MOELLER® marine products

Fueling the Fun

Redi Tanks

Redi-Tanks Fuel Tanks Information & Recommendations

Emissions-related Installation Instructions

PERMANENT INSTALLATION

To obtain optimal performance from your Moeller Marine fuel tank, it is important that you follow these installation guidelines closely.

1. **Follow all applicable ABYC, ISO, NMMA, and USCG regulations and recommendations.**
2. The fuel tank must be fully supported in its installed position.
3. The fuel tank should be installed securely. The installed fuel tank should not bounce, shift, or move as this will cause chaffing. The fuel tank should not be allowed to be scraped, cut, or punctured because of a loose installation or manufacturing debris.
   IMPORTANT: Neoprene padding should be added to any area where the surface of the tank makes contact with a surface that may cause chaffing. **DO NOT COMPRESS NEOPRENE PADDING!**
4. **Allow 3% expansion of the fuel tank in all directions.** *Hydrocarbon swell occurs when gasoline or diesel fuel soaks into the fuel tank material. (Example: Initial size 40”L x 24”W x 18”H = Expanded size 41.2”L x 24.7”W x 18.5”H) Design the fuel tank compartment to allow growth equally. Hold down brackets / braces must be installed to prevent damage to the fuel tank even after hydrocarbon expansions occur and must be able to accept the 3% expansion . Consult Moeller Marine for bracket options.
5. **DO NOT** remove dust caps until you are ready to install the fuel tank. Dust caps are provided to limit dirt, dust, water or any other foreign substance from getting into the fuel tank.
6. Fuel tank placement should be carefully considered as certain environmental factors can increase fuel temperature leading to potential degradation of fuel integrity and related problems. Certain fuel system components must be covered in certain heat ranges relating to location relative to engine.
7. **DO NOT** deform the tank during installation. Methods of deforming the fuel tank also include: walking, standing, or applying excessive weight onto the fuel tank. Moeller highly recommends temporary coverage of fuel during vessel build, with self supporting shell or template. This also aids in keeping debris out of fuel tank area.
8. **DO NOT** solid plumb fuel lines to the fuel tank use only flexible lines. (USCG)
9. **DO NOT FOAM THE FUEL TANK IN PLACE! (USCG)**
10. **NEVER** modify the fuel tank. Use only fittings which come with the tank, or fittings approved by Moeller Marine. Moeller warranty could be voided with any modifications to fuel tank.
11. **DO NOT** attempt to patch or repair holes or punctures in fuel tank.
12. Fuel tank temperatures need to be stabilized to room temperature for 24 hours before testing or installation.
13. If you receive a fuel tank where components are to be added by the boat builder for such items as fuel pumps or senders where block off plates are in the place of these units due to prior agreement with Moeller, when installing and tightening the bolts, **DO NOT** torque the bolts past 45 in-lbs. This is a factory specification and for initial torque only. Over torquing bolts can damage the tank and inserts and compromise the seal of the component.
14. If any hardware is removed from the tank for service or replacement, after reattachment, we recommend pressure testing to 3 psi per ABYC H-24.18.5

Improper installation may cause performance problems such as: Leaks, Loss of Capacity, Sender Inaccuracy, and Fuel Starvation.

Mount the tank in an accessible area. Fuel tank fittings should be installed so they are readily accessible. (USCG) Installations that warrant removal of walls, floors, structure, or other systems may be warranted at a prorated rate.

IMPORTANT: Fuel system or propulsion damage resulting from the improper installation of the fuel tank will not be covered under the limited warranty.

REMEMBER - THESE ARE GUIDELINES FOR THE PERMANENT INSTALLATION OF FUEL TANKS, AND THAT THE BUILDER IS ULTIMATELY RESPONSIBLE FOR THE PROPER INSTALLATION OF TANKS

In addition to USCG pressure testing requirements, Moeller highly recommends a pre-installation pressure test. Consult Moeller for assistance.

