

DESCRIPTION

Magnetrol's series 24 liquid level switches are single switch mechanism units available for level alarm or shut down applications. The B24 is designed for service in steam boilers up to 250 lbs WSP. The C24 is designed for general industrial use.

FEATURES

- Cast iron float cage
- Process temperature up to 200 °C (400 °F)
- Removable sensing unit from cage allows easy maintenance
- Single switch level
- Specific gravity as low as 0,85
- Process pressure up to 27,6 bar (400 psi)
- Standard anti corrosive protection
- Materials of construction:
 - cage: cast iron
 - float and trim: 316 (1.4401)
 - magnetic sleeve: 400 series SST

APPLICATIONS

- Boilers
- Condensate receivers
- Flash tanks
- Holding tanks
- Day tanks
- Dump valve controls

Model	Pressure bar (psi)	Temperature °C (°F)	Min. specific gravity
B24	17,2 (250)	200 (400)	0,85
C24	27,6 (400)	40 (100)	

Standard cast iron cages



AGENCY APPROVALS

Agency	Approval
ATEX	II 2G EEx d II C T6, explosion proof II 1G EEx ia II C T6, intrinsically safe
CENELEC	EEx d II C T6, explosion proof
CCE ^①	R1 (1) 136/MI/433, explosion proof
FM	Class I, Div. 1, Groups C & D Class II, Div. 1, Groups E, F & G, Type NEMA 7/9
FM/CSA ^②	Non-Hazardous area Explosion proof area – Groups B, C, D, E, F & G Type NEMA 4X/7/9
SAA ^②	Explosion proof area
LRS	Lloyds Register of Shipment (marine applications)
GOST/ GOSGORTECHNADZOR ^②	Russian Authorisation Standards
Other approvals are available, consult factory for more details	

^① For CCE approved units, use the ATEX explosion proof model numbers.

^② Consult factory for proper model numbers.

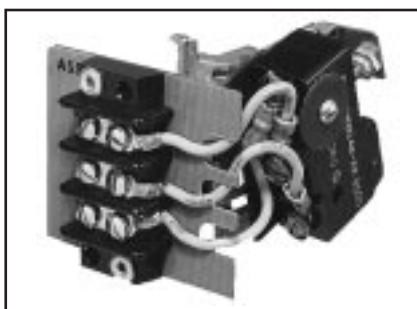
AVAILABLE SWITCH MECHANISMS

Type of switch module ^①	Max. Process Temp. ^②	Switch ratings – A res. ^③			Code
		24 V DC	240 V AC	120 V AC	
Micro switch	max 120 °C (250 °F)	6	15	15	B
Micro switch	max 200 °C (400 °F)	10	15	15	C
Micro switch with gold alloy contacts	max 120 °C (250 °F)	1	–	1	U
Hermetically sealed micro switch with silver plated contacts	max 200 °C (400 °F)	3	1	1	W
Hermetically sealed micro switch with gold plated contacts	max 200 °C (400 °F)	0,5	0,5	0,5	X
Proximity switch - type SJ 3.5 SN	max 100 °C (210 °F)	NA	NA	NA	V
Mercury switch	max 200 °C (400 °F)	10	6,5	13	A
Pneumatic bleed type (open air)	max 200 °C (400 °F)	NA	NA	NA	J
Pneumatic non bleed type (closed circuit)	max 200 °C (400 °F)	NA	NA	NA	K

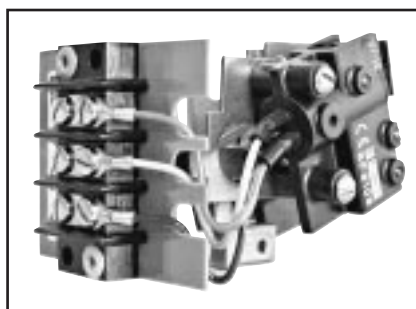
^① For applications with heavy vibration, consult factory for suited switch modules.

