



HENNLICH

MERES

# VZTLAKOVÉ SPÍNAČE HLADINY H13/H31/H51/N15/N32/N52

## DESCRIPTION

External cage type level switches are completely self-contained units designed for side mounting to a tank or vessel with threaded or flanged pipe connections. These switches are engineered to customer specifications.

## FEATURES

- Carbon steel or stainless steel cages (other materials available at request)
- Process temperature up to 260 °C (500 °F)
- Single switch level
- Standard anti corrosive protection

### Flanged cages:

- Removable sensing unit from cage allows easy maintenance
- Specific gravity as low as 0,40
- Process pressure up to 345 bar (5000 psi)

### Sealed cages:

- Sensing unit and cage are self-containing
- Specific gravity as low as 0,40
- Process pressure up to 345 bar (5000 psi)

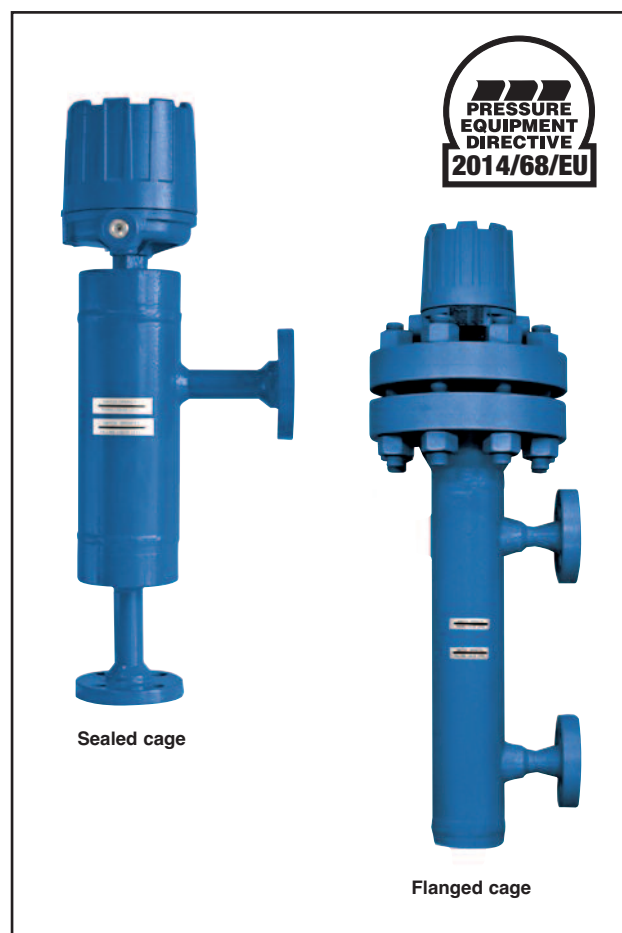
### Optional:

- NACE construction
- Interface calibration
- Customized installation dimensions
- Special actuating levels
- Special tank connections
- Special exterior surface preparation and finish

## APPLICATIONS

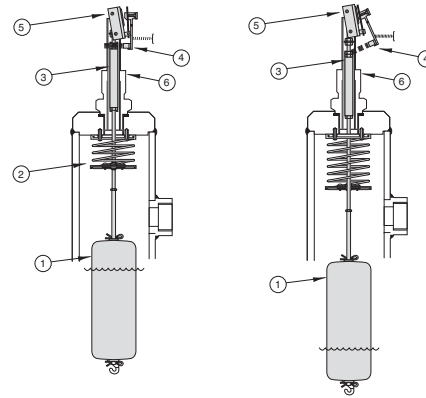
- Foaming or surging liquids
- Agitated fluids
- Sewage handling
- Dirty liquids
- Paints
- Varnishes
- Heavy oils
- Liquids with solids

## Standard & tailor made designs

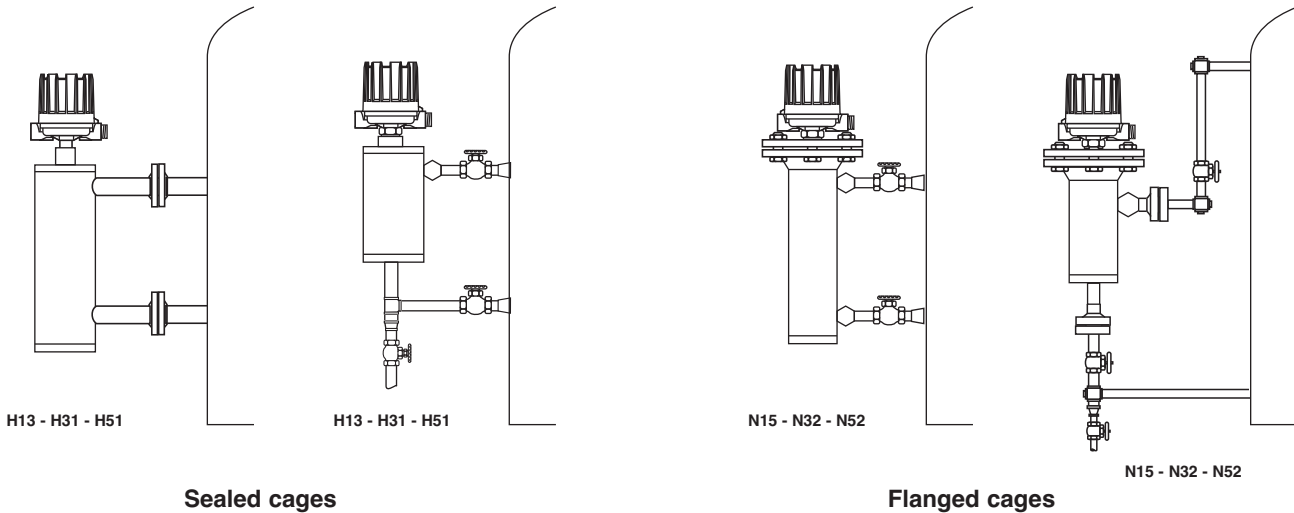


## PRINCIPLE OF OPERATION








The displacer (1), which is heavier than the liquid, rests its weight on a spring. Rising liquid level imparts buoyancy to the displacer allowing the spring (2) to move upward. The attraction sleeve (3), attached to the spring, moves upward into the field of a permanent magnet (4). Magnet motion tilts the switch (5) for actuation. A non-magnetic barrier tube (6) provides a static seal between the switch mechanism and the displacer assembly.



