

JERGUSON®

A Division Of The Clark-Reliance Corporation

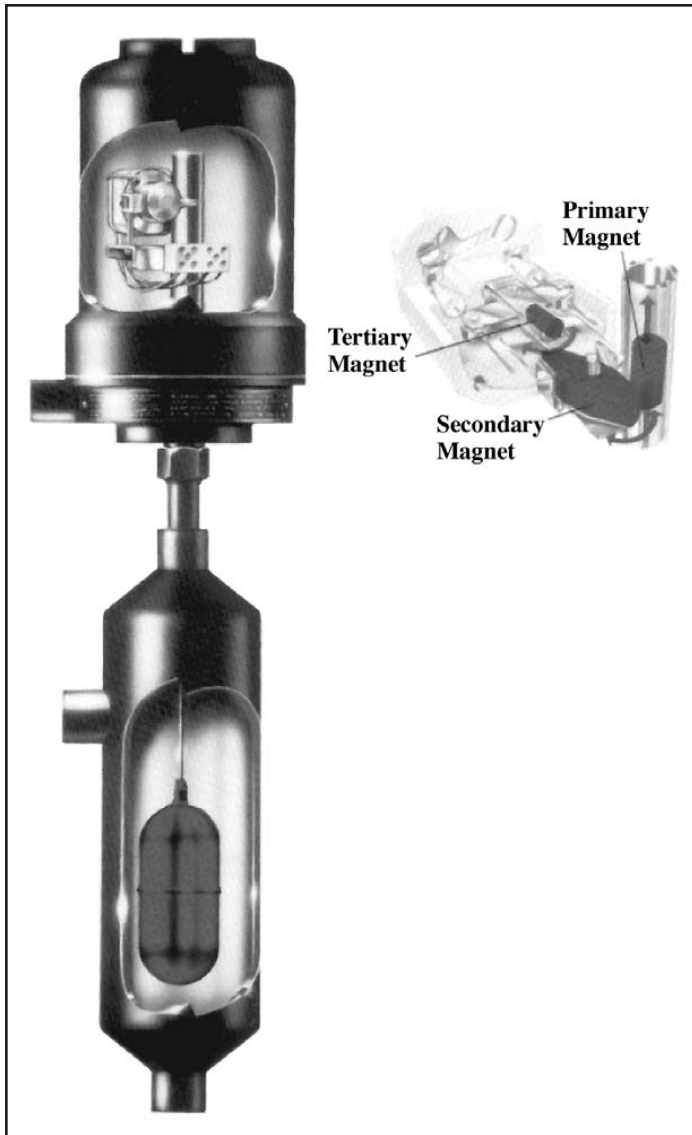
Specialists in Liquid Level Indication

Installation, Operation and Maintenance for

External Cage Float Operated

Magnetic Level Switch

Section: JS100
Bulletin: JS100.03
Date: 11/1/11



FEATURES

- Tri-Magnet Switching
- Vibration Resistant
- Sealed Cage
- Flanged Cage
- T316 SST Trim
- NSI B31.3 Design

OPERATION

The float or displacer drives a stainless steel sheathed permanent magnet attached to the float rod in the glandless pressure tube. As the float rises and falls with a changing liquid level the float assembly moves upwards inside the pressure tube.

A switch mechanism is mounted inside the enclosure adjacent to the pressure tube, and is activated by the rising or falling magnet.

The vertical movement of the float magnet in the pressure tube simultaneously actuates the secondary and switch magnets within the switch mechanism, to operate the contacts. This "three-magnet" system enables the float magnet to pass the switch and actuate switch mechanisms at other levels. Switch mechanisms which are actuated will not re-set until the float magnet actuates the switch mechanism on a falling level.

Switching is achieved with the unique "tri-magnet" system, providing positive snap-action "latch-on" switching.

- Unique 3 magnet latching switch mechanism.
- No springs.
- No problem.