^② Max process temperature is specified at 40 °C (100 °F) ambient temperature and for non condensing applications.

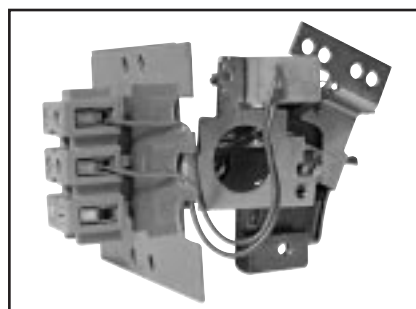
^③ For more details - see bulletin BE 42-120.



Type B, C & U



Type W & X



Type V



Type A



Type J & K

AVAILABLE HOUSINGS



- For Non Ex use
- IP 66
- Die cast Aluminium
- 2 Entries (one plugged)
- Standard blue anti corrosive coating
- Housing heater/drain available, consult factory



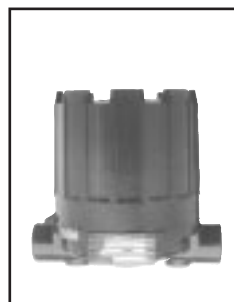
- For Exd/Exi use
- IP 66
- Die cast Aluminium
- 2 Entries (one plugged)
- Standard blue anti corrosive coating
- ATEX II 2G EEx d II C T6
- ATEX II 1G EEx ia II C T6



- For Exd use
- IP 66
- Cast Iron
- One entry (2 entries at request)
- Standard blue anti corrosive coating
- CENELEC EEx d II C T6



- For pneumatic switches
- IP 53 (NEMA 3R)
- IP 55 optional at request
- Alu base / cold rolled steel cover
- Standard blue anti corrosive coating

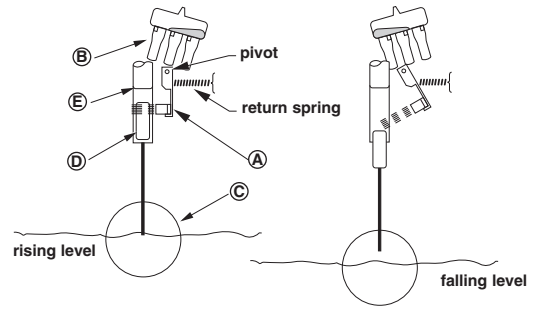


- For Exd use
- IP 66 (NEMA 7/9)
- Die cast Aluminium
- 2 Entries (one plugged)
- Standard blue anti corrosive coating
- FM, Class I, Div. 1, Groups C & D
- FM, Class II, Div. 1, Groups E, F & G

PRINCIPLE OF OPERATION

A permanent magnet (A) is attached to a pivoted switch (B). As the float (C) rises following the liquid level, it raises the magnet attractor (D) into the field of the magnet, which in turn snaps against the non-magnetic barrier tube (E), tilting the switch. The barrier tube provides a static seal between the switch mechanism and the float, eliminating the need for a flexing bellows seal, packing gland or other failure prone sealing elements.

When the liquid level falls, the float draws the magnet attractor below the magnetic field. The magnet swings out and tilts the switch to the reverse position causing low level switch actuation (A).



EXPEDITE SHIP PLAN (ESP)

Several mechanical switches are available for quick shipment, within max. 3 weeks after factory receipt of purchase order, through the Expedite Ship Plan (ESP).

Models covered by ESP service are conveniently grey coded in the selection data charts.

To take advantage of ESP, simply match the grey coded model number codes (standard dimensions apply).

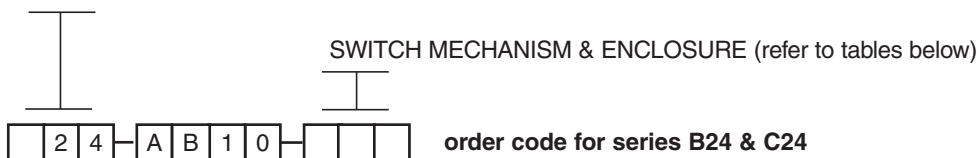
ESP service may not apply to orders of ten units or more. Contact your local representative for lead times on larger volume orders, as well as other products and options.