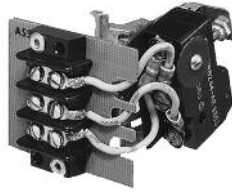
## MOUNTING



## AGENCY APPROVALS

AGENCY	APPROVED MODEL	AREA CLASSIFICATION
<b>ATEX</b> 	All with electric switch mechanism and housing listed as ATEX Ex d	ATEX II 2 G Ex d IIC T6 Gb
	All with electric switch mechanism and housing listed as ATEX Ex ia	ATEX II 1 G Ex ia IIC T6 Ga
<b>FM</b> 	All with electric switch mechanism and housing listed as NEMA 7/9	Class I, Div 1, groups C & D Class II, Div 1, Groups E, F & G
	Consult factory for proper model numbers	Class I, Div 1, groups B, C & D Class II, Div 1, Groups E, F & G
<b>IECEX</b> 	All with electric switch mechanism and housing listed as IECEX Ex d	Ex d IIC T6
	All with electric switch mechanism and housing listed as IECEX Ex ia	Ex ia IIC T6 Ga
<b>CSA</b> 	Consult factory for proper model numbers	Class I, Div 1, groups C & D Class II, Div 1, Groups E, F & G
	Consult factory for proper model numbers	Class I, Div 1, groups B, C & D Class II, Div 1, Groups E, F & G
<b>EAC (Russia, Kazakhstan, Belarus)</b> 	All with electric switch mechanism and housing listed as ATEX Ex d	1Ex d IIC T6 Gb
	All with electric switch mechanism and housing listed as ATEX Ex ia	0Ex ia IIC T4 Ga
<b>LRS</b> 	All sealed cages H13, H31, H51	Marine approval
<b>CE</b> 	The units are conform to the ATEX directive 2014/34/EU, PED directive 2014/68/EU, Low Voltage Directive 2014/35/EU and RoHS directive 2011/65/EU	
Other approvals are available, consult factory for more details		

# SWITCH MECHANISMS AND HOUSINGS



## Series B, C, D & U Dry contact switches <sup>①</sup>

- Series B and C switches are general purpose units with a selection of maximum liquid temperature ratings
- Series D switch is designed for high DC current applications
- Series U switches have gold alloy contacts



## Series J & K Pneumatic switches <sup>③</sup>

- Suited for process industry applications in hazardous locations or where electrical power is not available
- Series J bleed type switch is intended for general purpose applications
- Series K switch is specially designed to provide non-bleed operation with a high degree of vibration resistance



## Series HS <sup>②</sup>, F, W, X & 8 Hermetically sealed switches

- Entire mechanism and contacts are contained within a positively pressurized capsule with series HS
- Ideal for use in salt and other corrosive atmospheres



## Switch housings <sup>①</sup>

- Die cast aluminium housings
- Cast iron housings
- Stainless steel housings
- Optional housing heaters and drains available for some housings
- Pneumatic switch mechanisms available with alu base/cold rolled steel cover



## Series V Inductive Proximity switch <sup>④</sup>

- Series V switches are inductive proximity switches type SJ3,5-SN with a maximum liquid temperature rating of +100 °C (+210 °F)

## Basic electrical ratings <sup>①</sup>

Voltage	Switch Series and Non-Inductive Ampere Rating								
	B	C	D	F	HS	U	W	X	8
120 V AC	15.00	15.00	10.00	2.50	5.00	1.00	1.00	0.50	1.00
240 V AC	15.00	15.00	—	—	5.00	—	1.00	0.50	—
24 V DC	6.00	6.00	10.00	4.00	5.00	1.00	3.00	0.50	3.00
120 V DC	0.50	1.00	10.00	0.30	0.50	—	0.50	0.50	—
240 V DC	0.25	0.50	3.00	—	0.25	—	—	—	—

<sup>①</sup> For more details see bulletin BE 42-683

<sup>②</sup> For more details on HS Hermetically sealed switches, see bulletin BE 42-694

<sup>③</sup> For more details on J & K Pneumatic switches, see bulletin BE 42-685 and bulletin BE 42-686

<sup>④</sup> For more details on V Inductive Proximity switches, see bulletin BE 42-798

# SELECTION DATA 150 LBS UP TO 600 LBS (PN 16 UP TO PN 100)

Order code for liquid displacer level switches in an external cage

## 1 - 3 | BASIC MODEL NUMBER, SPECIFIC GRAVITY AND PRESSURE LIMITS

Model No.	Cage type	Min. S.G.	Process temp. °C (°F)	Max. pressure bar (psi)	
				carbon steel cage	stainless steel cage
N15	flanged 150 lbs rating	0,40	40 (100)	19,6 (285)	19,0 (275)
			150 (300)	15,9 (230)	14,8 (215)
			260 (500)	11,7 (170)	11,7 (170)
	flanged 300 lbs rating	0,40	40 (100)	51,0 (740)	49,6 (720)
			150 (300)	45,2 (655)	38,6 (560)
			260 (500)	41,4 (600)	33,1 (480)
	flanged 600 lbs rating	0,40	40 (100)	102 (1480)	99,3 (1440)
			150 (300)	90,7 (1315)	77,2 (1120)
			260 (500)	82,7 (1200)	65,8 (955)
H13	sealed	0,40	40 (100)	103 (1500)	
			150 (300)	96,5 (1400)	
			260 (500)	82,7 (1200)	