JERGUSON® GAGE AND VALVE

A Division of The Clark • Reliance® Corporation
16633 Foltz Industrial Parkway • Strongsville, OH 44149 USA
Telephone: (440) 572-1500 • Fax: (440) 238-8828

ORDERING INFORMATION

EXTERNAL CAGE SPECIFICATIONS

Model	JBC			JXC		
	Minimum S.G.	Pressure Rating	Model	Minimum S.G.	Pressure Rating	Pressure Rating
JBC1F	.74	350	JXC1F	.70	74	285
JBC2F	.55	300	JXC2F	.55	57	285
JBC3F	.60	600	JXC3F	.60	62	600
JBC4F	.70	1440	JXC4F	.70	72	740
JBC5F	.65	1000	JXC5F	.70	72	1440
JBC6F	.35	300	JXC6F	.35	37	285
JBC7F	.45	750	JXC7F	.45	47	740
JBC8F	.60	1000	JXC8F	.60	62	990
JBC9F	.34	450	JXC9F	.34	34	285

ENCLOSURE TYPES

Duty	Material of cover	Material of base	Material of pressure tube	Material of screwed union	Maximum number of switches
SA7 Explosion-proof	Aluminum Alloy	Cast Iron	316 Stainless Steel	To match chamber material	2 x four contact or 2 x eight contact
SA4 Weather-proof	Drawn Steel	Aluminum Alloy			

INTERNATIONAL APPROVALS

U	Underwriters Laboratories	Cl. I, Div. 1, Grp. C & D
C	Canadian Standards Association	Cl. I, Div. 1, Grp. C & D
B	BASEEFA/CENELEC	E Exd IIC T6; BS5501: Pts 1 & 5
H	Underwriters Laboratories	Cl. I, Div. 1, Grp. B, C & D
N	Weatherproof to NEMA 4X/IP66	U.L. CSA EANSW

NUMBER OF SWITCH MECHANISMS

Specify No. of Switches Required

SWITCH MECHANISM TYPES

	Temp Wet-side °F	AC max. values		DC max. values				
		VA	Volts	Amps	Watts	Volts	Res. Amps	Ind. Amps
D4	750	2000	440	5	50	250	5	0.5
X4	480	2000	440	10	50	250	10	0.5
H4	480	2000	440	5	50	250	5	0.5
P4	750	6	250	0.25	3.6	250	0.25	0.1
D8	750	2000	440	5	50	250	5	0.5
X8	480	2000	440	10	50	250	10	0.5
H8	480	2000	440	5	50	250	5	0.5
P8	750	6	250	0.25	3.6	250	0.25	0.1

TYPICAL MODEL



CHAMBER TYPE & MATERIAL OF CONSTRUCTION

Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
JBC	JBS	JXC	JXS

Float is sealed inside chamber during manufacturing. Not removable.

Float may be removed from chamber for routine maintenance, cleaning or inspection.

PROCESS CONNECTION CONFIGURATION & RATING

Process Connection Style	Side & Bottom		Side & Side with drain	
	1	2	1	2
0	1"	N.P.T. (Socket Weld Connection Use Code "s")	1"	N.P.T. (Socket Weld Connection Use Code "s")
1	1"	Class 150 R.F. A.N.S.I. B 16.5/B.S. 1560	1"	Class 150 R.F. A.N.S.I. B 16.5/B.S. 1560
2	1"	Class 300 R.F. A.N.S.I. B 16.5/B.S. 1560	1"	Class 300 R.F. A.N.S.I. B 16.5/B.S. 1560
3	1"	Class 600 R.F. A.N.S.I. B 16.5/B.S. 1560	1"	Class 600 R.F. A.N.S.I. B 16.5/B.S. 1560
4	1 1/2"	Class 150 R.F. A.N.S.I. B 16.5/B.S. 1560	1 1/2"	Class 150 R.F. A.N.S.I. B 16.5/B.S. 1560
5	1 1/2"	Class 300 R.F. A.N.S.I. B 16.5/B.S. 1560	1 1/2"	Class 300 R.F. A.N.S.I. B 16.5/B.S. 1560
6	1 1/2"	Class 600 R.F. A.N.S.I. B 16.5/B.S. 1560	1 1/2"	Class 600 R.F. A.N.S.I. B 16.5/B.S. 1560
7	2"	Class 150 R.F. A.N.S.I. B 16.5/B.S. 1560	2"	Class 150 R.F. A.N.S.I. B 16.5/B.S. 1560
8	2"	Class 300 R.F. A.N.S.I. B 16.5/B.S. 1560	2"	Class 300 R.F. A.N.S.I. B 16.5/B.S. 1560
9	2"	Class 600 R.F. A.N.S.I. B 16.5/B.S. 1560	2"	Class 600 R.F. A.N.S.I. B 16.5/B.S. 1560

