

Omnitrol 621/721

Top-Mounted Level Control Switches (Lead Displacers)

For tank farm operators, terminal automation engineers, floating-roof storage owners, and EPC firms requiring highly reliable high-level and overfill protection in floating-roof petroleum tanks, the Omnitrol 621/721 provides robust, positive mechanical actuation using dense lead displacers suspended on stainless-steel beaded chain. Unlike float devices affected by wind, sloshing, and roof vibration, the 621/721 uses high-mass lead displacers that remain stable during roof movement, eliminating nuisance trips while ensuring alarms occur only at the true roof elevation. The system supports single-stage (621) or dual-stage (721) alarming for Hi and Hi-Hi safety layers and mounts easily via 2½" NPT or flange configurations. A fixed differential ensures consistent, repeatable switching at the correct alarm height, supporting critical overfill protection programs in compliance-driven storage operations. With explosion-proof or weatherproof housings, stainless beaded suspension chain, and factory-set actuation, the 621/721 offers long service life and dependable alarm performance for open-top, internal floating-pan, or remote hazardous-area tank installations.



Key Features

Wind-Resistant Displacers

Dense lead displacers remain unaffected by wind, surface agitation, and roof vibration, ensuring dependable alarm activation only at the true floating-roof position.

Fixed Differential Accuracy

Factory-set switching differential ensures alarms occur at consistent heights, supporting strict overfill protection requirements and minimizing operational uncertainty in tank farms.

External Top-Mounted Design

All mechanics remain outside the product space, improving accessibility, reducing exposure risks, and simplifying maintenance without tank entry or process disruption.

Dual-Stage Alarm Capability

The 721 model provides independent Hi and Hi-Hi alarms, giving operators redundant protection layers aligned with safety-critical storage practices and API 2350 programs.

Stainless Beaded Suspension

Beaded chain construction prevents kinking or coiling common with cable, improving long-term mechanical reliability in tanks experiencing roof movement.

Hazardous-Area Certification

UL approval, combined with explosion-proof housings, ensure safe operation in classified petroleum, refinery, and terminal environments.



Typical Applications



FLOATING ROOF TANKS

Provides stable level alarms unaffected by wind or roof motion, ensuring accurate detection of Hi or Hi-Hi conditions in petroleum storage tanks.



INTERNAL FLOATING PANS

Delivers reliable switching despite sloshing or pan movement, ensuring consistent alarm performance in internal floating-roof or pan-type tank designs.



OVERFILL SAFETY SYSTEMS

Supports API-driven Hi and Hi-Hi protection layers, enabling dependable mechanical alarm actuation during critical overfill prevention scenarios.



PUMP PROTECTION CONTROL

Triggers pump shutdown on low-level events, preventing dry-run conditions and safeguarding pump assets in refinery, terminal, or sump systems.



REMOTE HAZARDOUS TANKS

Allows safe external adjustment and maintenance in isolated or classified areas, reducing technician exposure and improving operational uptime.



PETROCHEMICAL STORAGE VESSELS

Ensures dependable height detection in turbulent or variable-density fluids, providing long-term alarm reliability across demanding process conditions.

Benefits



Accurate Alarm Performance

Lead displacers withstand wind and roof movement, preventing false trips and ensuring alarms trigger only at correct floating-roof elevations.



Reliable Dual Protection

The two-stage 721 model adds redundant Hi and Hi-Hi layers, strengthening compliance with overfill standards and enhancing operational safety.



Easy External Maintenance

Top-mounted mechanics allow servicing without tank entry, reducing downtime, minimizing risk, and simplifying routine inspection tasks.



Long-Term Mechanical Integrity

Stainless beaded chain resists wear, coiling, and kinking, maintaining reliable operation despite constant roof movement in large storage tanks.



Durable Hazardous-Area Design

Rugged enclosures withstand weather, corrosion, and classified-area conditions, ensuring dependable functionality in harsh environmental settings.