## 4 | MATERIALS OF CONSTRUCTION

	Cage	Displacer and trim	Magnetic sleeve
A	Carbon steel	316 SST (1.4401)	400 series SST
B			316 SST (1.4401)
D	316/316L (1.4401/1.4404)		

## 5 - 7 | PROCESS CONNECTION

	Threaded NPT connection							
	upper side / bottom				side / side			
	Model N15: cage rating			Model H13	Model N15: cage rating			Model H13
150 lbs	300 lbs	600 lbs	150 lbs		300 lbs	600 lbs		
1"	B21	B23	B20	B20	B41	B43	B40	B40
1 1/2"	C21	C23	C20	C20	C41	C43	C40	C40
2"	D21	D23	D20	D20	D41	D43	D40	D40
	Socket weld connection							
	upper side / bottom				side / side			
	Model N15: cage rating			Model H13	Model N15: cage rating			Model H13
150 lbs	300 lbs	600 lbs	150 lbs		300 lbs	600 lbs		
1"	B31	B33	B30	B30	B51	B53	B50	B50
1 1/2"	C31	C33	C30	C30	C51	C53	C50	C50
2"	D31	D33	D30	D30	D51	D53	D50	D50
	ASME flanges							
	upper side / bottom				side / side			
	150 lbs RF	300 lbs RF	600 lbs RF	600 lbs RJ	150 lbs RF	300 lbs RF	600 lbs RF	600 lbs RJ
1"	N30	N40	N50	N60	S30	S40	S50	S60
1 1/2"	P30	P40	P50	P60	T30	T40	T50	T60
2"	Q30	Q40	Q50	Q60	V30	V40	V50	V60
	EN 1092-1 flanges							
	upper side / bottom				side / side			
	PN 16 EN 1092-1 Type B1	PN 25/40 EN 1092-1 Type B1	PN 63 EN 1092-1 Type B2	PN 100 EN 1092-1 Type B2	PN 16 EN 1092-1 Type B1	PN 25/40 EN 1092-1 Type B1	PN 63 EN 1092-1 Type B2	PN 100 EN 1092-1 Type B2
DN 25	1FA	1HA	1JA	1KA	1FB	1HB	1JB	1KB
DN 40	2FA	2HA	2JA	2KA	2FB	2HB	2JB	2KB
DN 50	3FA	3HA	3JA	3KA	3FB	3HB	3JB	3KB

## 8 - 10 | SWITCH MECHANISM & HOUSING (see next page)



complete order code for N15/H13 models

X = product with a specific customer requirement

SELECT ELECTRIC SWITCH MECHANISM & HOUSING: MODELS N15 & H13

Switch Description	Process <sup>①</sup> Temperature Range °C (°F)	Contacts	Weather proof (IP 66)		ATEX - IECEx (IP 66)						FM (IP 66)
					II 2G Ex d IIC T6 Gb				II 1G Ex ia IIC T6 Ga		NEMA 7/9
			Cast Aluminium		Cast Aluminium		Cast Iron (ATEX only)		Cast Aluminium		Cast Alu.
			M20x1,5	1" NPT	M20x1,5	1" NPT	M20x1,5	3/4" NPT	M20x1,5	1" NPT	1" NPT
Series B Snap switch	-40 to +120 (-40 to +250)	1x SPDT	B2Q	BAQ	BH9	BA9	BK5	BU5	–	–	BKQ
		1x DPDT	B8Q	BDQ	BJ9	BB9	BD5	BW5	–	–	BNQ
Series C Snap switch	-40 to +230 (-40 to +450)	1x SPDT	C2Q	CAQ	CH9	CA9	CK5	CU5	C2S	CAS	CKQ
		1x DPDT	C8Q	CDQ	CJ9	CB9	CD5	CW5	C8S	CDS	CNQ
Series D DC Current Snap switch	-40 to +120 (-40 to +250)	1x SPDT	D2Q	DAQ	DH9	DA9	DK5	DU5	–	–	DKQ
		1x DPDT	D8Q	DDQ	DJ9	DB9	DD5	DW5	–	–	DNQ
Series F Hermetically sealed Snap switch	-45 to +260 (-50 to +500)	1x SPDT	F2Q	FAQ	FH9	FA9	FK5	FU5	–	–	FKQ
		1x DPDT	F8Q	FDQ	FJ9	FB9	FD5	FW5	–	–	FNQ
Series HS <sup>②</sup> Hermetically sealed Snap switch	-45 to +260 <sup>③</sup> (-50 to +500)	1x SPDT	H7A	HM2	HFC	HA9	HB3	HB4	–	–	HM3
		1x DPDT	H7C	HM6	HGC	HB9	HB7	HB8	–	–	HM7
Series U Gold alloy contacts Snap switch	-40 to +120 (-40 to +250)	1x SPDT	U2Q	UAQ	UH9	UA9	UK5	UU5	U2S	UAS	UKQ
		1x DPDT	U8Q	UDQ	UJ9	UB9	UD5	UW5	U8S	UDS	UNQ
Series V Inductive Proximity switch	-40 to +100 (-40 to +210)	–	–	–	–	–	–	–	V5S	VBS	–
Series W Hermetically sealed Silver plated contacts Snap switch	-45 to +230 (-50 to +450)	1x SPDT	W2Q	WAQ	WH9	WA9	WK5	WU5	W2S	WAS	WKQ
		1x DPDT	W8Q	WDQ	WJ9	WB9	WD5	WW5	W8S	WDS	WNQ
Series X Hermetically sealed Gold plated contacts Snap switch	-45 to +230 (-50 to +450)	1x SPDT	X2Q	XAQ	XH9	XA9	XK5	XU5	X2S	XAS	XKQ
		1x DPDT	X8Q	XDQ	XJ9	XB9	XD5	XW5	X8S	XDS	XNQ
Series 8 Hermetically sealed Snap switch	-45 to +260 (-50 to +500)	1x SPDT	82Q	8AQ	8H9	8A9	8K5	8U5	–	–	8KQ
		1x DPDT	88Q	8DQ	8J9	8B9	8D5	8W5	–	–	8NQ

