

# Model 716D

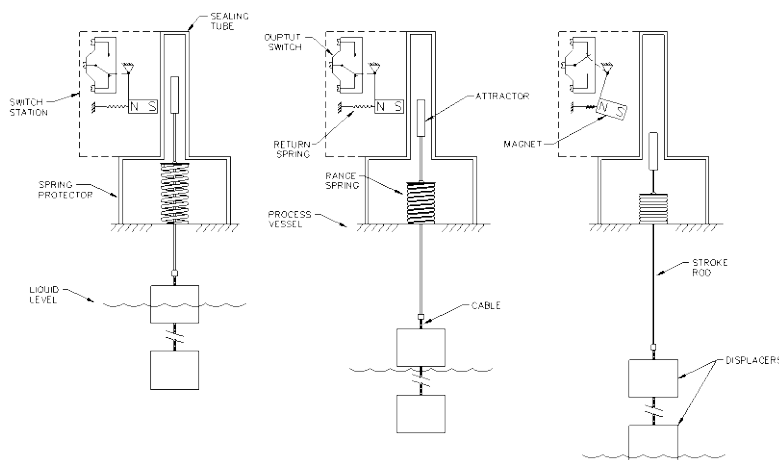
## DISPLACER SWITCH - TOP INSERTED ONE STATION – ADJUSTABLE DIFFERENTIAL CONTROL

The Model 716D spring supported displacer type level switch employs the same mechanism, displacers, etc., as the Model 716A. It is equipped with only a single switch station and is setup for adjustable differential control. The most common application is to turn a pump on and off for controlling the filling or emptying of tanks and sumps.

Displacer actuated units are less sensitive to surface wave action than other models which are actuated by floats. Spring opposed displacer type units are suited to difficult services where the fluid contains entrained solids or otherwise would tend to cause hang-ups in float actuated units.

Operation is based on a buoyancy principle. A displacer, which is more dense than the process liquid is supported by a spring. The length of the spring is proportional to the amount of weight that it supports; the less the weight, the longer the spring will be. When liquid covers both displacers, an amount of weight equal to the weight of the process liquid displaced is removed from the spring and supported by the process liquid. The spring length is proportionally increased and the attractor is moved up into the field of the switch station magnet. The magnet is pulled against the outside of the sealing tube and output switch is actuated.

Similarly, when the process fluid uncovers the top displacer, the displaced liquid weight is transferred back to the spring. The length of the spring is decreased and the empty space set by the adjustable differential device is moved through. The attractor remains in front of the switch station magnet until the liquid level drops on the lower displacer and addition weight is put on the spring. The spring then compresses to its original "Dry" length and the attractor is pulled out of the field of the magnet. The magnet is pulled back to its original position and the switch deactivates.



**DELTA CONTROLS**  
CORPORATION

<b>BASIC TYPE</b>	-	<b>SENSING DISPLACER</b>	-	<b>INSERTION DISTANCE</b>	-	<b>PROCESS CONNECTION</b>	-	<b>SWITCH AND HOUSING</b>	-	<b>OPTIONS</b>
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MODEL  
EXAMPLE: 716D - 53C - 10' - 3"150RS - L2W - AA

### BASIC TYPE

M/N	DESCRIPTION
716D	1 STATION 2 DISPLACER

316 S.S. SPRING: 250°F MAXIMUM;  
INCONEL SPRING TO 450°F  
BASIC: 316 S.S. TRIM,  
416 S.S. ATTRACTOR

### INSERTION DISTANCE

M/N	DESCRIPTION
10	10 FT OF 316 S.S. CABLE
#	UP TO 50 FEET OF 316 S.S. CABLE, MAXIMUM

REPLACE "# WITH REQ'D FEET OF CABLE.  
FOR MONEL OR HASTELLOY "C" CABLE: C/F

### PROCESS CONNECTION

M/N	PROCESS CONNECTIONS
3" NPT* 3" 150R*	3" NPT 3" 150# ANSI FLANGE
3" 300R* 3" 600R*	3" 300# ANSI FLANGE 3" 600# ANSI FLANGE
4" 150R* 4" 300R*	4" 150# ANSI FLANGE 4" 300# ANSI FLANGE

REPLACE "\*" WITH "S" FOR STEEL,  
"B" FOR 304 S.S., OR  
"Y" FOR 316 S.S.  
CONSULT FACTORY FOR OTHER SIZES &  
RATINGS.