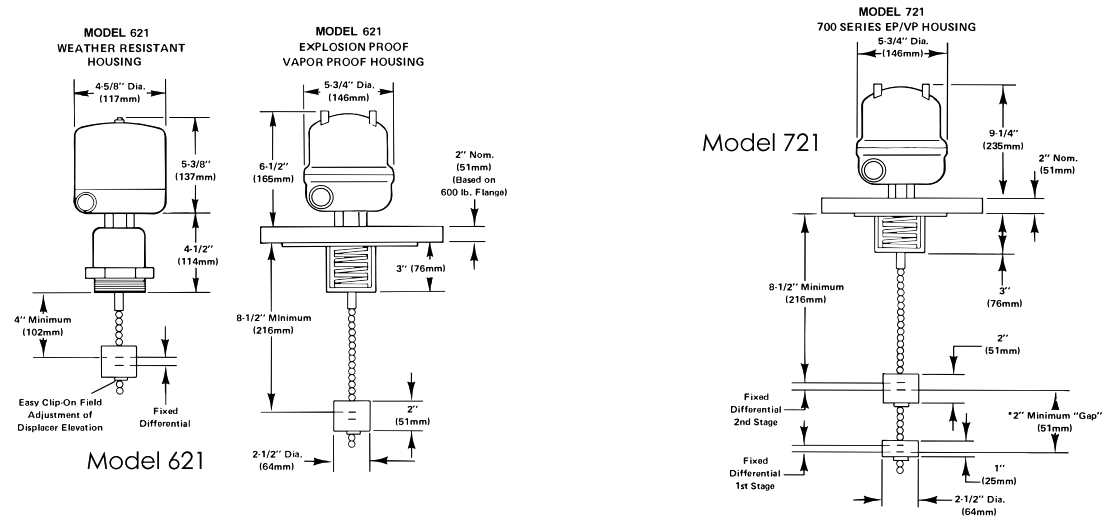
Consistent Setpoint Operation

Factory-set fixed differential switching provides predictable alarm heights, improving operator confidence in safety-critical alarm response.

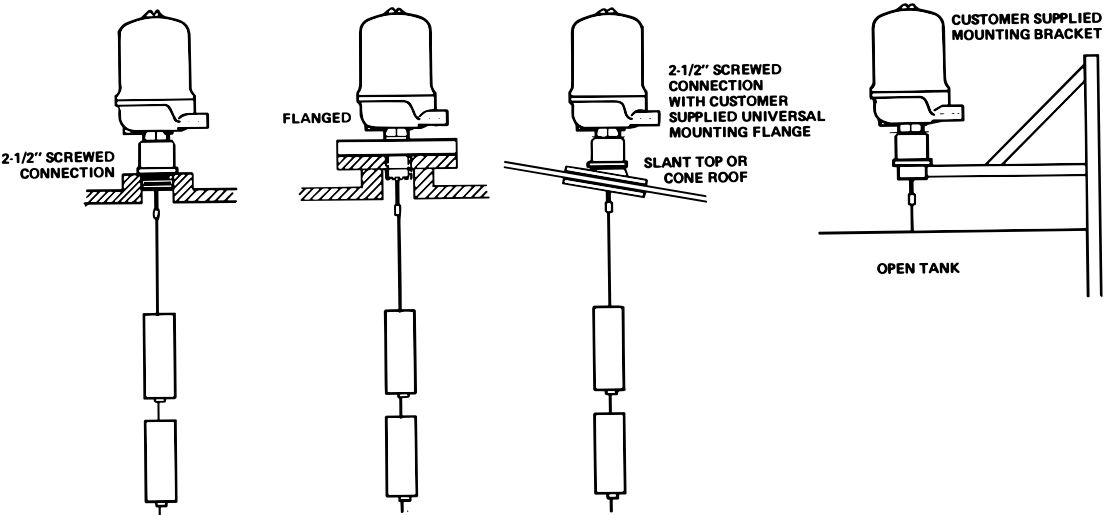
Technical Specifications & Key Features

Models:	621 (single-stage), 721 (two-stage)
Displacer material:	Lead (high mass for wind/turbulence immunity)
Displacer suspension:	Stainless steel beaded chain
Mounting:	• 2½" NPT thread • Flange mounts available (3" and larger)
Temperature rating:	−20 °F to +400 °F (−29 °C to +204 °C)
Enclosures:	• Weather-resistant • Explosion-proof / vapor-proof • Explosion-proof / rain-tight
Switch Options:	SPDT/DPDT micro switches
Function:	Fixed differential alarm switching
Calibration:	Factory set; additional chain lengths available
Certifications:	UL Approved

Dimensions



Typical System Layout





Model Number Selection

The model number will consist of a base number 621/721 followed by 9 digits. These digits will represent 10 sets of option tables.

Part Number Structure

OMNITROL ABC-DE-F-G-H-IJ-K-L-M

Part Prefix OMNITROL

Part Number	ABC- NUMBER OF ACTUATORS & DISPLACER MATERIAL
610	Single Actuator / Graphite Displacer
613	Single Actuator / Porcelain Displacer
616	Single Actuator / Stainless Steel Displacer
621	Single Actuator / Lead* Displacer
710	Dual Actuators / Graphite Displacer
713	Dual Actuators / Porcelain Displacer
716	Dual Actuators / Stainless Steel Displacer
721	Dual Actuators / Lead* Displacer

Part Number	F- FLANGE PRESSURE RATING
0	Threaded
1	125 Lb. ANSI
2	150 Lb. ANSI
3	300 Lb. ANSI
6	600 Lb. ANSI
7	900 Lb. ANSI
8	1500 LB. ANSI

Part Number	G- FLANGE FACE TYPE
0	Threaded
1	Flat Faced (FF)
2	Raised Face (RF)
3	Ring Type (RT) > 600 lbs

Part Number	H- HOUSING TYPE
W	Weather Resistant
V	Explosion & Vapor Proof Group B,C, & I
R	Explosion Proof / Rain Tight Group C & D