OPERATING TEMPERATURES

Moeller Marine fuel tanks are capable of operation within an ambient temperature range from -40°F (-40° C) to 176°F (80°C).
IMPORTANT: Fuel tank temperatures must be limited to 150°F (66° C) when not in operation. Processes that include dry heating of the fuel tank beyond 150°F (66° C) should be discontinued immediately. Fuel tanks subjected to temperatures in excess of 150°F (66° C) when not in operation, could be considered as damaged, and may not be covered under the limited warranty.

PERMEATION

Permeation is a natural phenomenon of gasoline in a cross-linked polyethylene fuel tank. Permeation is the result of gasoline fumes escaping from the fuel tank, not the loss of liquid fuel. All Moeller barrier fuel tanks meet and exceed EPA permeation regulations.

Several precautions need to be addressed when using a cross-linked polyethylene fuel tank

–Fuel (gasoline) vapors settle to the lowest point in the compartment; therefore, a means to ventilate the fumes is required. See ABYC Standards Section H-2 for specifics.

–A covered boat will not allow these fumes to escape, so build up of these fumes is inevitable. Caution should be taken when a boats fuel tank contains fuel and is covered for an extended period of time. A boat cover should never cover the fuel tanks exterior vent fitting(s).

–Fuel vapors will migrate to any compartment open to the fuel tank. The smell of fuel vapors does not necessarily mean that there is a leak in the fuel tank, but a closer inspection should be performed.

–Fuel vapors may be absorbed by other objects located in compartments where fuel vapor may migrate.

Following the above precautions, a cross-linked polyethylene fuel tank will provide years of service.

PRESSURE TESTING

Moeller Marine fuel tanks are tested in accordance to USCG Title 33 CFR, Section 183.510. After installation, fuel tank and fuel system pressure testing must be performed in accordance with applicable laws. Fuel tank temperatures need to be stabilized to room temperature for 24 hours before pressure testing.

IMPORTANT: Unrestrained pressure testing may cause damage or deformation to the fuel tank.

Fuel tank testing outside of the boat structure or prior to permanent installation requires the use of a fixture(s) to simulate the intended installation or to restrain each tank surface within 1 inch the print specification. Failure to utilize control fixtures may cause unintended surface deformation, causing leaks and permanent fuel tank damage. DO NOT exceed 3 psi for pressure testing.

STORAGE

Moeller Marine fuel tanks are manufactured from UV stable material. Fuel tanks may be stored outside as long as steps are taken to prevent damage to the fuel tank, any fittings or components exposed on the fuel tank, and to prevent intrusion of foreign substances. This includes limiting exposure temperatures to -40°F (-40° C) to 150° F (66° C). Fuel tank temperatures need to be stabilized to room temperature for 24 hours before installation or pressure testing. If extended storage of the tanks is needed, Moeller Marine recommends that you cover the fuel tanks. **DO NOT ALLOW ICE OR SNOW BUILDUP.**

First In First Out (FIFO) procedures should be followed as with any inventory.

TOLERANCES

The Association of Rotational Molders recognizes wall thickness tolerances of plus/minus 20% for rotational molded products. Other wall thickness variations may be present due to design configuration.

Environmental and molding conditions result in variation of size and capacity of the fuel tank. Moeller recognizes size and capacity tolerances of plus or minus 1-1/2% of specified dimension or capacity.

Moeller fuel tanks are rated for use with gasoline with up to 85% ethanol. However, National Marine Manufacturers Association, NMMA, and the Outdoor Power Equipment Institute, OPEI, strongly recommend that fuels with greater than 10% ethanol not be used in marine or outdoor craft.

Gasolines Containing Ethanol

If your gasoline contains ethanol (ethyl alcohol), you should be aware of certain adverse effects that can occur. Increasing the percentage of alcohol in the fuel can also worsen these adverse effects.

–Some of these adverse effects are caused because the alcohol in the gasoline can absorb moisture from the air, resulting in a separation of the water/alcohol from the gasoline in the fuel tank.