Flange faces are raised face with serrated concentric or serrated spiral groove finish.

WELDING SPECIFICATIONS

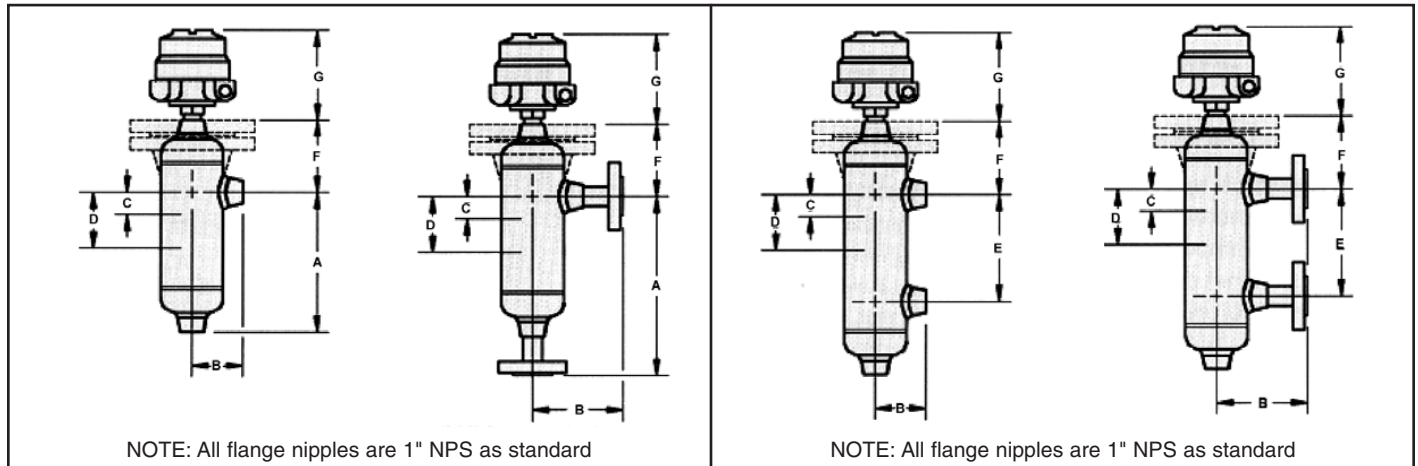
Welding

Code design and construction standard on all chambers unless otherwise specified.

Code radiography is available upon request.

Circumferential and process connection welds are full penetration single-V butt welds. All body flanges are weld neck. Process flanges are slip on type, 1" NPS nipples as standard. Welders qualified to A.S.M.E. IX. P.W.H.T. available on request.