SELECTION DATA

A complete liquid level switch, consists of 1 order code:

BASIC MODEL NUMBER

B 2 4	Float switch for steam boiler applications with self-cleaning brass liner
C 2 4	Float switch for general industrial applications



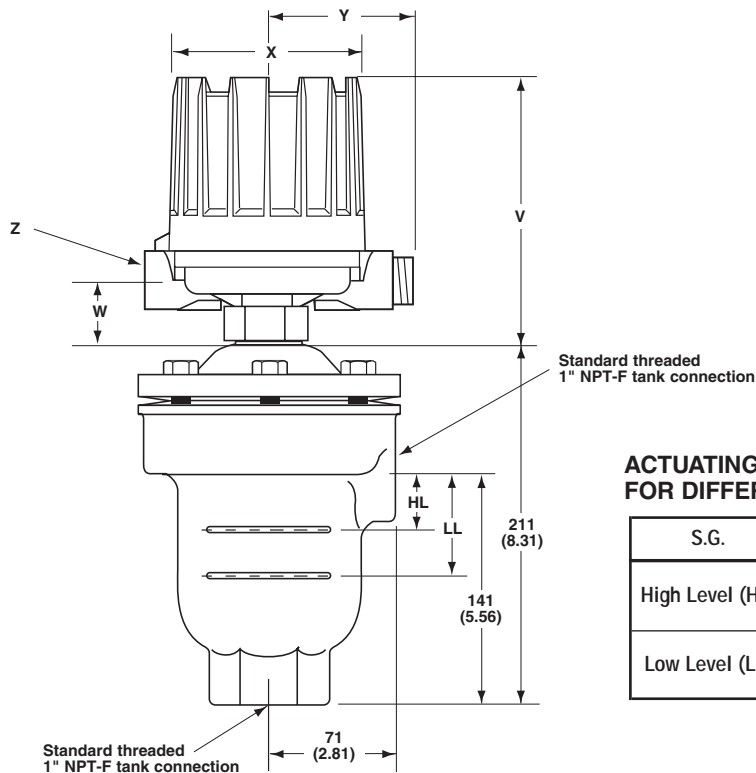
Select electric switch mechanism & enclosure (see page 2 for switch ratings)

qty and switch type		All models with material code A								
		Weather proof (IP 66)		ATEX (IP 66)				CENELEC (IP 66)		FM (IP 66)
				II 2G EEx d IIC T6		II 1G EEx ia II C T6		EEx d IIC T6		NEMA 7/9
		cast Aluminium		cast Aluminium		cast Aluminium		cast Iron		cast Alu.
		M20 x 1,5	1" NPT	M20 x 1,5	1" NPT	M20 x 1,5	1" NPT	M20 x 1,5	3/4" NPT	1" NPT
A	1 x SPDT	A2P	AAP	AHC	AAC	-	-	AK7	AU7	AKP
	1 x DPDT	A8P	ADP	AJC	ABC	-	-	AD7	AW7	ANP
B	1 x SPDT	B2P	BAP	BHC	BAC	-	-	BK7	BU7	BKP
	1 x DPDT	B8P	BDP	BJC	BBC	-	-	BD7	BW7	BNP
C	1 x SPDT	C2P	CAP	CHC	CAC	C2L	CAL	CK7	CU7	CKP
	1 x DPDT	C8P	CDP	CJC	CBC	C8L	CDL	CD7	CW7	CNP
U	1 x SPDT	U2P	UAP	UHC	UAC	U2L	UAL	UK7	UU7	UKP
	1 x DPDT	U8P	UDP	UJC	UBC	U8L	UDL	UD7	UW7	UNP
V	-	-	-	-	-	VFS	VHS	-	-	-
W	1 x SPDT	W2P	WAP	WHC	WAC	W2L	WAL	WK7	WU7	WKP
	1 x DPDT	-	-	-	-	-	-	-	-	-
X	1 x SPDT	X2P	XAP	XHC	XAC	X2L	XAL	XX7	XU7	XKP
	1 x DPDT	-	-	-	-	-	-	-	-	-