–Be aware that gasolines containing large percentages of ethanol may cause increased corrosion of metal parts, especially aluminum and brass.

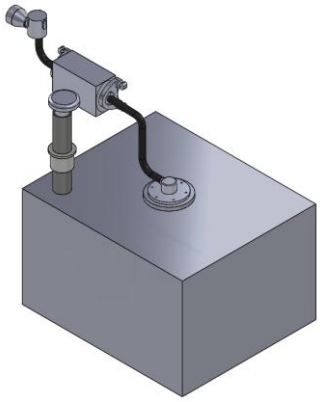
–Long periods of storage, common to boats, create unique problems. In cars alcohol-blend fuels are normally consumed before they can absorb enough moisture to cause trouble, but boats often sit idle long enough for phase separation to take place.

I**MPORTANT:** Use of improper gasoline or additives can damage your fuel system. Fuel system damage resulting from the use of improper gasoline or additives is considered misuse of the system, and damage caused thereby will not be covered under the limited warranty.

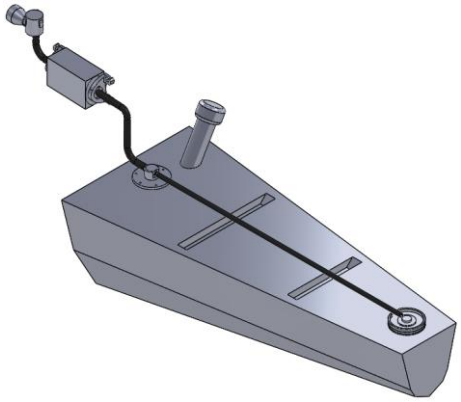
FIRE AND EXPLOSION HAZARD: Fuel leakage from any part of the fuel system can be a fire and explosion hazard which can cause serious bodily injury or death. Careful periodic inspection of entire fuel system is mandatory, particularly after storage. All fuel components should be inspected for leakage, softening, hardening, swelling or corrosion. Any sign of leakage or deterioration requires replacement before further engine operation.

TYPICAL PLUMBING LAYOUT FOR SYSTEM TYPES

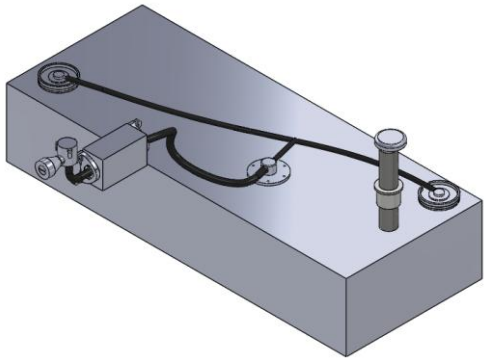
Below are some examples of typical plumbing layouts for tanks with various components for a canister system and for a direct fill pressure system.



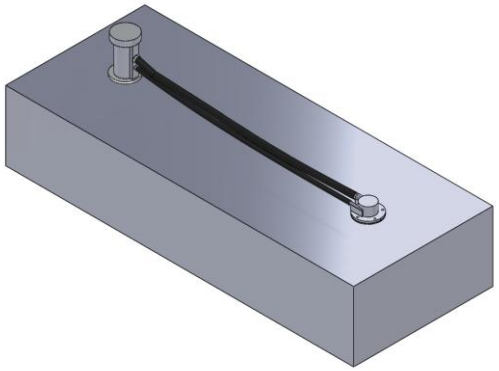
Attwood type system: one FLVV in canister system



Attwood type system: one FLVV and one GRV in canister system; shown with direct fill application



Attwood type system: one FLVV and two GRV in canister system



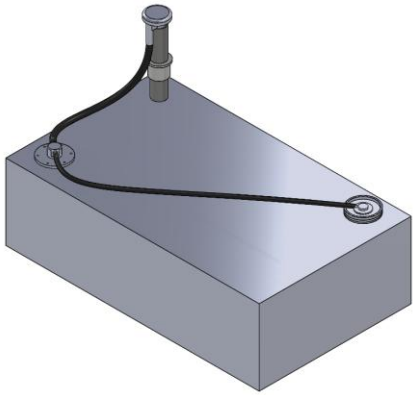
BluSkies type system: one direct fill and one UVV in pressure system

