, IEC 60947-5-1

Pressure connector: H (G^{3/8} female, DIN ISO 228/l)

FF 4-2 DAH	0 182 129	0.11 ... 2	0.04 ... 1.89	0.07 0.11	20	40	0.5 / 1.5
FF 4-4 DAH	0 182 131	0.22 ... 4	0.07 ... 3.75	0.15 0.25	24	40	1 / 3
FF 4-8 DAH	0 182 143	0.5 ... 8	0.2 ... 7.5	0.3 0.5	30	40	2 / 6
FF 4-16 DAH	0 182 156	1 ... 16	0.4 ... 15	0.6 1	36	48	4 / 12
FF 4-32 DAH	0 182 168	2 ... 32	0.8 ... 30	1.2 2	52	64	10 / 20

Pressure controls with perbunan diaphragm

VDE 0660, IEC 60947-5-1

and plastic pressure connector for demineralized water.

Pressure connector: Y (G^{3/8} female, DIN ISO 228/l)

FF 4-2 DAY	0 714 440	0.11 ... 2	0.04 ... 1.89	0.07 0.11	6	12	0.5 / 1.5
FF 4-4 DAY	0 714 441	0.22 ... 4	0.07 ... 3.75	0.15 0.25	8	12	1 / 3
FF 4-8 DAY	0 714 442	0.5 ... 8	0.2 ... 7.5	0.3 0.5	12	16	2 / 6
FF 4-10 DAY	0 714 475	0.7 ... 10	0.3 ... 9.2	0.4 0.8	12	16	4 / 5
FF 4-16 DAY	0 714 443	1 ... 16	0.4 ... 15	0.6 1	20	24	4 / 12

DIN approved pressure controls with stainless steel bellows (EN 12263/DIN32733)

DIN 3398 Teil 4, VDE 0660, IEC 60947-5-1

Suitable for liquid fuel, heat transfer oil up to 200°C and desalinated water.

Pressure connector: G (G^{1/4} female, DIN ISO 228/l), stainless steel

FF 4-12 AAG	0 710 292	1 ... 12	0.5 ... 11.2	0.5 0.8	12	16	6 / 7
FF 4-30 AAG	0 710 293	4 ... 30	1 ... 26.4	1.8 3.6	30	42	16 / 20

High pressure controls with plastic plunger

VDE 0660, IEC 60947-5-1

These pressure switches operate with a plastic plunger, which is resistant to detergents, de-greasing and polish-removal agents. The **FF 4-60 PAH ... FF 4-250 PAH** pressostats are thus **particularly suitable for use on high-pressure cleaning**

apparatus. Throttle screw H 115-115.001 is fitted as standard inside the pressure connection on these units. This must be removed for use with viscous media.

Pressure connector: H (G^{3/8} female, DIN ISO 228/l)

FF 4-60 PAH	0 183 412	8 ... 60	4 ... 52	4 8	100	120	20 / 40
FF 4-120 PAH	0 183 424	16 ... 120	8 ... 104	8 16	200	240	20 / 80
FF 4-250 PAH	0 038 594	30 ... 250	14 ... 226	12 24	400	500	100 / 200



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Pressure controls with perbunan diaphragm

VDE 0170/0171, VDE 0660, IEC 60947-5-1

Flat diaphragm, resistant to mineral oils. UL-file: E 85 974

Pressure connector: F (1/4"-18 NPTF per ANSI B 1.20.3 - 1976)

Type	Part Code Nr.	Upper switch point adjustable from ... to	Lower switch point adjustable from ... to	Smallest differential at lower ... higher		max. operating pressure	max. test pressure	Standard settings
		P.S.I.G	P.S.I.G	end of range		P.S.I.G	P.S.I.G	P.S.I.G
FF 444-V1 DAF	0 097 308	1 ... 29	1/2 ... 27	1	2	290	580	7 / 22
FF 444-V2 DAF	0 097 309	3 ... 58	1 ... 54	2	4	348	580	14 / 44
FF 444-V3 DAF	0 097 310	7 ... 116	3 ... 109	4	7	435	580	29 / 87
FF 444-V4 DAF	0 097 311	15 ... 232	6 ... 218	9	14	522	696	58 / 174
FF 444-V5 DAF	0 097 312	29 ... 464	12 ... 435	17	29	769	928	145 / 290

Pressure controls with perbunan diaphragm and manual reset.

Manual reset is possible, when pressure decreased below lower switch point. Pressure connector: F (1/4"-18 NPTF per ANSI B 1.20.3-1976)

FF 444-V4 DRF	3 332 400	15 ... 232		9	14	522	696	174
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Pressure controls for fire-protection plant

Especially demanding requirements regarding quality and functional reliability are placed on pressure switches intended for pressure monitoring on fire-protection equipment.