Part Number	IJ- SWITCH TYPE
E2	20 Amp SPDT Micro (E2)
E4	20 Amp DPDT Micro (E4)
G2	ECW Gold Contact
H2	10 Amp DC SPDT Micro (H2)
H4	10 Amp DC DPDT Micro (H4)
M2	5 Amp SPDT Micro-Hermetically Sealed (M2)
M4	5 Amp DPDT Micro-Hermetically Sealed (M4)
S2	5 Amp SPDT Micro Environment Proof (S2)
S4	5 Amp DPDT Micro Environment Proof (S4)

Part Number	DE- PROCESS CONNECTION & MATERIAL
C0	Cast Iron 2.5" NPT Threaded
E0	Cast Iron 2.5" NPT Threaded (GLC)
D3	Cast Iron with 3" ANSI 125 Lb. FF
D4	Cast Iron with 4" ANSI 125 Lb. FF
D6	Cast Iron with 6" ANSI 125 Lb. FF
D8	Cast Iron with 8" ANSI 125 Lb. FF
F3	Carbon Steel with 3" ANSI Flange
F4	Carbon Steel with 4" ANSI Flange
F6	Carbon Steel with 6" ANSI Flange
F8	Carbon Steel with 8" ANSI Flange
G3	304 SS with 3" ANSI Flange
G4	304 SS with 4" ANSI Flange
G6	304 SS with 6" ANSI Flange
G8	304 SS with 8" ANSI Flange
H3	316 SS with 3" ANSI Flange
H4	316 SS with 4" ANSI Flange
H6	316 SS with 6" ANSI Flange
H8	316 SS with 8" ANSI Flange
B0	Carbon Steel Bushing 2.5" NPT
S0	304 SS Bushing 2.5" NPT
T0	316 SS Bushing 2.5" NPT
J3	Cast Iron with 3" ANSI Flange (GLC)
J4	Cast Iron with 4" ANSI Flange (GLC)
J6	Cast Iron with 6" ANSI Flange (GLC)
J8	Cast Iron with 8" ANSI Flange (GLC)
K3	Cast Steel with 3" ANSI Flange (GLC)
K4	Cast Steel with 4" ANSI Flange (GLC)
K6	Cast Steel with 6" ANSI Flange (GLC)
K8	Cast Steel with 8" ANSI Flange (GLC)
L3	304 SS with 3" ANSI Flange (GLC)
L4	304 SS with 4" ANSI Flange (GLC)
L6	304 SS with 6" ANSI Flange (GLC)
L8	304 SS with 8" ANSI Flange (GLC)
M3	316 SS with 3" ANSI Flange (GLC)
M4	316 SS with 4" ANSI Flange (GLC)
M6	316 SS with 6" ANSI Flange (GLC)
M8	316 SS with 6" ANSI Flange (GLC)



Part Number	IJ- SWITCH TYPE
E2	20 Amp SPDT Micro (E2)
E4	20 Amp DPDT Micro (E4)
G2	ECW Gold Contact
H2	10 Amp DC SPDT Micro (H2)
H4	10 Amp DC DPDT Micro (H4)
M2	5 Amp SPDT Micro-Hermetically Sealed (M2)
M4	5 Amp DPDT Micro-Hermetically Sealed (M4)
S2	5 Amp SPDT Micro Environment Proof (S2)
S4	5 Amp DPDT Micro Environment Proof (S4)

Part Number	K- SPECIFIC GRAVITY
A	< .53 (Special)
B	.53 to .57
C	.58 to .62
D	.63 to .67
E	.68 to .72
F	.73 to .77
G	.78 to .82
H	.83 to .87
I	.88 to .92
J	.93 to .97
K	.98 to 1.02
L	1.03 to 1.07
M	1.08 to 1.12
N	1.13 to 1.17
O	> 1.17 (Special)
Y	Not Applicable (Lead Displacer)

Part Number	L- DISPLACER CABLE LENGTH
0	10 ft (Standard)
2	20 ft
3	30 ft
4	40 ft

Part Number	M- GROUND LEVEL CHECKER CHAIN LENGTH
0	No GLC
1	10 ft (Standard)
2	20 ft
3	30 ft
4	40 ft
5	50 ft
6	60 ft

Summary

The Omnitrol 621/721 provides rugged, high-reliability level alarm switching for floating-roof tanks, where wind, tank turbulence, and roof vibration make traditional floats unreliable. With dense lead displacers, stainless chain suspension, and explosion-proof housings, it ensures positive, dependable switching for critical overfill safety and pump protection in hazardous petrochemical and tank storage environments. Offering single- and dual-stage models, the system is ideal for API 2350-driven safety programs, refinery and terminal operations, and any facility demanding mechanical certainty and long-term reliability.

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This document is for information purposes only. All designs subject to change. Certified dimensions, specifications, and performance data available upon request

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