JERGUSON®
A PRODUCT OF CLARK-RELIANCE

External Cage Displacer Operated
Magnetic Level Switch

Section:	JS100
Bulletin:	JS100.04
Date:	4/2017
Supercedes:	12/2014

Jerguson's Tri-Magnet Level Switches deliver failure-free performance.



(Series JX)

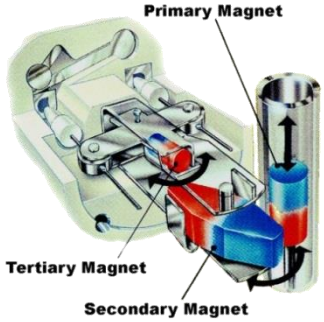


(Series JB)

The innovative use of repelling magnetic fields eliminates mechanical elements that are prone to failure in high temperatures, extreme vibration, or simply fatigue over time.

FEATURES

- **Tri-Magnet Switching for Unparalleled Reliability**
- **Vibration Resistant**
- **Sealed or Flanged Cage**
- **316 Stainless Steel Trim**
- **ASME B31.1 & B31.3 Design**



Unique 3 magnet latching.
No springs...No problem.

"The new switches are very rugged and dependable, and most importantly, they are mercury-free and safe for the environment. Dealing with spilled mercury is an extremely difficult task, but it is one we don't have to worry about with these new switches. The Jerguson Tri-Magnet Level Switches have been in operation in our facility since May 2007."

-Maintenance Superintendent,
Major Utility Power Generation Plant

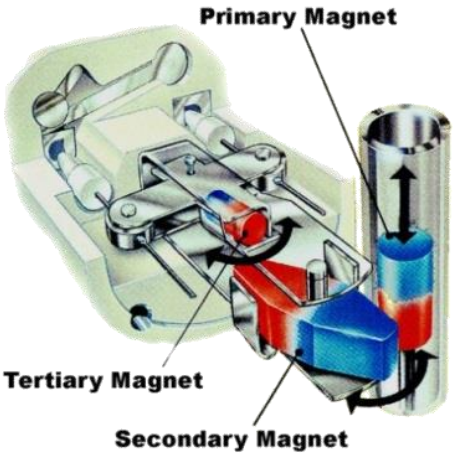
The Tri-Magnet Level Switch was endurance tested to over 850,000 cycles without failure.

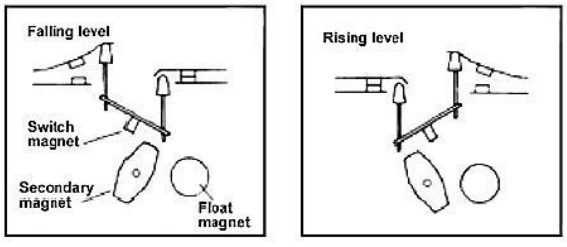
16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: (440) 572-1500 ● Fax: (440) 238-8828
www.jerguson.com ● sales@clark-reliance.com

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 and attraction. The primary magnet mounted on the float rod causes the secondary magnet to rotate as it passes up and down. The tertiary switch magnet is repelled by the secondary and snaps to the opposite side. This causes the cradle to pivot, moving the push rods, which operate the switch contacts. The result is positive snap action interlock switching…**no springs…no spring problems!**





Schematic showing three-magnet system

Type	Choice of Switch Mechanisms Application
X4, X8	**General purpose** - 10 amp mechanisms for general purpose duties up to 480°F
D4, D8	**High temperature** - 5 amp mechanisms for high temperature applications up to 750°F
H4, H8	**Hermetically sealed** - 5 amp mechanisms suitable for temperatures up to 480°F, 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** - 0.25 amp gold-plated contact switch mechanism for use in intrinsically safe or low power circuits up to 750°F
E4, E8	**Encapsulated** - 5 amp switch mechanism is sealed / encapsulated inside alluminum housing, suitable for temperatures to 850°F

4 Contact Type D4, X4, P4, H4, E4

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, E8

D.P.D.T.
4 x S.P.S.T.
AA Make on Rise
BB Make on Fall



Link for DPDT/DPCO

Note: Max. temperature of displacer operated level switch = 400°F

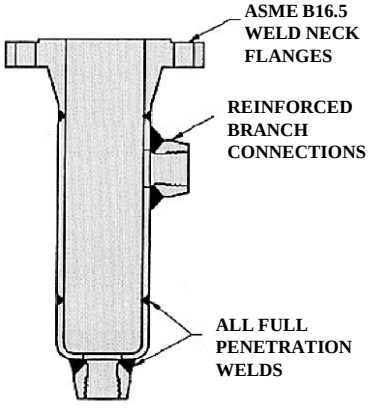
THE DISPLACER CHAMBER

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 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.