Components Represented in Layouts:

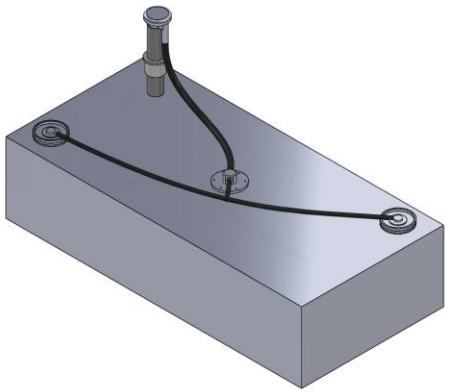
Fluid Level Valve; Grade / Vent Valve, Ullage Valve, Inlet Check Valve, Direct Fill Carbon Canister, P-trap, Deck Fill: for canister and pressure systems

Components Available from Moeller to complete Systems as shown (limited offerings for base systems, more complete products available from component suppliers)

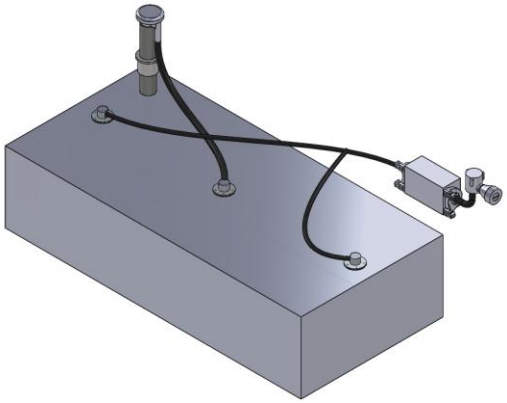
- o Inlet Check Valve with or without heat shield
- o Deck fill: flat or angled, black or white
- o Carbon canister with or without heat shield, 10” or 17” dependent upon size of tank
- o P-trap: black or white



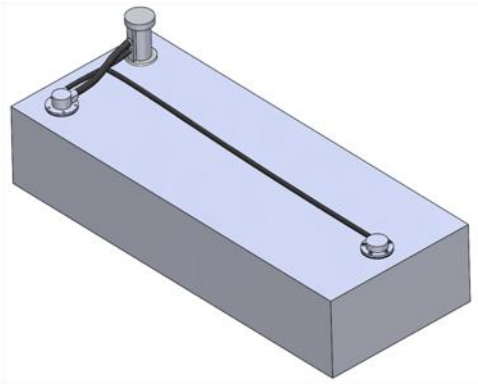
Attwood type system: one FLVV and one GRV in pressure system



Attwood type system: one FLVV and two GRV in pressure system



Perko type system: one FLV and two TVV in canister system



BluSkies type system: one direct fill, one UVV, and one grade valve in pressure system

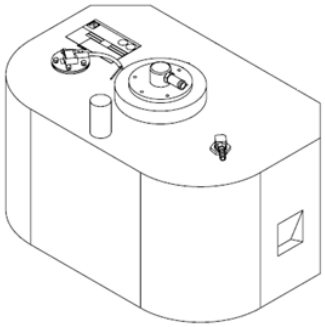
Tank Specific Information & Recommendations

