



OPW Installation and Maintenance Instructions

OPW 144TA High Level Alarm

IMPORTANT: Please read these warnings and use the assembly instructions completely and carefully before starting. Failure to do so may cause product failure, or result in environmental contamination due to liquid leakage into the soil, creating hazardous spill conditions.

IMPORTANT: Check to make sure the unit is intact and undamaged and all parts have been supplied. Never substitute parts for those supplied. Doing so may cause product failure.

WARNING-DANGER: Using electrically operated equipment near gasoline or gasoline vapors may result in a fire or explosion, causing personal injury and property damage. Be sure that the working area is free from such hazards, and always use proper precautions.

Notice: OPW products must be used in compliance with applicable federal, state, and local laws and regulations. Product selection should be based on physical specifications and limitations and compatibility with the environment and material to be handled. All illustrations and specifications in this literature are based on the latest production information available at the time of publication. Prices, materials, and specification are subject to change at any time, and models may be discontinued at any time, in either case, without notice or obligation.

Standard Product Warranty

OPW warrants that products sold by it are free from defects in materials and workmanship for a period of one year from the date of manufacture by OPW (ECO products two years from date of manufacture.) Proof of purchase may be required. As the exclusive remedy under this limited warranty, OPW, will at its sole discretion, repair, replace, or issue credit for future orders for any product that may prove defective within the one year date of manufacture period (repairs, replacements, or credits may be subject to prorated warranty for remainder of the original warranty period, complete proper warranty claim documentation required.) This warranty shall not apply to any product that has been altered in any way, which has been repaired by any party other than a service representative authorized by OPW, or when failure is due to misuse, or improper installation or maintenance. OPW shall have no liability whatsoever for special, incidental or consequential damages to any party,

and shall have no liability for the cost of labor, freight, excavation, clean up, downtime, removal, reinstallation, loss of profit, or any other cost or charges.

For any product certified to California 2001 standards, OPW warrants that product sold by it are free from defects in material and workmanship for a period of one year from date of manufacture or one year from date of registration of installation not to exceed 15 months from date of manufacture by OPW.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

Preventative Maintenance:

- 1.) Test system prior to each fill-up.
- 2.) Replace battery if Low battery Indicator is on. Use only OPW P/N: H15461M.
- 3.) If wiring is damaged, replace as necessary following NEC, NFPA and any other applicable local, State, and federal requirements.

Alarm Technical Information:

Hazardous Location Approval:
Class I, Groups C & D
Maximum Ambient Temperature Rating:
60 deg C
Maximum Surface Temperature Classification:
T4 Surface Code

Switch Technical Information:

Minimum liquid specific gravity: 0.45. Stem material: Stainless Steel. Float Material: Closed Cell Buna-N (UL Approved) for gasoline services. Max Pressure: 150 psi @ 70 deg F. Thread: 1/8" NPT.

Replacement Parts:

Battery OPW P/N: H15461M
Label Set OPW P/N: C05314M
Wire Fitting OPW P/N: H15412M
Float Switch OPW P/N: H15411M
SST Tube OPW P/N: C05295M

Important: Leave these Installation Instructions with the Station Operator.

INSTALLATION INSTRUCTIONS - 144TA High Level Alarm



CONFORMS TO ANSI / UL 913

CERTIFIED TO CAN / CSA STD C22.2 No. 157-92

US CONTROL NUMBER – 03069027

NOTE: As defined in article 501 – Class 1 Locations of the National Electric Code, this apparatus and it's interconnect wiring are intrinsically safe. Under normal conditions this apparatus and it's wiring cannot release sufficient energy to ignite a specific ignitable atmospheric mixture by opening, shorting, or grounding.

WARNING: Interconnect wiring between the gauge and the alarm unit must be kept totally isolated and separate from any other wiring. This wiring must not share any junction box, conduit, raceway, or fixtures with circuits other than those defined by NEC as being intrinsically safe for all class 1 locations.