- FF 4-... VdS are approved for use in fixed watersprinkler installations by the German Association of Insurers (Verband der Sachversicherer)

VdS-approved

- FF 4-2 VdS is a typical alarm pressure switch. The setting range is limited to 1 bar. Differential lever and spring are omitted to assure a minimum resetting differential.
- FF 4-10 VdS and FF 4-16 VdS pressure switches limit the switching differential to 1.5 bar maximum.

Pressure connector: I (G 1/2 female, DIN ISO 228/I)

		bar	bar	typ bar	max bar	bar	bar	bar
FF 4-2 VdS DAI	3 334 200	0.5 ... 1	0.4 ... 0.9	0.1 fixed		20	40	0.6 / 0.7
FF 4-10 VdS DAI	3 318 700	0.7 ... 10	0.3 ... 8.5	0.5	1.5	32	40	4 / 5
FF 4-16 VdS DAI	3 334 300	1 ... 16	0.4 ... 15	0.8	1.5	36	48	11 / 12

Pressure controls for intrinsically-safe equipment in coal-mining, BVS-approved

The certificate BVS 93.C.1042 has been issued by the DMT-Gesellschaft für Forschung und Prüfung mbH, for the use of FF 4-...i pressure controls on intrinsically-safe plant in coal mining.

The products are delivered with cable gland Pg 13,5 Ms resulting in protection class IP 65.

