



AMERICAN

Manufacturing Company, Inc.

FLOAT SWITCHES

INTRODUCTION

There are several types of float switches and different applications for these switches. Some switches may be used for several applications, while others are only for a specific duty. Float switches may be used for pilot duty, to operate control devices such as relays and contactors, thereby never seeing a significant electrical load, or direct duty when carrying a full motor load. Float switches are manufactured to handle light to heavy electrical current in a normally open or normally closed application. Some are narrow angle while others are wide-angle. The higher amp wide-angle float switches are called motor rated, differential, or sometimes piggyback switches when they are manufactured with a special plug on the end.



NARROW-ANGLE PILOT DUTY FLOAT SWITCHES

The narrow-angle pilot duty switch has been made from an encapsulated mercury switch enclosed in a plastic float. The non-corrosive float may be either solid or hollow, and it keeps the switch inside positioned to make contact when the float either floats up (normally open) or hangs down (normally closed). This type of float will typically have an amperage rating of 1 to 2 amps. The typical load on this type of switch will be less than half of that, which allows the float to last longer. If the switch services a custom control panel with considerable built-in logic, a heavier switch (frequently around 7 amps) may be used. These switches should be protected in the control circuit with a properly rated fuse or breaker in all cases.

WIDE ANGLE PILOT DUTY FLOAT SWITCHES

The wide-angle pilot duty float switch is a low-rated differential switch constructed much the same way as the narrow-angle but with a differential mechanism inside. This requires the float to rotate a specific distance before actuating. The travel distance is around four inches minimum. For pilot duty applications, this may decrease the control cost by reducing the number of relays required in the control, as well as the number of floats. The limiting factor is the accuracy of the vertical differential. With a four-inch tether for differential control, a reasonable repeatability can be approached. Designers trying to increase the differential by increasing the tether length will increasingly sacrifice repeatability with increasing tether length. If the system under design is sensitive to dose volumes, it becomes almost impossible to control them with a single differential float switch.

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FLOAT SWITCHES

WIDE ANGLE MOTOR CONTROL SWITCH

Whenever using a single float switch for pump control, it must be a wide-angle to provide sufficient run time for the pump and prevent short cycling. If a narrow-angle switch were used, the motor would be turned on and off with the slightest wave action in the tank. The motor or float would fail prematurely. Wide-angle motor control switches were first designed to provide a reliable and inexpensive on/off switch for sump pumps. The switches were manufactured as part of the pump and incorporated an adapter allowing the pump to be piggybacked to the float plug for power. The independent switches have become most popular because they can be replaced without removing the pump. Pumps usually last much longer than these types of switches. These switches, when used with bigger pumps, require special consideration in both design and installation.

In some cases, the use of this type of switch is not suitable. The switch must be designed to carry the full load amperage of the pump. These switches open and close one wire and can pose potential safety risks if a pump is wired incorrectly. For systems with a Hand-Off-Auto (HOA) switch, the HOA switch must also be rated to carry the pump's full load amperage.

TWO FLOAT PILOT DUTY CONTROL Two float pilot duty control provides the safest and most accurate control method possible. Two floats are tethered with a 4" cord length. The drawdown between these two floats will always be the same to the best possible tolerance (typically 1/2" to 1"). The floats are exposed to very low amperage for the control circuit. The pump is provided electricity only when a definite duty contactor connects all wires to the pump. The two floats can be set any distance apart without sacrificing the accurate control of the drawdown. For many systems, this is critical. When sensing liquid level with two switches, the addition of other components for better operational control, such as counters or elapsed time meters, is safer and less expensive.

GENERAL FLOAT SWITCH INSTALLATION

Float switches, in general, should be installed on a separate support from the pump. This support may be a non-corrosive rack using weighted float switches or a vertical float bar. In the event of a pump or float switch failure, the device still in operation does not need to be removed. This is of great benefit from a service point of view. The best option is to use a removable float bar. This allows the floats to be removed while maintaining their separation distance. This will allow checking of the drawdown and operation of the system without disconnecting the floats or changing the drawdown. without pulling on a wet electrical connection in use.