### SENSING DISPLACER

DISPLACER (INCHES)						WKG PSIG @ °F			MINIMUM ANSI FLANGED	
M/N	MAT *	MIN SPG	MAX SPG	O.D.	LENGTH	100°F	250°F	450°F	NPT	NOZZLE
49Y	316 S.S.	0.45	0.90	3.5	5.9,12.5	385	300	250	NA	4" SCH 80
50Y	316 S.S.	0.60	1.20	3.5	4.8,10.0	385	300	250	NA	4" SCH 80
51Y	316 S.S.	0.60	1.07	2.9	7.1,14.9	500	400	325	3"	3" SCH 80
52Y	316 S.S.	0.70	1.10	2.9	5.9,12.0	500	400	325	3"	3" SCH 80
53C	PORCELAIN	0.80	1.55	2.9	5.0,10.0	2200	1500	1425	3"	3" SCH 80
54Y	316 S.S.	0.85	1.20	2.9	4.8,10.0	500	400	325	3"	3" SCH 80
55Y	316 S.S.	1.01	2.10	2.9	4.8,10.0	500	400	325	3"	3" SCH 80
56C	PORCELAIN	1.10	2.00	2.9	5.0,10.0	2200	1425	1425	3"	3" SCH 80

\* 316 S.S. AVAILABLE IN SOLID POLYPROPYLENE; WORKING PRESSURE OF 2200 PSIG @ 100°F; LIMITED TO 1520 PSIG @ 220°F MAXIMUM. CHANGE "Y" TO "P"

### SWITCH AND HOUSING

M/N FIRST CHARACTER	SWITCH TYPE - SERVICE AND LOAD RATINGS	Switch Temp Rating
S	GENERAL USE, COMPACT, 4 AMP @ 28VDC, 5 AMP @ 125VAC, 250VAC	-65 to 250°F (-54 to 121°C)
T	HIGH TEMPERATURE; 5 AMP @ 125VAC, 250VAC; 0.5A@125VDC;	-65 to 400°F (-54 to 204°C)
H	SEALED SWITCHES, 15 AMPS @ 125/250VAC, 0.5 AMPS @ 125 VDC, 0.25A @ 250VDC, 1/8HP 125VAC, 1/4HP 250VAC	-67 to 185°F (-55 to 85°C)
L	A.C. MOTOR LOADS; 15 AMP @ 125,250,480VAC, 0.25 HP @ 250VAC, 1/8HP@125VAC; 1/4HP@250VAC; 0.5A@125VDC; 0.25A@250VDC	-67 to 185°F (-55 to 85°C)
D	HIGH D.C. LOADS; 10 AMP @ 125VAC/DC; 0.25 HP @ 125VAC/DC; 3A(resistive)@250VDC; 1/2HP@125VDC POLARIZED (i.e., with negative side connected to common.)	-67 to 180°F (-55 to 82°C)
M/N SECOND CHARACTER	NUMBER OF CONTACTS	
1	1 SPDT CONTACT	
2	2 SPDT CONTACTS	
4	4 SPDT CONTACTS (TYPE S ONLY)	
M/N THIRD CHARACTER	HOUSING RATING	
W	Type 4X, IP65	
X	TYPE 4X, IP65 (EPOXY COATED)	
C	ALUMINUM - FOR HAZARDOUS LOCATIONS; SEE CSA RATINGS	
T	300 STAINLESS STEEL - FOR HAZARDOUS LOCATIONS; SEE CSA RATINGS	

### OPTIONS

M/N	DESCRIPTION
AA	NONE
IN	INCONEL SPRING 450°F INCREASE MIN. SPG BY 6%
SA	316 S.S. SHEATHED ATTRACTOR
HH	120VAC ELECTRICAL HOUSING HEATER TO PREVENT CONDENSATION & ICING



#### CSA Ratings:

Housing types 'C' and 'T'  
Cl I Div 1, Gr B,C,D; Cl II, Div 1 Gr E,F,G; Cl III Div 1  
Class I Zone 1, Ex/AEx d IIB+H<sub>2</sub>  
Maximum contact ratings 480Vac, 15A, T5 with max ambient 80°C. T6 without heater with max ambient 60°C



**DELTA CONTROLS**  
CORPORATION

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