DIMENSIONAL AND OPERATING LEVEL DATA



Model	A			B		C	D		E	F	
	Single Switch	Multi-Switch	∅ Flanged	NPT or S/W	Flanged	Hi Alarm	Single Switch	Multi-Switch	C-C	Chamber Type B	Chamber Type X
JBC1F & JXC1F	8 1/2"	11 1/2"	14"	3 1/4"	6"	2"	2 3/4"	5 3/4"	14"	5 1/2"	5 3/4"
JBC2F & JXC2F	10"	13"	14"	3 3/4"	6 1/2"	2"	2 3/4"	5 3/4"	14"	6"	6"
JBC3F & JXC3F	10"	13"	14"	3 3/4"	6 1/2"	2"	2 3/4"	5 3/4"	14"	6"	6 11/16"
JBC4F & JXC4F	10"	13"	14"	3 3/4"	6 1/2"	2"	2 3/4"	5 3/4"	14"	6"	8 1/16"
JXC5F	10"	13"	14"	3 3/4"	6 1/2"	2"	2 3/4"	5 3/4"	14"	6"	8 1/16"
JBC5F	9 1/2"	12 1/2"	14"	4 1/4"	7 1/2"	2"	2 3/4"	5 3/4"	14"	6 1/2"	8 1/16"
JBC6F & JXC6F	10"	13"	14"	4 3/4"	7 1/2"	2"	2 3/4"	5 3/4"	14"	7"	6 9/16"
JBC7F & JXC7F	10"	13"	14"	4 3/4"	7 1/2"	2"	2 3/4"	5 3/4"	14"	7"	7 3/8"
JBC8F & JXC8F	10"	13"	14"	4 3/4"	7 1/2"	2"	2 3/4"	5 3/4"	14"	7"	8 1/4"
JBC9F & JXC9F	12 1/2"	15 1/2"	16"	5 3/4"	8 1/2"	2"	2 3/4"	5 3/4"	14"	7 1/2"	7 3/16"

Notes: 1) Flanged dimensions apply for R.F. process connections up to 2" - 600#.

2) Switch actuation levels are at minimum S.G.

3) C = Highest operating liquid level

4) D (Single Switch) = Reset level

5) D (Multi-Switch) = Lowest operating liquid level

6) D-C = Switching Differential (Max.)

7) Add 2" to "A" Dimension for (2) Switches

All dimensions in inches. Dimensions are for reference only, and must be certified upon order.

ENCLOSURE DIMENSIONAL DATA

Type	Duty	Height G	Conduit Thread	Switch Adjustment	Weatherproof Rating
SA7, S17	Explosionproof	13 3/4"	1" NPT	3 3/8"	NEMA 4x & 7
SA4	Weatherproof	12"	1" NPT	3 3/8"	NEMA 4x

MATERIALS OF CONSTRUCTION

Technical Specification	Designed in accordance with the requirements of B313 Pressure tested to 1.5 x maximum working pressures.	
Materials of Construction	Carbon Steel Chamber	Stainless Steel Chamber
Chamber Tube	ASTM A106 GrB/BS3602 HFS410	ASTM A312 T316/BS3605-316-514
Top/Bottom Caps	ASTM A234/BS1504-161-430A	ASTM A403 WP-316
Flanges/Fittings	ASTM A105/BS1503-221-430E	ASTM A182F316/BS1503-316-513
Studs	ASTM A193-B7/BS1506-621A-B7	ASTM Z193-B7/BS1506-621A-B7
Nuts	ASTM A194-2H/BS1506-162-2H	ASTM A194-2H/BS1506-162-2H
Float & Trim	T316 SST	T316 SST

Options:

• Low temperature carbon steel chambers • Controls to meet N.A.C.E. requirements • A comprehensive N.D.T. package

WARRANTY STATEMENT

All mechanical level devices are warranted free of defects in materials and workmanship for five years from the date of original factory shipment.

If returned within the stated warranty period; and upon factory inspection the cause of the claim is determined to be covered under the warranty: at option, the device

will be repaired or replaced without cost to the purchaser (or owner) other than transportation.

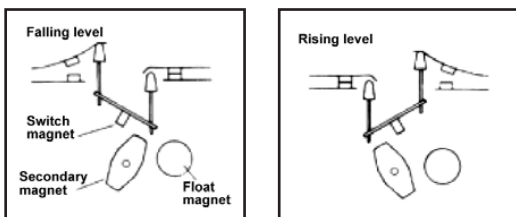
Jerguson® shall not be liable for mis-application, labor claims, direct or consequential damage or expense arising from the installation or use of the equipment. There are no other warranties expressed or implied.