1. All tank specific information and recommendations for angle and tilt were performed such that for all tanks, any of the walls of the tanks can face the front of the boat, unless noted in table below. When determining which way the tank will sit in the boat, note the location of the pickup and the fuel sender as to the functionality give boat tip angles.
2. Tanks sold as complete units with sender, pick-up, Fill Limit Vent Valve (FLVV or FLV) and Grade Valve (GRV), etc. as required.
3. Systems designed in conjunction with Attwood Marine Products for all canister system tanks and with BluSkies for all pressure system tanks.
4. The Carbon Canister, Inlet Check Valve (ICV), deck fill, and P-Trap Vent must be purchased as separate components and can be purchased from Moeller Marine Products.
5. Unless noted, tanks are designed for a canister system but most can be used with pressurized systems. This is determined by the boat builders plumbing and the use of an inline Fuel Demand Valve. Consult Attwood Marine Products. Any tank with an Attwood direct fill option like the FTA001234BR and FTA001259BR cannot be used in a pressure system.
6. For coverage by Attwood warranty and guaranty, all components in the system must be Attwood.
7. Carbon canister location / packaging to be determined by boat manufacturer in coordination with Attwood per the installation instructions.
8. If the ICV and/or carbon canister is located in the engine compartment, a heat shield for that component will be required per the installation instructions.
9. Hose length and routings to be determined by boat manufacturer in coordination with Attwood to satisfy intent of the system relative to regulatory requirements.
10. Installation instructions can be found at www.attwoodmarine.com by clicking on Fuel, Integrated Fuel Systems, Components for EPA Certified Fuel systems or Attwood can be contacted via email at attwoodinfo@attwoodmarine.com and at www.moellermarine.com.
11. Information on BluSkies parts and instructions can be found at www.bluskies.us or contacting via email at info@bluskies.us and at www.moellermarine.com.

Diurnal Tank #	Old Tank (if applicable)	Gallons	Style	Pressure System Only	Dimensions of Tank (inch)				FLVV Shutoff Ht (in) #	Volume at Fill Shutoff	Static Float Angle 0° to 5° Bow Up - Worst Case Maximum Volume at Fill Shutoff Gallons for Any of the 4 Sides Facing the Bow of the Boat ¥						If Noted, Has At Least One Side That Cannot Face Forward in Vessel
					Length	Width	Height	Overall Height w/Components			0°	1°	2°	3°	4°	5°	
FTA001088BR	FT1512	12	Comp*		23	15	11.75	14.5	3.20	12.68	12.68	12.67	12.67	12.67	12.67	12.66	
FTA001234BR	-	15	Pontoon		47	15.85	12.83	18.96 **	0.94	15.39	15.45	14.85	14.26	13.68	13.12	12.56	Designed only with narrow end forward
FTA001103BR	FT1999	15	Cube		26	16	11.75	14.5	3.20	15.95	15.95	15.95	15.95	15.95	15.95	15.95	
FTA001092BR	FT2143	18	Comp*		34	9.25	21.14	23.52	3.20	18.86	18.86	18.75	18.63	18.52	18.41	18.30	
FTA001099BR	FT2599-3	21	Flat		47	18.03	7.5	10.25	1.38	21.50	21.50	21.50	21.48	21.40	21.21	20.94	
FTA001108BR	FT2399	23	Cube		24	20	14	15.41	3.20	22.89	22.89	22.86	22.83	22.80	22.77	22.74	
FTA001091BR	FT2631	23	Cube		20.75	18.88	17.75	19.32	3.20	23.44	23.44	23.39	23.33	23.27	23.22	23.16	
FT001550BD-1	-	25	Pontoon	Yes	46.76	20.85	16.85	24.38 €	.625	25.08	25.08	24.87	24.01	23.11	22.17	21.23	Designed only with narrow end forward
FT001550BD-2	-	25	Pontoon	Yes	46.76	20.85	16.85	26.37 €	.625	25.08	25.08	24.87	24.01	23.11	22.17	21.23	Designed only with narrow end forward
FTA001109BR	FT2926	26	Belly		43	25.75	8	11.45	1.69	25.95	25.95	25.95	25.95	25.79	25.50	25.15	Tank to only run lengthwise with hull
FTA001233BR	-	30	Pontoon		71	22.51	15	21.37 **	0.76	30.55	30.55	29.25	27.99	26.79	25.63	24.53	Designed only with narrow end forward
FTA001259BR	-	27	Pontoon		49.51	20.85	16.85	23.11 **	1.38	25.32	25.32	24.47	23.56	22.66	21.79	20.92	Designed only with narrow end forward
FTA001284BR	-	27	Pontoon		49.51	20.85	16.85	19.60	1.38	25.32	25.32	24.47	23.56	22.66	21.79	20.92	Designed only with narrow end forward
FTA001122BR	FT3418	28	Belly		60.25	26.5	7.38	10.20	2.28	30.41	30.41	29.72	29.01	28.27	27.31	26.24	Tank to only run lengthwise with hull
FTA001102BR	FT3509-1	30	Belly		48	23.38	8.5	10.50	1.38	31.34	31.34	31.33	31.29	31.08	30.74	30.34	Tank to only run lengthwise with hull
FT001513BD-1	-	31	Pontoon	Yes	71	22.51	15	23.49 €	.625	31.08	31.08	29.77	28.50	27.29	26.12	25.00	Designed only with narrow end forward
FT001513BD-2	-	31	Pontoon	Yes	71	22.51	15	26.15 €	.625	31.08	31.08	29.77	28.50	27.29	26.12	25.00	Designed only with narrow end forward
FTA000926BR	-	31	Cube		23.5	22	20.5	20.75	3.20	31.74	31.74	31.74	31.74	31.74	31.74	31.74	
FTA001089BR	FT3549	32	Comp*		37.5	20.99	16.63	18.76	3.20	32.76	32.76	32.3	31.83	31.34	30.84	30.33	
FTA001093BR	FT3525BR	32	Cube		28.5	20.5	17.5	20.10	3.20	33.53	33.53	33.06	32.59	32.12	31.65	31.17	
FTA001110BR	FT4018	33	Cube		26	20.5	18.5	21.25	3.20	34.46	34.46	34.46	34.46	34.46	34.46	34.46	
FT4221BR-2	FT4221BR-1	35	Cube		37.26	22.57	12.74	14.74	2.28	35.46	35.46	34.61	33.76	32.91	32.05	31.19	
FT001534BD-1	-	37	Pontoon	Yes	29.55	21.00	20.00	26.48 €	3.875	37.90	37.90	37.45	37.02	36.69	36.32	35.95	Designed only with one end forward