LOCATION: NEC ARTICLE 501-3-CLASS 1 Locations exempt intrinsically safe enclosures in paragraph 501-3(b)(1)(c), and therefore may be placed in the most convenient location but must be within reach to the operator and within audible range.

MOUNTING: Since a general purpose NEMA 4X enclosure is used to protect the alarm circuits and batteries, any mounting holes, conduit, or fasteners must be sealed in order to maintain the weatherproof integrity of the enclosure. All penetrations into enclosure must be made at the bottom of alarm unit.

Instructions for Direct Tank Bung Installation

Step 1 – Minimum Ullage Size

Determine type and size of tank. Follow the below calculations for Horizontal or Vertical tanks; or use provided Tank Charts to determine required ullage (I). (See Tank Charts on pg 6) Record answer as (I) on the Float Tube Worksheet.

Horizontal Tank Calculations

For 90% Product Height

Multiply the tank diameter (inches) x 0.8435

Example for 27 (inch) Diameter Tank: Product Level @ 90% = 27 (inches) x 0.8435 = 22.78 (inches)

For 95% Product Height

Multiply the tank diameter (inches) x 0.903

Example for 27 (inch) Diameter Tank: Product Level @ 95% = 27 (inches) x 0.903 = 24.38 (inches)

NOTE: Round the answer down to the nearest 1/8 (inch) increment.

Vertical Tank Calculations

For 90% Product Height

Multiply the tank height (inches) x 0.9

For 95% Product Height

Multiply the tank height (inches) x 0.95

Example for 8 (feet) tall vertical tanks: Product Level @ 95% = 96 (inches) x 0.95 = 91.2 (inches)

NOTE: Round the answer down to the nearest 1/8 (inch) increment.

Step 2 – See Fig. 1

Measure from the top of the tank inlet to the inside of the of the top of the tank and record this as value (A)

Thread adaptor into tank inlet, hand tighten, then measure exposed / unexposed threads (B) that are above/below tank surface.

Record A + B as (II).

Remove adaptor from tank inlet.

NOTE: If you are mounting on a riser pipe (B), add riser height to exposed thread (II).

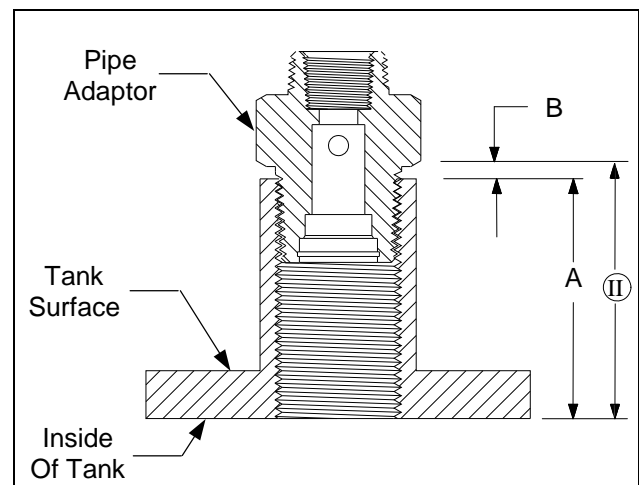


Figure 1

Step 3 – See Fig. 2

Thread float switch assembly into float drop tube, hand tighten, and measure exposed thread.

Record this value as C.

Add 1.19 inches to C and record this value as (III).

Step 4

Use the following equation to determine required float drop tube length:

$I + II - III + 1.5 =$ required length. (See Float Tube Worksheet)

Cut float drop tube to required length using a standard tubing cutter.

WARNING: Chamfer and De-burr the end of the pipe before proceeding. Failure to do so may result in cut o-rings.

NOTE: Both ends of tube are threaded. Either end may be cut.