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FLOAT SWITCH ACCESORIES

Float Tree Bracket 1"

FLOATTREEBRAC1



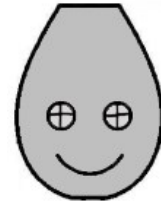
Stainless Steel Float Clamp

SWITCHCLAMP



Float Weight

WH



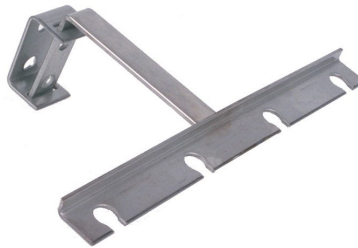
Float Tree With 2-PO15 & 2-DO15 Floats

SWITCHBARDRIP4



Stainless Steel Float Bracket

FLOATBAR



Stainless Steel Float Bracket

FLOATBAR3



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FLOAT SWITCHES

<u>ITEM #</u>	<u>DESCRIPTION</u>
AO10	FLOAT N.A. DIFF., MERC., N.O., POLY, 10A, 10'
AO10W	FLOAT N.A. DIFF., MERC., N.O., POLY, 10A, 10', Weight
DC15	FLOAT W.A. DIFF., MECH., N.C., ABS, 13A, 15'
DC15W	FLOAT W.A. DIFF., MECH., N.C., ABS, 13A, 15', Weight
DO10P1	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 10', 110V plug
DO15	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 15'
DO15M	FLOAT W.A. DIFF., MERC., N.O., ABS, 13A, 15'
DO15P1	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 15', 110V plug
DO15P2	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 15', 230V plug
DO15W	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 15', Weight
DO15MW	FLOAT W.A. DIFF., MERC., N.O., ABS, 13A, 15', Weight
DO20	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 20'
DO20M	FLOAT W.A. DIFF., MERC., N.O., ABS, 13A, 20'
DO20W	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 20', Weight
DO30	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 30'
DO30M	FLOAT W.A. DIFF., MERC., N.O., ABS, 13A, 30'
DO30W	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 30', Weight
DO50	FLOAT W.A. DIFF., MECH., N.O., ABS, 13A, 50'
DO50M	FLOAT W.A. DIFF., MERC., N.O., ABS, 13A, 50'
PO15	FLOAT N.A. PILOT, MERC., N.O., POLY, 10A, 15'
PO15W	FLOAT N.A. PILOT, MERC., N.O., POLY, 10A, 15', Weight
PO20	FLOAT N.A. PILOT, MERC., N.O., POLY, 10A, 20'
PO20W	FLOAT N.A. PILOT, MERC., N.O., POLY, 10A, 20', Weight
PO30	FLOAT N.A. PILOT, MERC., N.O., POLY, 10A, 30'
PO30W	FLOAT N.A. PILOT, MERC., N.O., POLY, 10A, 30', Weight
PO50	FLOAT N.A. PILOT, MERC., N.O., POLY, 10A, 50'
PO50W	FLOAT N.A. PILOT, MERC., N.O., POLY, 10A, 50', Weight
PO100	FLOAT N.A. PILOT, MERC., N.O., POLY, 10A, 100'
DO100	FLOAT N.A. DIFF, MECH., N.O., POLY, 10A, 100'
WH	FLOAT WEIGHT **HALF ONLY** (need 2 to make whole)
FLOATTREEBRAC1	FLOAT TREE BRACKET 1" PVC
FLOATBAR	4 FLOAT STAINLESS FLOAT BAR
FLOATBAR3	3 FLOAT STAINLESS FLOAT BAR
SWITCHCLAMP	FLOAT WIRE PIPE CLAMP S.S.
SWITCHBARDRIP4	FLOAT TREE WITH 2-PO15 & 2-DO15 FLOATS

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