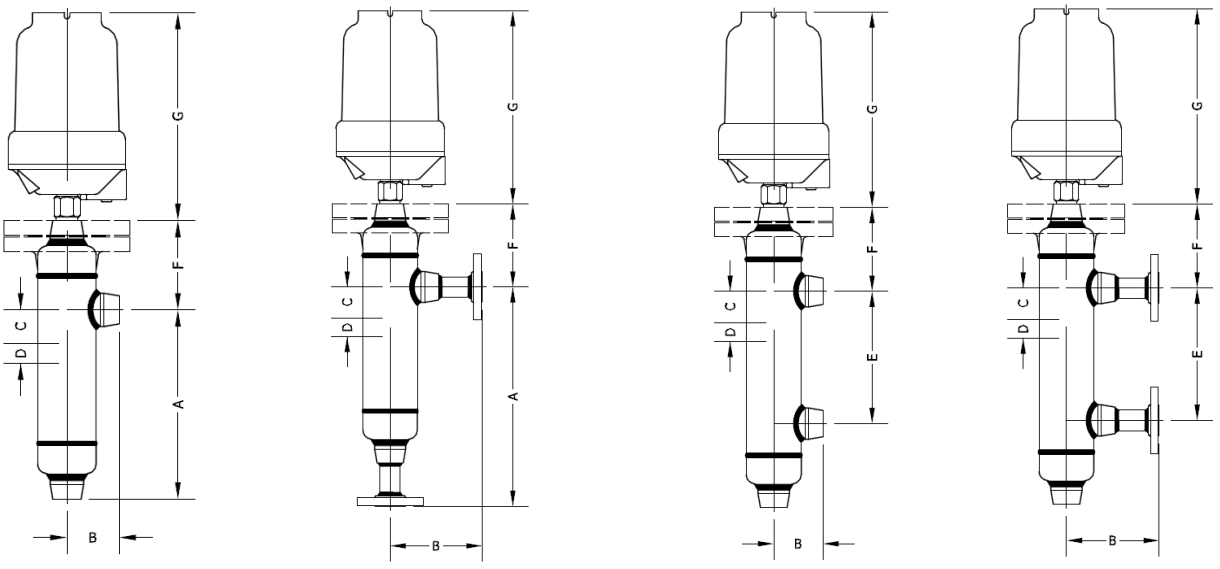
Single models are available. Chambers are designed to ASME B31.1, Power Piping Code, and ASME B31.3, Chemical Plant and Petroleum Refinery Piping Code.



Options:

- Stainless Steel Chamber
- Low temperature chamber below -20°F
- High temperature chrome-moly chamber
- Certified to B31.3 or B31.1
- Non-destructive testing: radiographic, ultrasonic, magnetic particle, dye penetrant
- Epoxy paint finish (FP-18)
- Extended NEMA 4 switch enclosure housing up to 3 SPDT switch mechanisms or 3 DPDT switch mechanisms
- Vent connection
- Specific gravity down to .40
- NACE specification MR-0175

DIMENSIONAL AND OPERATING LEVEL DATA



NOTE: All flange nipples are 1" NPS as standard

	A		B		C1	D	E	F	
	NPT or S/W	Flanged	NPT or S/W	Flanged	Hi Alarm	④	C-C	Chamber Type B	Chamber Type X
JBC1D & JXC1D	8 1/2"	16"	3 1/4"	6"	2"	0.56"	14"	5 1/2"	5 3/4"
JBC2D & JXC2D	14"	16"	3 1/4"	6"	2 7/8"	0.56"	14"	10 1/2"	9 1/4"
JBC3D & JXC3D	14"	16"	3 1/4"	6"	2 7/8"	0.56"	14"	10 1/2"	9 3/4"
JBC4D & JXC4D	14"	16"	3 1/4"	6"	2 7/8"	0.56"	14"	10 1/2"	10 1/2"
JBC5D & JXC5D	14"	16"	3 1/4"	6"	2 7/8"	0.56"	14"	10 1/2"	11 1/2"
JBC6D & JXC6D	14"	16"	4"	7"	2 1/4"	0.56"	14"	11 1/2"	11 1/2"

Notes: 1) Flanged dimensions apply for R.F. process connections up to 2" - 600#.
2) Switch actuation levels are at minimum S.G.
3) C1 = Single Switch : Process C/L to rising trip point of switch.
4) D = Switch Deadband, Distance Between Rising Trip & Falling Reset.
All dimenstions in inches. Dimensions are for reference only, and must be certified upon order. All dimensions based 1" reinforced fittings.