**5 YEAR
MECHANICAL
WARRANTY**

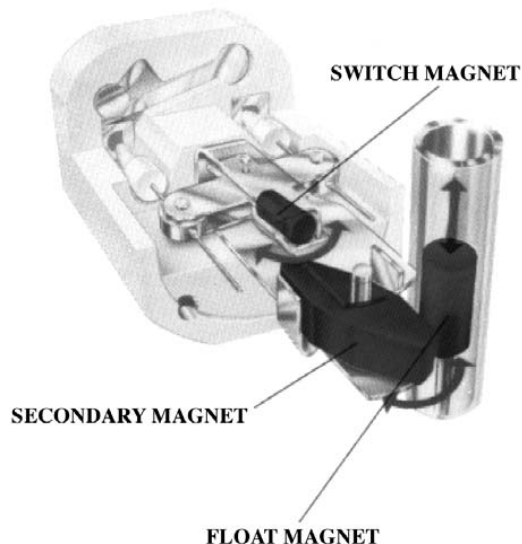
JERGUSON LEVEL SWITCHES THE SWITCH MECHANISM

Principle of Operation


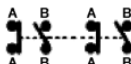
The switch mechanism is based on a unique three-dimensional magnet design where the snap action is accomplished by the utilization of magnetic repulsion. The magnet mounted on the float rod causes the secondary magnet to rotate as it passes up and down. The switch magnet is repelled by the secondary and snaps to the opposite side. This causes the cradle to pivot, moving the push rods which operated the switch contacts. The result is positive snap action interlock switching...**no springs...no spring problems.**



Schematic showing three-magnet system



Choice of Switch Mechanisms	
Type	Application
X4, X8	General purpose – 10 amp mechanisms for general purpose duties up to 480°F
D4, D8	High temperature – 750°F mechanisms for high temperature applications up to 5 amps
H4, H8	Hermetically sealed – Suitable for low temperature duties, contaminated atmosphere environments and intrinsically safe circuits. All moving parts and contacts enclosed in an inert gas filled stainless steel enclosure.
P4, P8	Low current – Gold-plated contact switch mechanism for use in intrinsically safe or low power circuits up to 750°F

4 Contact Type D4, X4, P4, H4	
2 x S.P.S.T. AA Make on Rise BB Make on Fall	
Link for SPDT/SPCO	
8 Contact Type D8, X8, P8, H8	
D.P.D.T. 4 x S.P.S.T. AA Make on Rise BB Make on Fall	
Link for DPDT/DPCO	

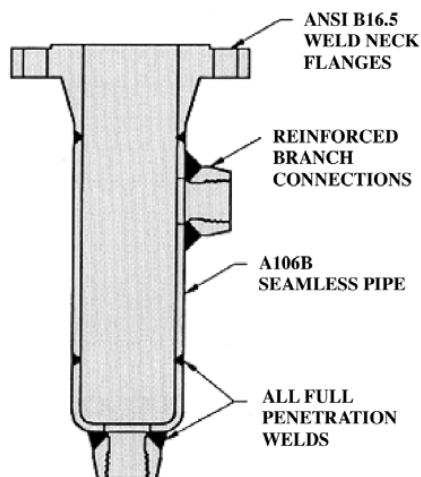
THE FLOAT CHAMBER

Applications

The flanged chamber construction of this X series range of vertical controls makes them a very serviceable level control solution for petrochemical, power generation and OEM applications.

The unique three-magnet memory latching system provides reliable switching for applications such as level alarm, safety shutdown and pump control in product storage tanks, gas scrubbers, process vessels, and high pressure steam generators.

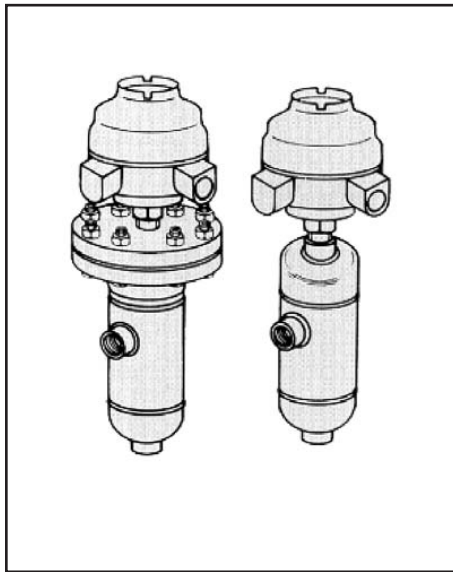
Single or multi-switch models are available. Chambers are designed to ANSI B31.1 Power Piping Code and ANSI B31.3 Chemical Plant and Petroleum Refinery Piping Code.