SELECT PNEUMATIC SWITCH MECHANISM & HOUSING: MODELS N15 & H13

Switch Description	Max supply pressure bar (psi)	Max process temperature <sup>①</sup> °C (°F)	Bleed orifice ø mm (inches)	NEMA 3R (IP 53)		
				Material code A	Material codes B & D	
				N15 & H13	N15 150 lbs & N15 300 lbs	N15 600 lbs & H13
Series J (open air)	6,9 (100)	200 (400)	1,60 (0.063)	JDE	JDE	JKE
	4,1 (60)	200 (400)	2,39 (0.094)	JEE	JEE	JLE
	4,1 (60)	260 (500)	1,40 (0.055)	JFE	JFE	JME
Series K (closed circuit)	6,9 (100)	200 (400)	–	KOE	KOE	KPE

① Process temperature based on max. 40 °C (100 °F) ambient temperature and for non steam applications.

② Model N15: HS switch not available on models N15 with 600 lbs cage rating in combination with material codes B or D.  
Model H13: HS switch only available with material code A.

③ On steam applications, temperature down-rated to +200 °C (+400 °F) process at +40 °C (+100 °F) ambient.

# SELECTION DATA 900 LBS UP TO 1500 LBS (PN 160 UP TO PN 250)

Note for 1500 lbs and PN 250: if higher pressure rating is required than those listed in below table then select model N52 or H51 (refer to page 8)

Order code for liquid displacer level switches in an external cage

## 1 - 3 | BASIC MODEL NUMBER, SPECIFIC GRAVITY AND PRESSURE LIMITS

Model No.	Cage type	Min. S.G.	Process temp. °C (°F)	Max. pressure bar (psi)	
				carbon steel cage	stainless steel cage
N32	flanged	0,40	40 (100)	207 (3000)	207 (3000)
			150 (300)	196 (2848)	192 (2795)
			200 (400)	193 (2800)	177 (2570)
H31	sealed	0,40	40 (100)	207 (3000)	
			150 (300)	196 (2848)	
			200 (400)	193 (2800)	

## 4 | MATERIALS OF CONSTRUCTION

	Cage	Displacer and trim	Magnetic sleeve
A	Carbon steel	316 SST (1.4401)	400 series SST
B			316 SST (1.4401)
D	316/316L (1.4401/1.4404)		

## 5 - 7 | PROCESS CONNECTION

Threaded NPT connection				
	upper side / bottom		side / side	
1"	B20		B40	
1 1/2"	C20		C40	
2"	D20		D40	
Socket weld connection				
	upper side / bottom		side / side	
1"	B30		B50	
1 1/2"	C30		C50	
2"	D30		D50	
ASME flanges				
	upper side / bottom		side / side	
	900 lbs RJ	1500 lbs RJ	900 lbs RJ	1500 lbs RJ
1"	N70	N80	S70	S80
1 1/2"	P70	P80	T70	T80
2"	Q70	Q80	V70	V80

## 8 - 10 | SWITCH MECHANISM & HOUSING (see next page)



complete order code for N32/H31 models

X = product with a specific customer requirement

SELECT ELECTRIC SWITCH MECHANISM & HOUSING: MODELS N32 & H31

Switch Description	Process ① Temperature Range °C (°F)	Contacts	Weather proof (IP 66)		ATEX - IECEx (IP 66)						FM (IP 66)
					II 2G Ex d IIC T6 Gb				II 1G Ex ia IIC T6 Ga		NEMA 7/9
			Cast Aluminium		Cast Aluminium		Cast Iron (ATEX only)		Cast Aluminium		Cast Alu.
			M20x1,5	1" NPT	M20x1,5	1" NPT	M20x1,5	3/4" NPT	M20x1,5	1" NPT	1" NPT
Series B Snap switch	-40 to +120 (-40 to +250)	1x SPDT	B2Q	BAQ	BH9	BA9	BK5	BU5	–	–	BKQ
		1x DPDT	B8Q	BDQ	BJ9	BB9	BD5	BW5	–	–	BNQ
Series C Snap switch	-40 to +200 (-40 to +400)	1x SPDT	C2Q	CAQ	CH9	CA9	CK5	CU5	C2S	CAS	CKQ
		1x DPDT	C8Q	CDQ	CJ9	CB9	CD5	CW5	C8S	CDS	CNQ
Series D DC Current Snap switch	-40 to +120 (-40 to +250)	1x SPDT	D2Q	DAQ	DH9	DA9	DK5	DU5	–	–	DKQ
		1x DPDT	D8Q	DDQ	DJ9	DB9	DD5	DW5	–	–	DNQ
Series F Hermetically sealed Snap switch	-45 to +200 (-50 to +400)	1x SPDT	F2Q	FAQ	FH9	FA9	FK5	FU5	–	–	FKQ
		1x DPDT	F8Q	FDQ	FJ9	FB9	FD5	FW5	–	–	FNQ
Series HS ② Hermetically sealed Snap switch	-45 to +200 (-50 to +400)	1x SPDT	H7A	HM2	HFC	HA9	HB3	HB4	–	–	HM3
		1x DPDT	H7C	HM6	HGC	HB9	HB7	HB8	–	–	HM7
Series U Gold alloy contacts Snap switch	-40 to +120 (-40 to +250)	1x SPDT	U2Q	UAQ	UH9	UA9	UK5	UU5	U2S	UAS	UKQ
		1x DPDT	U8Q	UDQ	UJ9	UB9	UD5	UW5	U8S	UDS	UNQ
Series V Inductive Proximity switch	-40 to +100 (-40 to +210)	–	–	–	–	–	–	–	V5S	VBS	–
Series W Hermetically sealed Silver plated contacts Snap switch	-45 to +200 (-50 to +400)	1x SPDT	W2Q	WAQ	WH9	WA9	WK5	WU5	W2S	WAS	WKQ
		1x DPDT	W8Q	WDQ	WJ9	WB9	WD5	WW5	W8S	WDS	WNQ
Series X Hermetically sealed Gold plated contacts Snap switch	-45 to +200 (-50 to +400)	1x SPDT	X2Q	XAQ	XH9	XA9	XK5	XU5	X2S	XAS	XKQ
		1x DPDT	X8Q	XDQ	XJ9	XB9	XD5	XW5	X8S	XDS	XNQ
Series 8 Hermetically sealed Snap switch	-45 to +200 (-50 to +400)	1x SPDT	82Q	8AQ	8H9	8A9	8K5	8U5	–	–	8KQ
		1x DPDT	88Q	8DQ	8J9	8B9	8D5	8W5	–	–	8NQ