Diurnal Tank #	Old Tank (if applicable)	Gallons	Style	Pressure System Only	Dimensions of Tank (inch)				FLVV Shutoff Ht (in) #	Volume at Fill Shutoff	Static Float Angle 0° to 5° Bow Up - Worst Case Maximum Volume at Fill Shutoff Gallons for Any of the 4 Sides Facing the Bow of the Boat ¥						If Noted, Has At Least One Side That Cannot Face Forward in Vessel
					Length	Width	Height	Overall Height w/Components			0°	1°	2°	3°	4°	5°	
FT001534BD-2	-	37	Pontoon	Yes	29.55	21.00	20.00	29.73 €	3.875	37.90	37.90	37.45	37.02	36.69	36.32	35.95	Designed only with one end forward
FTA001105BR	FT5008	41	Belly		59	28	8.75	10.50	1.69	41.38	41.38	41.38	41.36	41.22	40.86	40.29	
FT5031BD	FT5031	43	Cube		26.75	29	16	18.75	3.20	43.67	43.67	43.08	42.49	41.90	41.31	40.72	
FTA001106BR	FT5033	45	Belly		56.75	26.66	10.6	12.86	1.69	45.66	45.66	45.15	44.52	43.81	43.04	42.17	
FTA001104BR	FT5899	51	Tall Flat		44	21.5	15.75	18.75	2.29	52.49	52.49	52.21	51.49	50.99	50.49	49.99	
FTA001129BR	FT8202	73	Flat		66.88	27.44	11.69	14.19	1.69	73.88	73.88	73.88	73.87	73.37	72.57	71.64	