ENCLOSURE DIMENSIONAL DATA

Type	Duty	Height G	Conduit Thread	Switch Adjustment	Weatherproof Rating
SA7	Explosion-proof	13 1/4"	1" NPT	3 3/8"	NEMA 4 & 7
SA4	Weather-proof	12"	1" NPT	3 3/8"	NEMA 4

MATERIALS OF CONSTRUCTION

Technical Specifications	Designed in accordance with the requirements of B31.1 & B31.3. Pressure tested to 1.5 x maximum working pressures.	
Materials of Construction	Carbon Steel Chamber	Stainless Steel Chamber
Chamber Pipe	ASTM A106 GrB	ASTM A312 316
Top/Bottom Caps	ASTM A234	ASTM A403 WP-316
Flanges/Fittings	ASTM A105	ASTM A182F316
Studs	ASTM A193-B7	ASTM Z193-B7
Nuts	ASTM A194-2H	ASTM A194-2H
Displacer	316 SST	316 SST
Spring/Trim	Iconel 600/316 SST	Iconel 600/316 SST

OUR WARRANTY

5 YEAR MECHANICAL WARRANTY

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.

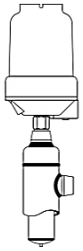
ORDERING INFORMATION

TYPICAL MODEL

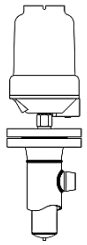
JBC 4D SA4N 1 X4 1 0 F _

CHAMBER TYPE & MATERIAL OF CONSTRUCTION
EXTERNAL CAGE SPECIFICATIONS

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



Float is sealed inside chamber during manufacturing. Not removeable.



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

Cage

JBC					JXC				
Model	Min. S.G.	Disp. Mat'l.	Pressure Rating 100°F	Pressure Rating 400°F	Model	Min. S.G.	Disp. Mat'l.	Pressure Rating 100°F	Pressure Rating 400°F
JBC1D	.50	316SST	350	350	JXC1D	.50	316SST	285	200
JBC3D	.40	316SST	1000	1000	JXC3D	.40	316SST	780	635
JBC4D	.40	316SST	1640	1640	JXC4D	.40	316SST	1480	1270
JBC5D	.40	316SST	2560	2560	JXC5D	.40	316SST	2220	1900
JBC6D	.40	316SST	3980	3980	JXC6D	.40	316SST	3705	3170

ENCLOSURE TYPES

Code	Duty	Material of cover	Material of base	Material of pressure	Material of screwed	Maximum number of switches
SA4N	Weather-proof	Aluminum Alloy		316 Stainless Steel	To match chamber material	1
SA7F	Explosion-proof Factory Mutual Cl.I,Div.1,Grps B,C &D	Drawn Steel	Aluminum Alloy			

Enclosure

NUMBER OF SWITCH MECHANISMS

Specify No. of Switches Requried (1)

No. of Switches

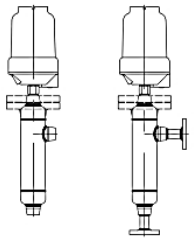
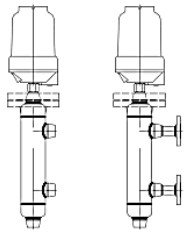
NOTES:
1. Code design standard on all chambers unless otherwise specified.
2. Code radiography is available upon request.
3. ***Main Chamber***: Circumferential welds between center pipe & pipe cap(s) and/or weld neck chamber flange ("X" style 'Chamber Design' only), are full penetration, single-V, butt welds. ***Process Connections***: Immediate branch is an o'let. For flanged connections, when selected, a 1" NPS nipple is welded to the o'let, and slip-on flanges are welded to the nipple, as standard.
4. Welders qualified to ASME IX. PWHT available upon request.

Design Options	
(Omitted)	Standard Design
WN	Weld Neck Flanges
SW	Socket Weld Flanges
RTJ	Ring Type Joint Flange
3E	3" Temperatrue Extension
6F	6" Temp. Extension w/ Cooling Fins
X	Special Design

Process Conn. Size	
0	.50" (DN15)
1	.75" (DN20)
2	1.00" (DN25)
3	1.25" (DN32)
4	1.50" (DN40)
5	2.00" (DN50)
6	2.50" (DN65)
7	3.00" (DN80)
(Omitted)	Replacement Head Ass'y, Less Chamber ("X" Chamber Design Style)

Process Conn. Style	
F	FNPT
M	MNPT
S	FSW
P	Plain-End/MSW (Sch.80)
1	150#RFSO ASME
3	300#RFSO ASME
6	600#RFSO ASSME
9	900#RFSO ASME
0	1500#RFSO ASME
(Omitted)	Replacement Head Ass'y, Less Chamber ("X" Chamber Design Style)