SELECT PNEUMATIC SWITCH MECHANISM & HOUSING: MODELS N32 & H31

Switch Description	Max supply pressure bar (psi)	Max process temperature ① °C (°F)	Bleed orifice ø mm (inches)	NEMA 3R (IP 53)	
				Material code A	Material codes B & D
Series J (open air)	6,9 (100)	200 (400)	1,60 (0.063)	JDE	JKE
	4,1 (60)	200 (400)	2,39 (0.094)	JEE	JLE
Series K (closed circuit)	6,9 (100)	200 (400)	–	KOE	KPE

① Process temperature based on max. 40 °C (100 °F) ambient temperature and for non steam applications.

② HS switch only available with material code A.

# SELECTION DATA 1500 LBS UP TO 2500 LBS (PN 250 UP TO PN 400)

Order code for liquid displacer level switches in an external cage

## 1 - 3 | BASIC MODEL NUMBER, SPECIFIC GRAVITY AND PRESSURE LIMITS

Model No.	Cage type	Min. S.G.	Process temp. °C (°F)	Max. pressure bar (psi)	
				carbon steel cage	stainless steel cage
N52	flanged	0,40	40 (100)	345 (5000)	345 (5000)
			150 (300)	345 (5000)	321 (4660)
			200 (400)	310 (4500)	295 (4280)
H51	sealed	0,40	40 (100)	345 (5000)	
			150 (300)	345 (5000)	
			200 (400)	310 (4500)	

## 4 | MATERIALS OF CONSTRUCTION

	Cage	Displacer and trim	Magnetic sleeve
A	Carbon steel	316 SST (1.4401)	400 series SST
D	316/316L (1.4401/1.4404)		

## 5 - 7 | PROCESS CONNECTION

Threaded NPT connection				
	upper side / bottom		side / side	
1"	B20		B40	
1 1/2"	C20		C40	
2"	D20		D40	
Socket weld connection				
	upper side / bottom		side / side	
1"	B30		B50	
1 1/2"	C30		C50	
2"	D30		D50	
ASME flanges				
	upper side / bottom		side / side	
	1500 lbs RJ	2500 lbs RJ	1500 lbs RJ	2500 lbs RJ
1"	N80	N90	S80	S90
1 1/2"	P80	P90	T80	T90
2"	Q80	Q90	V80	V90

## 8 - 10 | SWITCH MECHANISM & HOUSING (see next page)



complete order code for N52/H51 models

X = product with a specific customer requirement



SELECT ELECTRIC SWITCH MECHANISM & HOUSING: MODELS N52 & H51

Switch Description	Process ① Temperature Range °C (°F)	Contacts	Weather proof (IP 66)		ATEX - IECEx (IP 66)						FM (IP 66)
					II 2G Ex d IIC T6 Gb				II 1G Ex ia IIC T6 Ga		NEMA 7/9
			Cast Aluminium		Cast Aluminium		Cast Iron (ATEX only)		Cast Aluminium		Cast Alu.
			M20x1,5	1" NPT	M20x1,5	1" NPT	M20x1,5	3/4" NPT	M20x1,5	1" NPT	1" NPT
Series B Snap switch	-40 to +120 (-40 to +250)	1x SPDT	B2Q	BAQ	BH9	BA9	BK5	BU5	–	–	BKQ
		1x DPDT	B8Q	BDQ	BJ9	BB9	BD5	BW5	–	–	BNQ
Series C Snap switch	-40 to +200 (-40 to +400)	1x SPDT	C2Q	CAQ	CH9	CA9	CK5	CU5	C2S	CAS	CKQ
		1x DPDT	C8Q	CDQ	CJ9	CB9	CD5	CW5	C8S	CDS	CNQ
Series D DC Current Snap switch	-40 to +120 (-40 to +250)	1x SPDT	D2Q	DAQ	DH9	DA9	DK5	DU5	–	–	DKQ
		1x DPDT	D8Q	DDQ	DJ9	DB9	DD5	DW5	–	–	DNQ
Series F Hermetically sealed Snap switch	-45 to +200 (-50 to +400)	1x SPDT	F2Q	FAQ	FH9	FA9	FK5	FU5	–	–	FKQ
		1x DPDT	F8Q	FDQ	FJ9	FB9	FD5	FW5	–	–	FNQ
Series U Gold alloy contacts Snap switch	-40 to +120 (-40 to +250)	1x SPDT	U2Q	UAQ	UH9	UA9	UK5	UU5	U2S	UAS	UKQ
		1x DPDT	U8Q	UDQ	UJ9	UB9	UD5	UW5	U8S	UDS	UNQ
Series V Inductive Proximity switch	-40 to +100 (-40 to +210)	–	–	–	–	–	–	V5S	VBS	–	
Series W Hermetically sealed Silver plated contacts Snap switch	-45 to +200 (-50 to +400)	1x SPDT	W2Q	WAQ	WH9	WA9	WK5	WU5	W2S	WAS	WKQ
		1x DPDT	W8Q	WDQ	WJ9	WB9	WD5	WW5	W8S	WDS	WNQ
Series X Hermetically sealed Gold plated contacts Snap switch	-45 to +200 (-50 to +400)	1x SPDT	X2Q	XAQ	XH9	XA9	XK5	XU5	X2S	XAS	XKQ
		1x DPDT	X8Q	XDQ	XJ9	XB9	XD5	XW5	X8S	XDS	XNQ
Series 8 Hermetically sealed Snap switch	-45 to +200 (-50 to +400)	1x SPDT	82Q	8AQ	8H9	8A9	8K5	8U5	–	–	8KQ
		1x DPDT	88Q	8DQ	8J9	8B9	8D5	8W5	–	–	8NQ