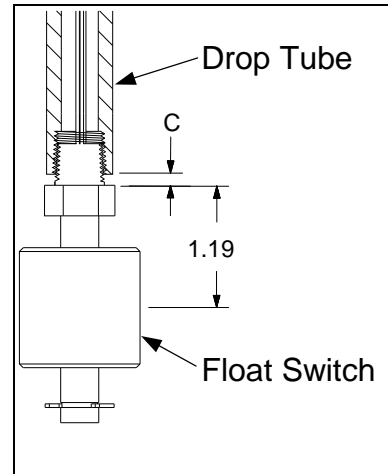


Figure 2

FLOAT TUBE WORKSHEET									
TANK TYPE									
Horizontal - See Horizontal Tank Chart (Step 1 or Page 6)									
Adaptor Thread Reveal	<input style="width: 40px; height: 20px;" type="text"/>	(A)	Switch Thread Reveal	<input style="width: 40px; height: 20px;" type="text"/>	(C)				
Riser Pipe Height	+	<input style="width: 40px; height: 20px;" type="text"/>	(B)	Fluid Level	+	<input style="width: 40px; height: 20px; text-align: center; value: 1.19;" type="text"/>	(D)		
Float Drop Tube Length = Minimum Ullage	<input style="width: 40px; height: 20px;" type="text"/>	(I)	+	<input style="width: 40px; height: 20px;" type="text"/>	(II)	-	<input style="width: 40px; height: 20px;" type="text"/>	(III)	+ 1.5 = <input style="width: 40px; height: 20px;" type="text"/> Inches

Step 5

Attach float switch to float drop tube by running the two (2) switch wires through the tube and tightening the switch into the tube threads.

NOTE: Apply proper thread sealant (i.e. Teflon tape) to float switch threads before tightening.

Step 6 – See Fig. 3

Lubricate the outside of the cut end of the drop tube.

Run wires through bottom of tank adaptor and firmly insert float drop tube into the tank fitting.

Secure the drop tube firmly with the supplied setscrew.

Step 7 – See Fig. 4

Remove lid from enclosure.

Place the gasket around the threads of tank fitting.

Run float switch wires into the bottom of the enclosure and through the conduit nut.

Secure enclosure to the tank fitting with the conduit nut by hand tightening.

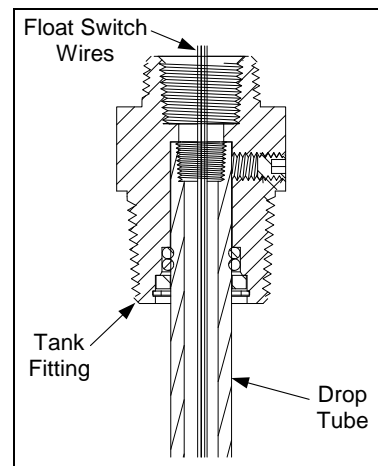


Figure 3

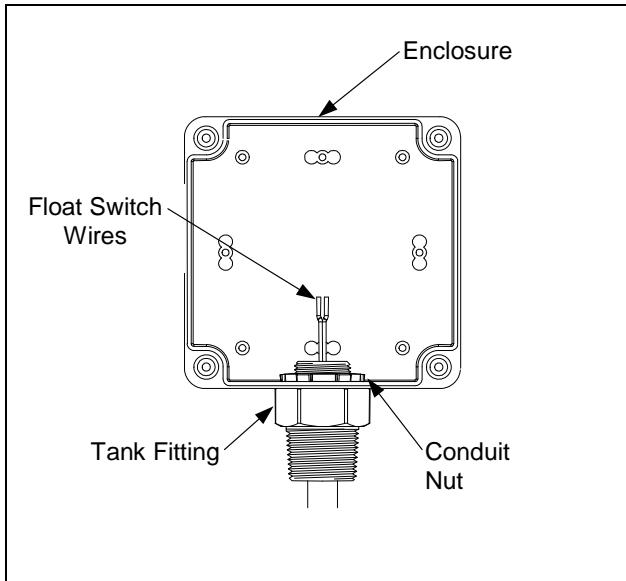


Figure 4

Step 8 – See Fig. 5

Pull wires through the wire fitting, and thread the wire fitting into the tank fitting. Make sure to apply proper thread sealant (i.e. Teflon tape) to the wire fitting threads before tightening.