Explosion protection to VDE 0170/0171: **EEx ia I**

Please ask your local ALCO CONTROLS representative for further details and order numbers.

Technical data

Rated operational current at 230 V	
Non-Inductive Amp. (AC1)	16 A
Inductive Amp. (AC15)	6 A
Inductive Amp. (DC11)	0.1 A
Motor rating, Full load Amp. (FLA)	10 A
Motor rating, Locked rotor Amp. (LRA)	60 A

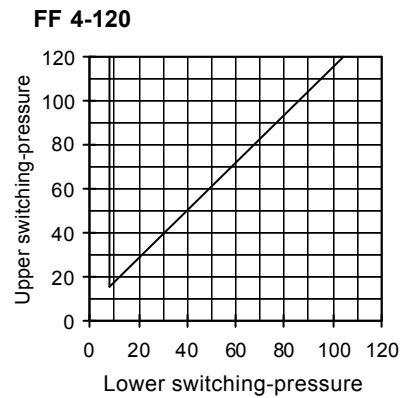
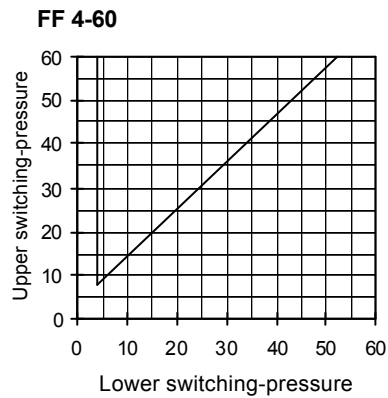
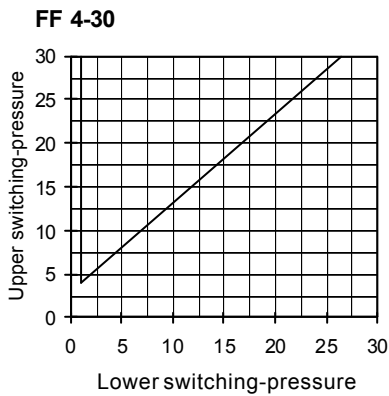
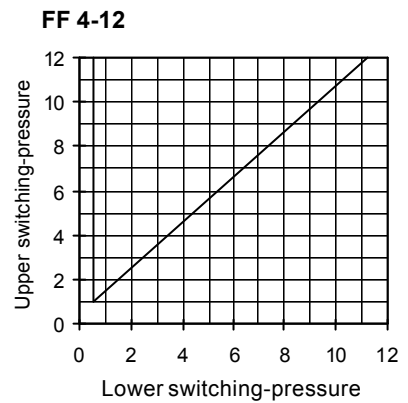
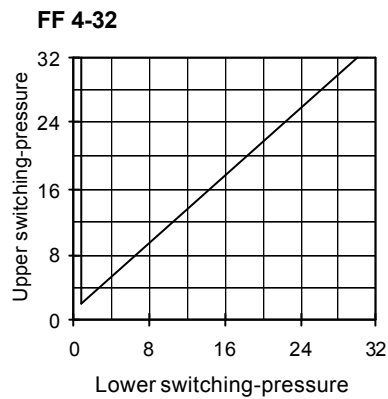
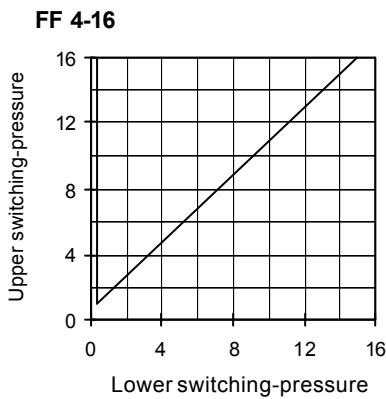
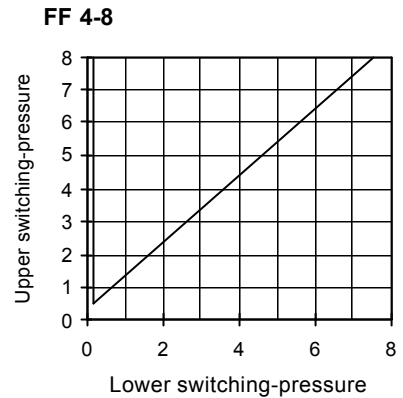
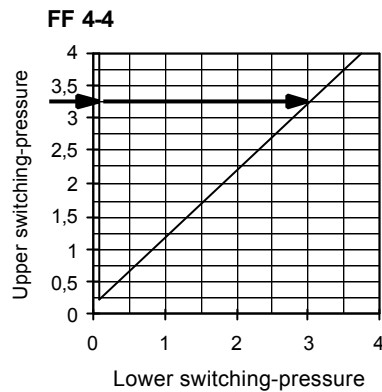
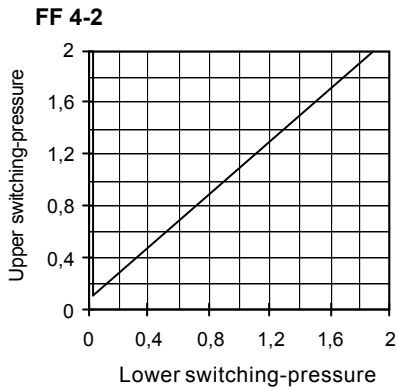
Protection to DIN 40 050 T9 / IEC 529	
with rubber grommet	IP 54
with cable gland Pg 13.5 or appliance socket	IP 65
Ambient temperature range, standard pressure connector	-20...+70°C
Ambient temperature range, plastic pressure connector	0...+50°C
Resistance to vibration, 10 to 1000 Hz	4g