SELECT PNEUMATIC SWITCH MECHANISM & HOUSING: MODELS N52 & H51

Switch Description	Max supply pressure bar (psi)	Max process temperature ① °C (°F)	Bleed orifice ø mm (inches)	NEMA 3R (IP 53)	
				Material code A	Material code D
Series J (open air)	6,9 (100)	200 (400)	1,60 (0.063)	JKE	not available
	4,1 (60)	200 (400)	2,39 (0.094)	JLE	
Series K (closed circuit)	6,9 (100)	200 (400)	–	KPE	

① Process temperature based on max. 40 °C (100 °F) ambient temperature and for non steam applications.

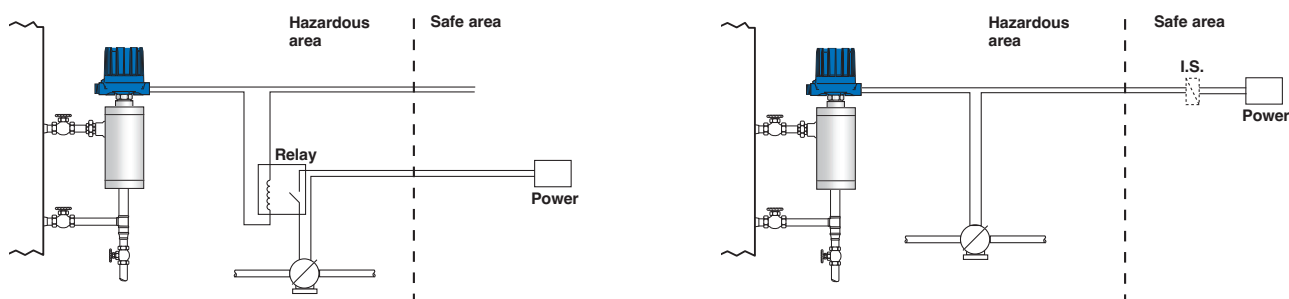
## PHYSICAL SPECIFICATIONS

Description		Specification
Measured variable		Liquid level / interface level
Physical range		Standard models: min S.G. 0,40
Process temperature		Up to 260 °C (500 °F)
Process pressure (for higher ratings consult factory)		Up to 345 bar (5000 psi)
Cage material		Carbon steel or stainless steel (others at request)
Wetted materials	Displacer and trim	316 SST (1.4401)
	Magnetic sleeve	316 SST (1.4401), or 400 series SST
	Spring	Inconel

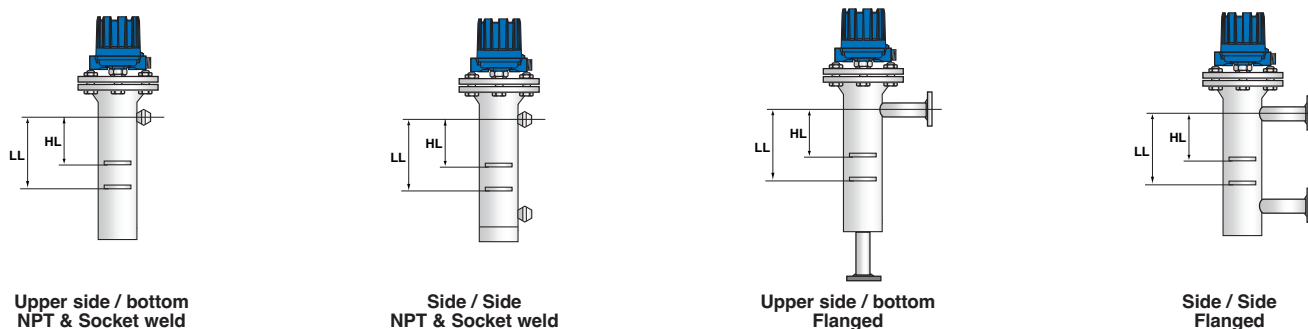
## ELECTRICAL SPECIFICATIONS

Description	Specification
Switch ratings	Up to 15 A @ 240 V AC (depending on switch mechanism) Up to 10 A @ 120 V DC (depending on switch mechanism)
Signal Output	Single SPDT or DPDT contacts or single pneumatic
Switch Types (see page 3)	Dry contact with standard or gold alloy contacts, Hermetically sealed, Hermetically sealed with gold or silver plated contacts, Proximity switch, or single pneumatic bleed and non bleed