* Compartment ** Uses Attwood Direct Fill # FLVV – Fluid Level Vent Valve € Uses BluSkies Direct Fill, Direct Fill necks are different lengths, boat manufacture must separately supply Fuel Demand Valve for the pressure tank application ¥ Detailed Information Available from Moeller on Usable Gallons by Static Angle and Side Forward



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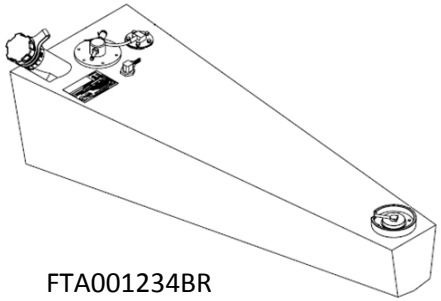

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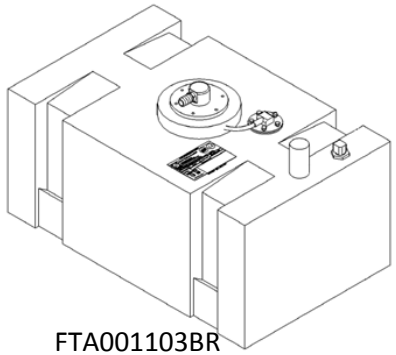

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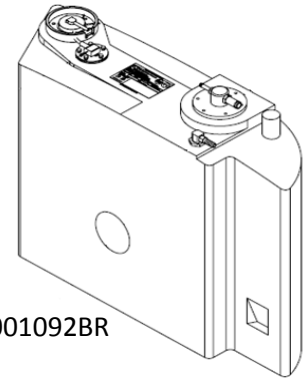

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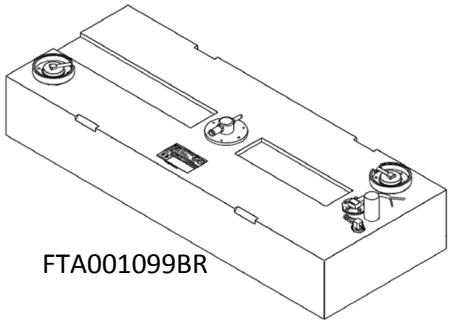

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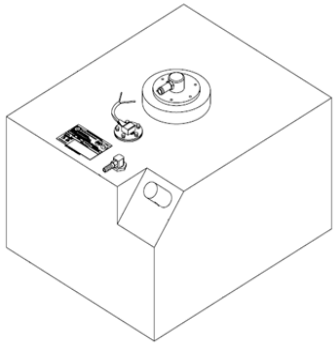

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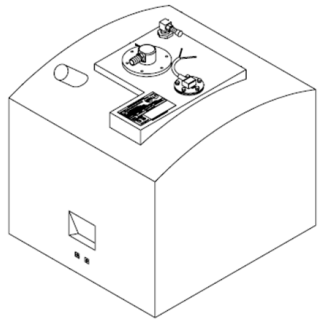

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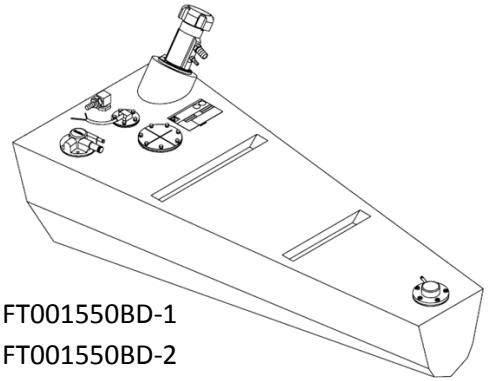

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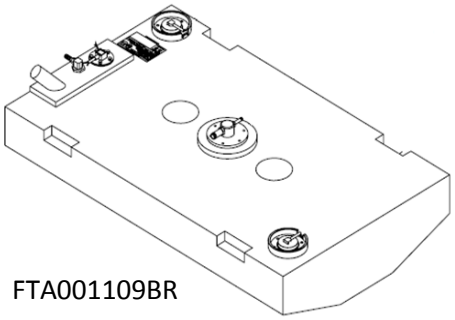