Select pneumatic switch mechanism & enclosure

Pneumatic switch type	Max supply pressure bar (psi)	Max liquid temperature °C (°F)	Bleed orifice Ø mm (inches)	NEMA 3R (IP 53)
Series J (open air)	4,1 (60)	200 (400)	2,39 (0.094)	JEG
Series K (closed circuit)	2,8 (40)	200 (400)	-	KOG

DIMENSIONS IN mm (inches)



ACTUATING LEVELS IN mm (inches) FOR DIFFERENT SPECIFIC GRAVITIES

S.G.	0,85	0,90	0,95	1,00	1,05	1,10
High Level (HL)	18 (0.71)	20 (0.79)	22 (0.87)	24 (0.94)	25 (0.98)	27 (1.06)
Low Level (LL)	40 (1.57)	41 (1.61)	42 (1.65)	43 (1.69)	44 (1.73)	45 (1.77)

Housing type	V		W		ø X		Y		Z
	mm	inches	mm	inches	mm	inches	mm	inches	
Weatherproof - FM (NEMA 7/9) - ATEX (Cast Alu)	202	7.94	42	1.66	151	5.93	109	4.29	M20 x 1,5 (*) or 1" NPT (2 entries - 1 plugged) (*) not for FM (NEMA 7/9)
CENELEC (Cast Iron)	249	9.80	45	1.77	143	5.63	110	4.33	M20 x 1,5 or 3/4" NPT (single entry - 2 entries at request)
Pneumatics Switch Module J	165	6.50	39	1.54	118	4.65	110	4.33	1/4" NPT
Pneumatics Switch Module K							130	5.12	

Allow 200 mm (7.87") overhead clearance / All housings are 360 ° rotatable

QUALITY ASSURANCE - ISO 9001



THE QUALITY ASSURANCE SYSTEM IN PLACE AT MAGNETROL GUARANTEES THE HIGHEST LEVEL OF QUALITY DURING THE DESIGN, THE CONSTRUCTION AND THE SERVICE OF CONTROLS. OUR QUALITY ASSURANCE SYSTEM IS APPROVED AND CERTIFIED TO ISO 9001 AND OUR TOTAL COMPANY IS COMMITTED TO PROVIDING FULL CUSTOMER SATISFACTION BOTH IN QUALITY PRODUCTS AND QUALITY SERVICE.

PRODUCT WARRANTY

ALL MAGNETROL MECHANICAL LEVEL CONTROLS ARE WARRANTED FREE OF DEFECTS IN MATERIALS AND WORKMANSHIP FOR FIVE FULL YEARS FROM THE DATE OF ORIGINAL FACTORY SHIPMENT.

IF RETURNED WITHIN THE WARRANTY PERIOD; AND, UPON FACTORY INSPECTION OF THE CONTROL, THE CAUSE OF THE CLAIM IS DETERMINED TO BE COVERED UNDER THE WARRANTY; THEN, MAGNETROL INTERNATIONAL WILL REPAIR OR REPLACE THE CONTROL AT NO COST TO THE PURCHASER (OR OWNER) OTHER THAN TRANSPORTATION.

MAGNETROL SHALL NOT BE LIABLE FOR MISAPPLICATION, LABOR CLAIMS, DIRECT OR CONSEQUENTIAL DAMAGE OR EXPENSE ARISING FROM THE INSTALLATION OR USE OF THE EQUIPMENT. THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED, EXCEPT, SPECIAL WRITTEN WARRANTIES COVERING SOME MAGNETROL PRODUCTS.



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UNDER RESERVE OF MODIFICATIONS

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