## ELECTRICAL CONNECTION



## ACTUATING LEVELS

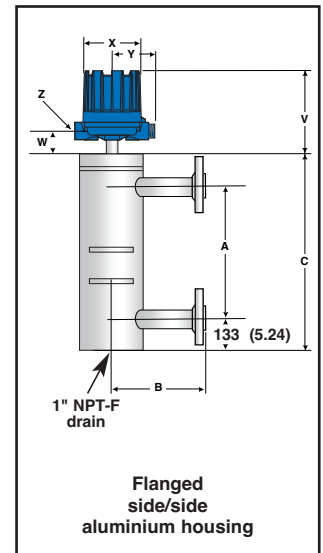
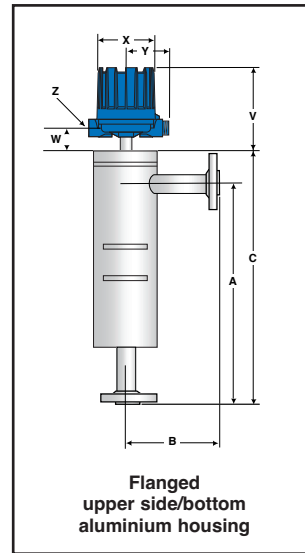
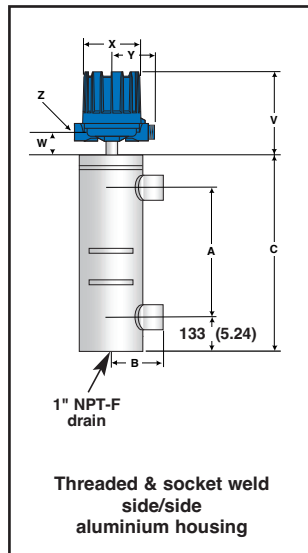
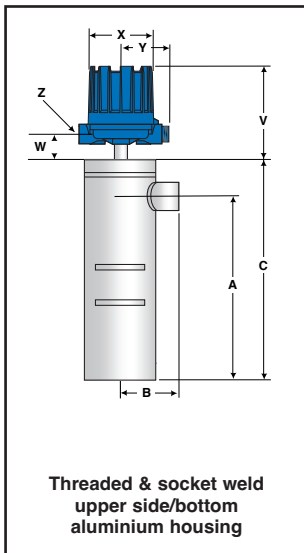


## ACTUATING LEVELS IN mm (inches) FOR DIFFERENT SPECIFIC GRAVITIES

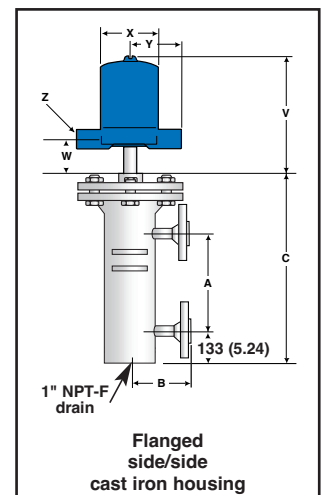
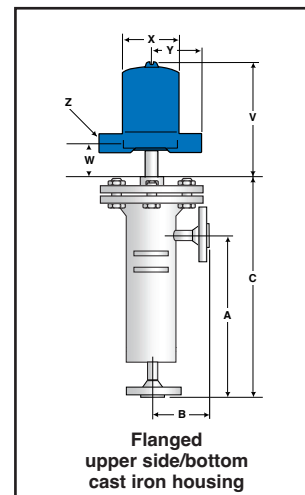
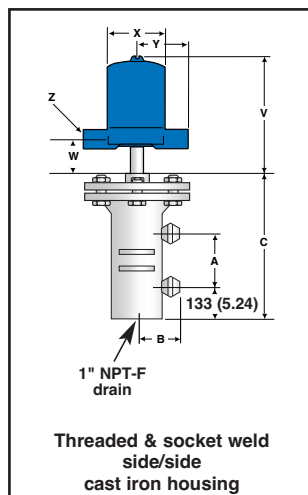
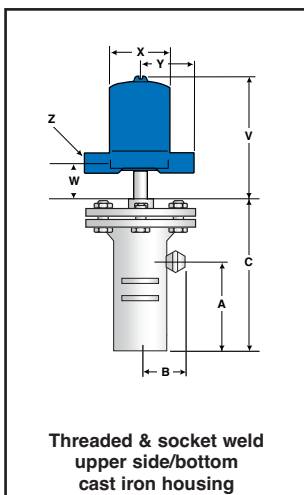
S.G.	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,1
High Level (HL)	96 (3.78)	126 (4.96)	147 (5.79)	161 (6.34)	172 (6.77)	181 (7.13)	187 (7.36)	193 (7.60)
Low Level (LL)	198 (7.80)	211 (8.31)	219 (8.62)	225 (8.86)	229 (9.02)	233 (9.17)	236 (9.29)	238 (9.37)

DIMENSIONS in mm (inches)

- H13 / H31 / H51 Models -



- N15 / N32 / N52 Models -



Housing type	Models	V		W		ø X		Y		Z
		mm	inches	mm	inches	mm	inches	mm	inches	
Weatherproof-FM (NEMA 7/9) - ATEX (Cast Alu)	Models with HS-switch	257	10.12	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)
	Models excl. HS-switch	202	7.94							
ATEX (Cast Iron)	All	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	All	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


# DIMENSIONS in mm (inches)

Process connection size	Mounting configuration	Model	Dimensions						Model	Dimensions					
			A		B		C			A		B		C	
			mm	inches	mm	inches	mm	inches		mm	inches	mm	inches	mm	inches
1" - DN 25	threaded/socket welded upper side/bottom	H13	425	16.73	69	2.72	623	24.53	N15 (*)	425	16.73	69	2.72	630	24.80
	threaded/socket welded side/side		292	11.50	69	2.72	623	24.53		292	11.50	69	2.72	630	24.80
	flanged upper side/bottom		550	21.65	170	6.69	748	29.45		550	21.65	170	6.69	755	29.72
	flanged side/side		292	11.50	170	6.69	623	24.53		292	11.50	170	6.69	630	24.80
1 1/2" - DN 40	threaded/socket welded upper side/bottom		425	16.73	81	3.19	623	24.53		425	16.73	81	3.19	630	24.80
	threaded/socket welded side/side		292	11.50	81	3.19	623	24.53		292	11.50	81	3.19	630	24.80
	flanged upper side/bottom		560	22.05	180	7.09	758	29.84		560	22.05	180	7.09	765	30.12
	flanged side/side		292	11.50	180	7.09	623	24.53		292	11.50	180	7.09	630	24.80
2" - DN 50	threaded/socket welded upper side/bottom		425	16.73	84	3.31	623	24.53		425	16.73	84	3.31	630	24.80
	threaded/socket welded side/side		292	11.50	84	3.31	623	24.53		292	11.50	84	3.31	630	24.80
	flanged upper side/bottom		565	22.24	185	7.28	763	30.04		565	22.24	185	7.28	770	30.31
	flanged side/side		292	11.50	185	7.28	623	24.53		292	11.50	185	7.28	630	24.80