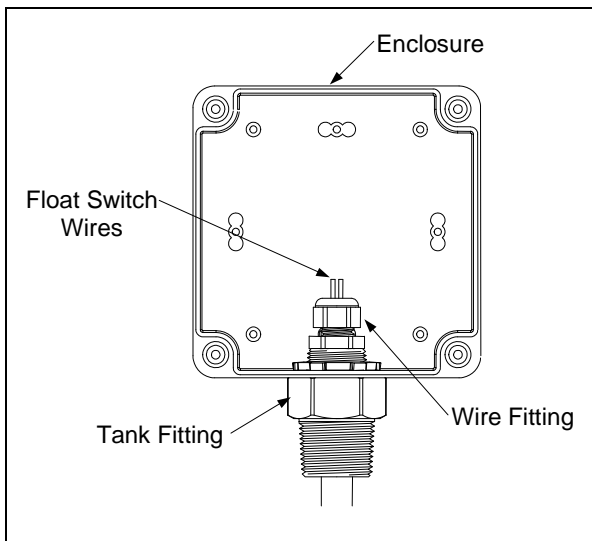


Figure 5

WARNING: DO NOT over-tighten plastic wire fitting. Over-tightening may cause stripping of threads.

Step 9

Trim wires to approx. 10-12 inches of excess.

Use wire strippers to strip back approx. ¼” of thread insulation.

Secure the wires to the two (2) terminal blocks labeled “SWITCH”

NOTE: Wire orientation in terminal block is not important.

Step 10 – See Fig. 6

Fasten lid assembly to rear enclosure using the four (4) provided plastic screws.

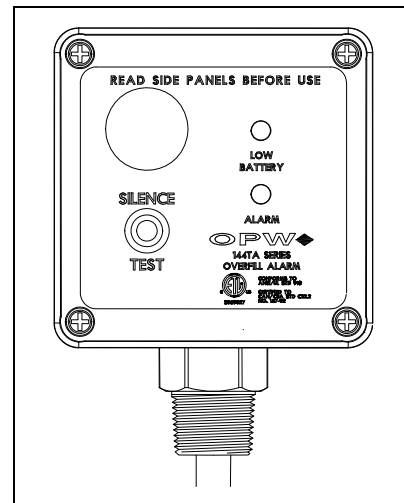


Figure 6

Step 11

Test alarm following the “Instructions for Testing Tank Alarm”.

Step 12

Apply proper thread sealant (i.e. Teflon tape) to tank fitting, and thread into tank opening.

Instructions for Testing Tank Alarm

Step 1

Push switch down. An audio signal should be heard and a red flashing LED should be visible.

Step 2

Lift float up and down, allowing system to sound alert, and repeat several times.

Low Battery Indicator

A yellow LED will be displayed when battery power is low. Replace battery as necessary, using only the replacement batteries supplied by OPW P/N H15461M.

Instructions for Remote Fill Installation

Step 13

Follow steps 1 through 6 of “Instructions for Direct Tank Bung Installations”.

Step 14 – See Fig. 7

Run the two (2) switch wires through the wire fitting, and fasten fitting securely into tank fitting. Make sure to apply proper thread sealant (i.e. Teflon tape) to the wire fitting before tightening.