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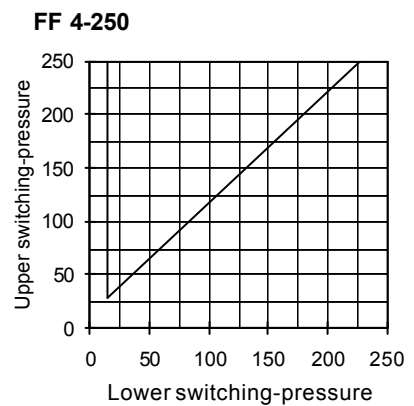
Switch Point Diagrams (all units in bar)



Above charts show the smallest adjustable differential.

Example per figure FF 4-4:

If upper setting is at 3.25 bar, lower setting can be adjusted between 0.07 and 3.0 bar (see arrows in the drawing).

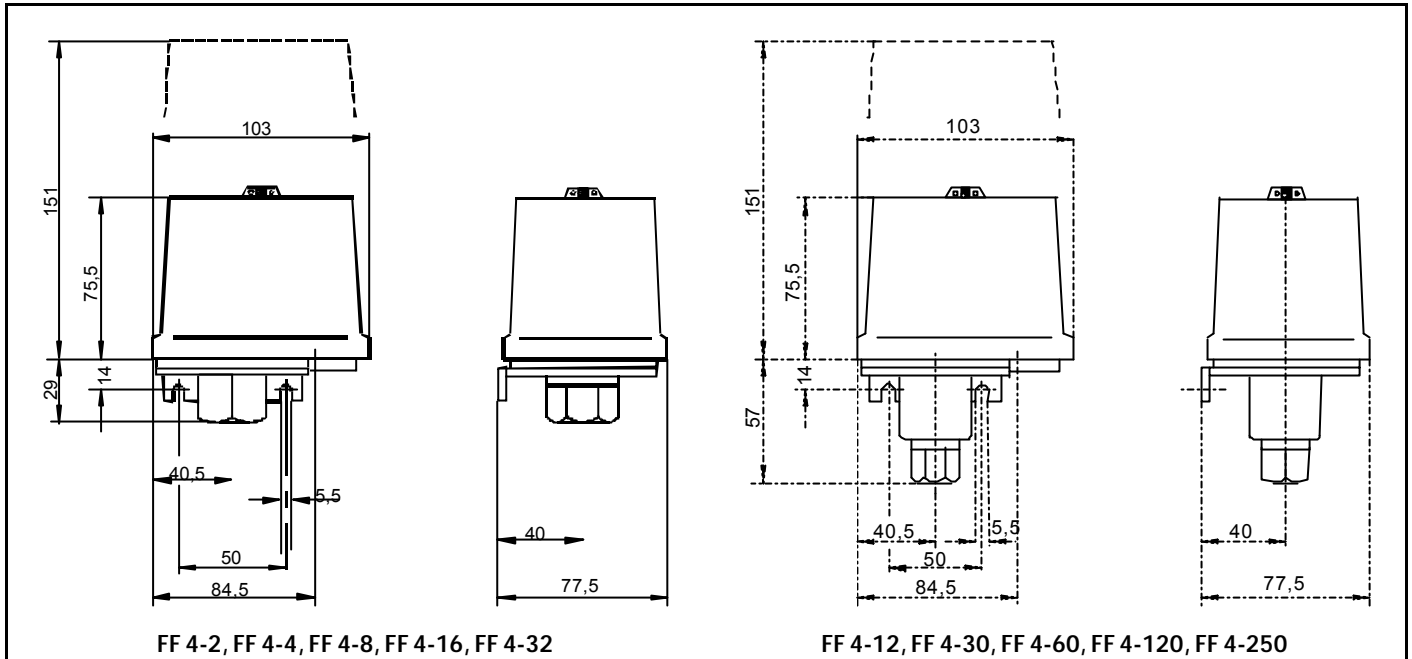




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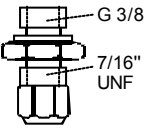
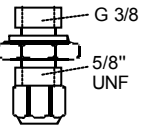
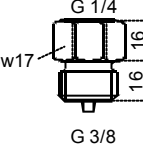
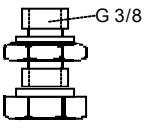
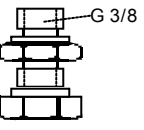
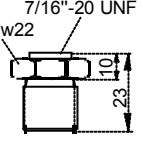
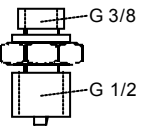
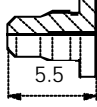
Dimensions:



FF 4-2, FF 4-4, FF 4-8, FF 4-16, FF 4-32

FF 4-12, FF 4-30, FF 4-60, FF 4-120, FF 4-250

Accessories

 <p>Brass gland for 6 x 1 copper tube Type: R-7/16" UNF FN 262 Ms Part Code Nr. 0526842 Approx. weight: 0.18 kg</p>	 <p>Brass gland for 10 x 1 copper tube Type: R-5/8" UNF FN 262 Ms Part Code Nr. 0526830 Approx. weight: 0.18 kg</p>	 <p>Nipple, Steel, G³/₈ - G¹/₄ female Type: H 124-141 Part Code Nr. 0136857 Approx. weight: 0.085 kg</p>
 <p>Steel Ermeto connector for Ø 6 mm steel pipe Type: R-AD 6-FN 43 Part Code Nr. 0405466 Approx. weight: 0.1 kg</p>	 <p>Steel Ermeto connector for Ø 10 mm steel pipe Type: R-AD 10-FN 43 Part Code Nr. 0405478 Approx. weight: 0.1 kg</p>	 <p>Nipple, Brass, G³/₈ - 7/16" - 20 UNF, female Type: H124-202.1 Part Code Nr. 0137051 Approx. weight: 0.05 kg</p>
 <p>Steel manometer fitting G³/₈ - G¹/₂ Type: H 124-114 Part Code Nr. 0403358 Approx. weight: 0.18 kg</p>	 <p>Throttle screw for FF 4-2 ...-32 Type: H 138-043 Part Code Nr. : 0021485 Approx. weight: 0.003 kg</p>	



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Pressure Connectors

Contact your local ALCO CONTROLS wholesaler for availability of these pressure connectors with the pressostat of your choice.

	<p>Code: G G ¼ female, brass / steel DIN ISO 228/1</p>		<p>Code: H G ¾ female, silumin DIN ISO 228/1</p>		<p>Code: I G ½ female, silumin DIN ISO 228/1</p>
			<p>Code: Y G ¾ female, polyamid DIN ISO 228/1</p>		
	<p>Code: R G ¼ A male, brass DIN ISO 228/1</p>		<p>Code: F ¼" - 18 NPTF female ANSI B 1.20.3 - 1976</p>		<p>Code: N ¼" - 18 NPTF male ANSI B 1.20.3 - 1976</p>

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