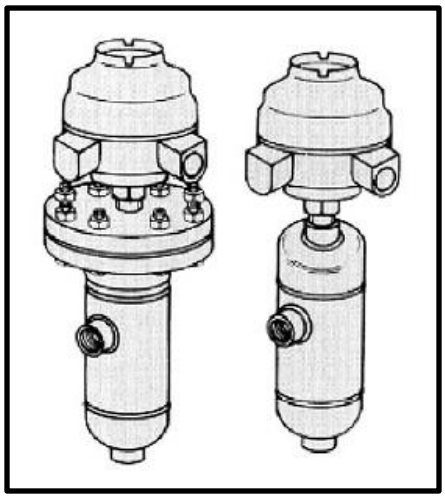
PROCESS CONNECTION CONFIGURATION

1 Side & Bottom	2 Side & Side With Drain
	

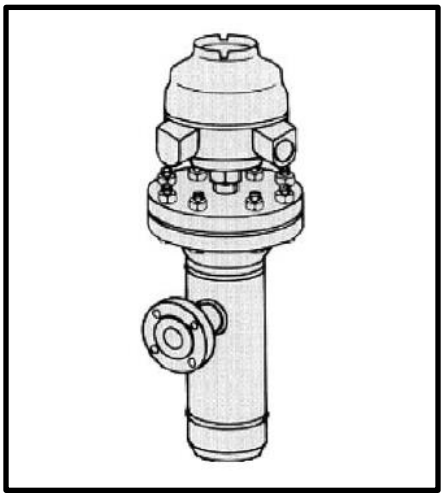
Switch Mechanism

		Temp Wet-side °F	AC max. values VA	AC max. values Volts	AC max. values Amps	DC Max. values Watts	DC Max. values Volts	DC Max. values Res. Amps	DC Max. values Ind. Amps
X4	4 Contact  Link for SPDT	480	2000	440	10	50	250	10	0.5
D4		750	2000	440	5	50	250	5	0.5
H4		480	2000	440	5	50	250	5	0.5
E4	Two independent single pole single throw contact sets	850	2000	440	5	50	250	5	0.5
P4		750	6	250	0.25	3.6	250	0.25	0.1
X8	8 Contact  Link for DPDT	480	2000	440	10	50	250	10	0.5
D8		750	2000	440	5	50	250	5	0.5
H8		480	2000	440	5	50	250	5	0.5
E8	Four independent single pole single throw contact sets	850	2000	440	5	50	250	5	0.5
P8		750	6	250	0.25	3.6	250	0.25	0.1

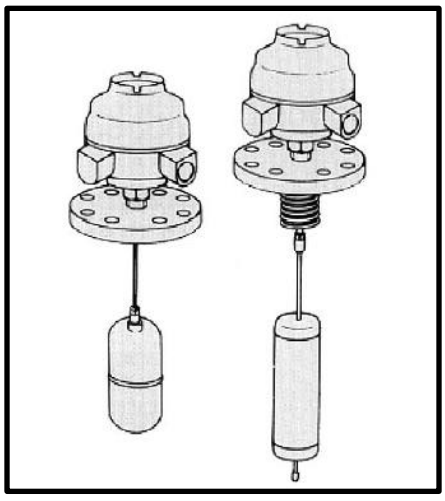
JERGUSON "FIT & FORGET" PRODUCTS PROVIDE THE SOLUTION TO YOUR LIQUID LEVEL CONTROL PROBLEMS



Medium Pressures
ASME Class 150, 300, 600
SG 0.40



High Pressure
ASME Class 900, 1500, 2500
SG 0.40



Direct Mounting
ASME 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
Condensors	Process Vessels
De-actuators	Condensate Tanks
Storage Tanks	Drainpots
Service Tanks	Accumulators
Header Tanks	Flush 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
Compare	Nuovo Pignone
Honeywell	Dresser

Authorised Distributor:

NATIONWIDE OIL & GAS

46, Jalan SS 22/21, Damansara Jaya,
47400 Petaling Jaya,
Selangor Darul Ehsan, Malaysia.
Email: nog@nog.com.my
Website: www.nog.com.my

JERGUSON®

16633 Foltz Parkway ● Strongsville, OH 44149 USA Telephone: (440) 572-1500 ● Fax: (440) 238-8828
www.jerguson.com ● sales@clark-reliance.com

Clark·Reliance®

Instrumentation & Control

JERGUSON® JACOBY·TARBOX® Reliance®



Level Gages
Magnetic Level Gages
Switches & Valves



Sight Flow Indicators
Sight Windows
Eductors



Boiler Level Gages
Remote Level Indicators
Boiler Safety Instruments

Filtration & Purification

ANDERSON® Separator



Gas Coalescing & Filtration
Steam Separators & Traps
Liquid Particle Filtration

Enervac™ INTERNATIONAL ULC



Transformer Oil Purification
SF6 Equipment
Air Dryers

OIL FILTRATION SYSTEMS®



Vacuum Dehydrators
Varnish Removal Systems
Hi & Low Flow Filter Skids

Elements, Internals, Parts & More











www.clark-reliance.com / www.clark-reliance.com/parts