1" - DN 25	threaded upper side/bottom	H31	425	16.73	92	3.62	630	24.80	N32 (**)	425	16.73	92	3.62	735	28.94
	threaded side/side		292	11.50	92	3.62	630	24.80		292	11.50	92	3.62	735	28.94
	socket welded upper side/bottom		425	16.73	99	3.90	630	24.80		425	16.73	99	3.90	735	28.94
	socket welded side/side		292	11.50	99	3.90	630	24.80		292	11.50	99	3.90	735	28.94
	flanged upper side/bottom		565	22.24	195	7.68	770	30.31		565	22.24	195	7.68	875	34.45
	flanged side/side		292	11.50	195	7.68	630	24.80		292	11.50	195	7.68	735	28.94
1 1/2" - DN 40	threaded upper side/bottom		425	16.73	94	3.70	630	24.80		425	16.73	94	3.70	735	28.94
	threaded side/side		292	11.50	94	3.70	630	24.80		292	11.50	94	3.70	735	28.94
	socket welded upper side/bottom		425	16.73	102	4.02	630	24.80		425	16.73	102	4.02	735	28.94
	socket welded side/side		292	11.50	102	4.02	630	24.80		292	11.50	102	4.02	735	28.94
	flanged upper side/bottom		575	22.64	205	8.07	780	30.71		575	22.64	205	8.07	885	34.84
	flanged side/side		292	11.50	205	8.07	630	24.80		292	11.50	205	8.07	735	28.94
2" - DN 50	threaded upper side/bottom		425	16.73	97	3.82	630	24.80		425	16.73	97	3.82	735	28.94
	threaded side/side		292	11.50	97	3.82	630	24.80		292	11.50	97	3.82	735	28.94
	socket welded upper side/bottom		425	16.73	112	4.41	630	24.80		425	16.73	112	4.41	735	28.94
	socket welded side/side		292	11.50	112	4.41	630	24.80		292	11.50	112	4.41	735	28.94
	flanged upper side/bottom		595	23.43	225	8.86	800	31.50		595	23.43	225	8.86	905	35.63
	flanged side/side		292	11.50	225	8.86	630	24.80		292	11.50	225	8.86	735	28.94

1" - DN 25	threaded/socket welded upper side/bottom	H51	425	16.73	99	3.90	630	24.80	N52 (**)	425	16.73	99	3.90	835	32.87
	threaded/socket welded side/side		292	11.50	99	3.90	630	24.80		292	11.50	99	3.90	835	32.87
	flanged 1500 lbs RJ upper side/bottom		565	22.24	195	7.68	770	30.31		565	22.24	195	7.68	975	38.39
	flanged 1500 lbs RJ side/side		292	11.50	195	7.68	630	24.80		292	11.50	195	7.68	835	32.87
	flanged 2500 lbs RJ upper side/bottom		580	22.83	211	8.31	785	30.91		580	22.83	211	8.31	990	38.98
	flanged 2500 lbs RJ side/side		292	11.50	211	8.31	630	24.80		292	11.50	211	8.31	835	32.87
1 1/2" - DN 40	threaded/socket welded upper side/bottom		425	16.73	102	4.02	630	24.80		425	16.73	102	4.02	835	32.87
	threaded/socket welded side/side		292	11.50	102	4.02	630	24.80		292	11.50	102	4.02	835	32.87
	flanged 1500 lbs RJ upper side/bottom		575	22.64	205	8.07	780	30.71		575	22.64	205	8.07	985	38.78
	flanged 1500 lbs RJ side/side		292	11.50	205	8.07	630	24.80		292	11.50	205	8.07	835	32.87
	flanged 2500 lbs RJ upper side/bottom		605	23.82	235	9.25	810	31.89		605	23.82	235	9.25	1015	39.96
	flanged 2500 lbs RJ side/side		292	11.50	235	9.25	630	24.80		292	11.50	235	9.25	835	32.87
2" - DN 50	threaded/socket welded upper side/bottom		425	16.73	112	4.41	630	24.80		425	16.73	112	4.41	835	32.87
	threaded/socket welded side/side		292	11.50	112	4.41	630	24.80		292	11.50	112	4.41	835	32.87
	flanged 1500 lbs RJ upper side/bottom		595	23.43	225	8.86	800	31.50		595	23.43	225	8.86	1005	39.57
	flanged 1500 lbs RJ side/side		292	11.50	225	8.86	630	24.80		292	11.50	225	8.86	835	32.87
	flanged 2500 lbs RJ upper side/bottom		620	24.41	250	9.84	825	32.48		620	24.41	250	9.84	1030	40.55
	flanged 2500 lbs RJ side/side		292	11.50	250	9.84	630	24.80		292	11.50	250	9.84	835	32.87

(\*) Add 33 mm (1.3") to 'C'-dimension for cast iron Ex d housings  
 (\*\*) Add 51 mm (2") to 'C'-dimension for cast iron Ex d housings



QUALITY SYSTEM CERTIFICATION  
DNV-GL  
ISO 9001

**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 3 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.

BULLETIN N°: BE 46-121.11  
 EFFECTIVE: AUGUST 2021  
 SUPERSEDES: February 2021



**AMETEK**  
 SENSORS, TEST & CALIBRATION