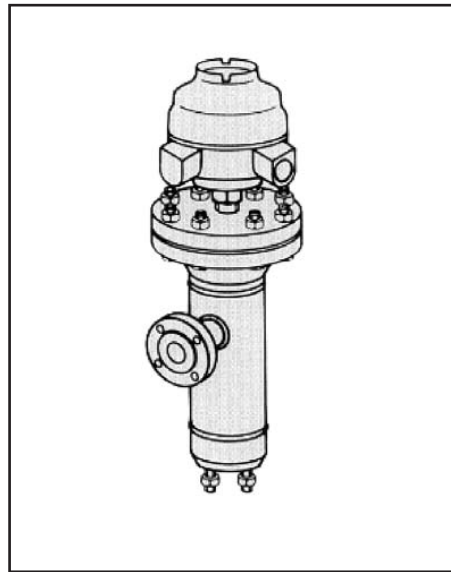
Options

- Stainless steel chamber
- Low temperature chamber below -35°F
- Certified to B31.3 or B31.1
- Non-destructive testing – radiographic, ultrasonic, magnetic particle, dye penetrant
- Epoxy paint finish
- Extended NEMA 4 switch enclosure housing up to 6 SPDT switch mechanisms or 3 DPDT switch mechanisms
- Vent connection
- Specific gravity below .35
- NACE specification MR-01-75 Rev. 02
- CL 1: Group B enclosures

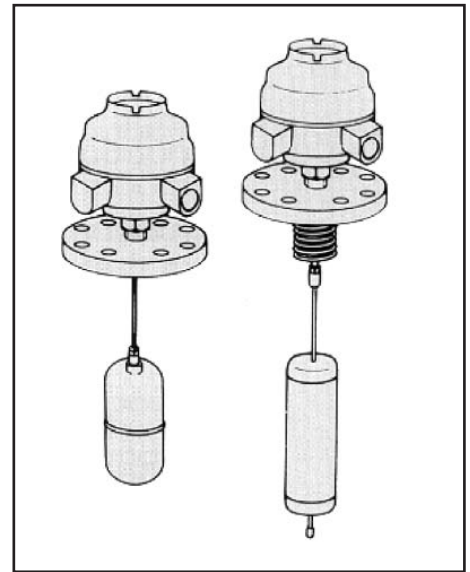
JERGUSON "FIT & FORGET" PRODUCTS PROVIDE THE SOLUTION TO YOUR LIQUID LEVEL CONTROL PROBLEMS



Medium Pressures
ANSI Class 150, 300, 600
SG 0.40



High Pressures
ANSI Class 900, 1500, 2500
SG 0.40



Direct Mounting
ANSI Class 150, 300, 600
SG 0.40

You can rely on us

The Jerguson range of liquid level controls is designed for operation in a wide variety of applications

Typical Applications

Separators	Water Sumps
Compressors	Scrubbers
Knock-out Pots	Fractioning Columns
Condensers	Process Vessels
De-actuators	Condensate Tanks
Storage Tanks	Drainpots
Service Tanks	Accumulators
Header Tanks	Flash Vessels
Effluent Sumps & Tanks	Fuel Tanks
Heat Exchanger	Feedwater Heaters
Lube Oil Tanks	Surge Drums

Jerguson level switches are used for the control of liquids by companies all over the world.

Shell	Bechtel
Exxon	Bellili
Amoco	Ontario Hydro
Fluor	Nissaci-Sangyo
Hyundai	Foster Wheeler
Hitachi	Siemens
British Petroleum	Mannesmann-Demag
Mobil	Catalytic
Texaco	Techni
Ingersoll Rand	Technipetrol
Compair	Nuovo Pignone
Honeywell	Dresser



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