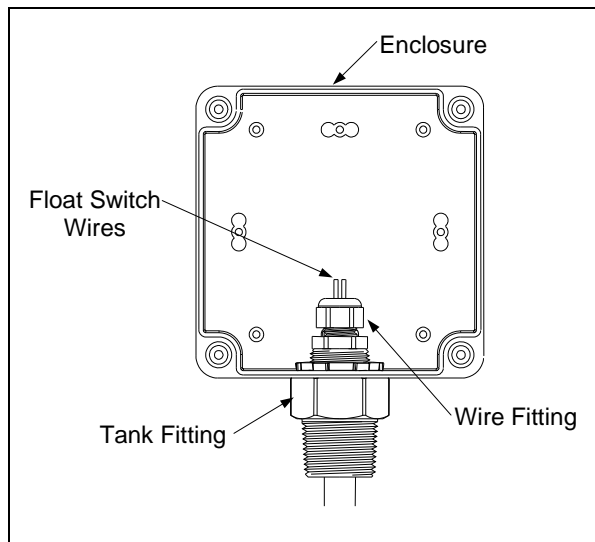


Figure 7

WARNING: DO NOT over-tighten plastic wire fitting. Over-tightening may cause stripping of threads.

Step 15

Mount enclosure back to remote fill spill container using the blind holes in the enclosure only.

NOTE: Make sure to use screws that do not puncture the blind holes in the enclosure to keep the enclosures weather resistant integrity.

Step 16 – See Fig. 8

Run wiring to remote alarm location (per NFPA 30A Automotive and Marine Service Station Code for Electrical Equipment – Chapter 7).

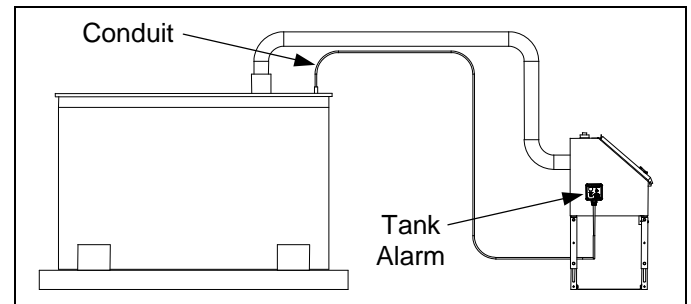


Figure 8

NOTE: Junction box(es) and conduit (not supplied) are required for running to a remote fill. Installation needs to follow Article 501 Class I locations in the NEC code.

Step 17

Insert electrical conduit through hole in the bottom of the enclosure.

Secure the electrical conduit to the enclosure using the supplied $\frac{3}{4}$ " conduit nut.

Step 18

Follow Steps 9 through 12 of “Instructions for Direct Tank Bung Installations”.

HORIZONTAL TANK CALCULATIONS

HORIZONTAL TANK DIAMETER (in.)	PRODUCT LEVEL AT:		HORIZONTAL TANK DIAMETER (in.)	PRODUCT LEVEL AT:	
	90% (in)	95% (in)		90% (in)	95% (in)
30	25.3	27.1	126	106.3	113.8
34	28.7	30.7	130	109.7	117.4
38	32.1	34.3	134	113	121
42	35.4	37.9	138	116.4	124.6
46	38.8	41.5	142	119.8	128.2
50	42.2	45.2	146	123.2	131.8
54	45.6	48.8	150	126.5	135.5
58	48.9	52.4	154	129.9	139.1
62	52.3	56	158	133.3	142.7
66	55.7	59.6	162	136.7	146.3
70	59	63.2	166	140.1	149.9
74	62.4	66.8	170	143.5	153.5
78	65.8	70.4	174	146.9	157.1
82	69.2	74	178	150.3	160.7
86	72.5	77.7	182	153.7	164.3
90	75.9	81.3	186	157.1	167.9
94	79.3	84.9	190	160.5	171.5
98	82.7	88.5	194	163.9	175.1
102	86	92.1	198	167.3	178.7
106	89.4	95.7	202	170.7	182.3
110	92.8	99.3	206	174.1	185.9
114	96.2	102.9	210	177.5	189.5
118	99.5	106.6	214	180.9	193.1
122	102.9	110.2	218	184.3	196.7



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