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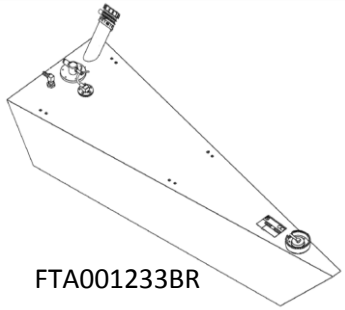

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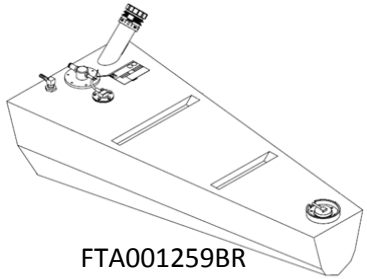

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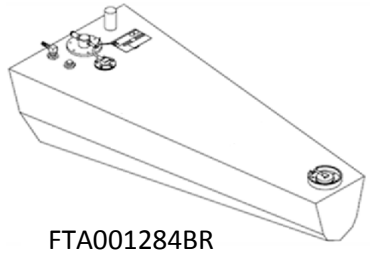

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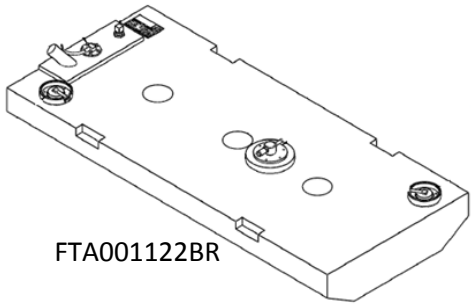

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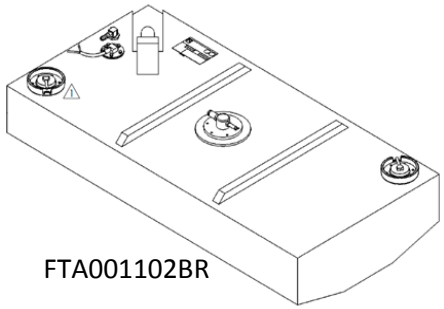

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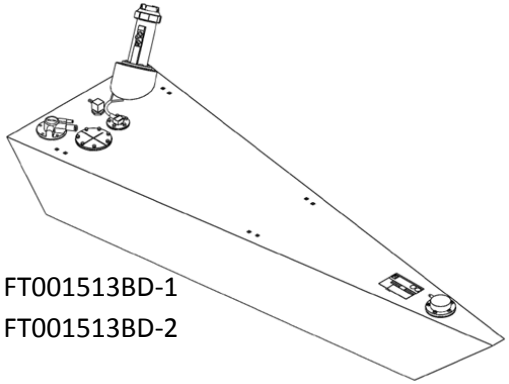

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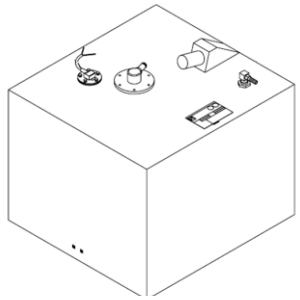

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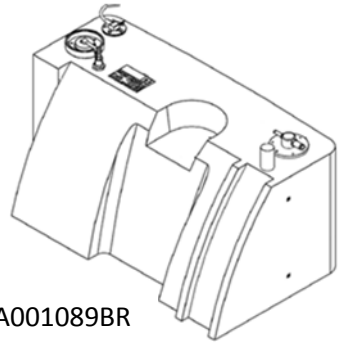

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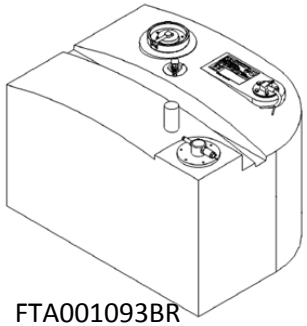

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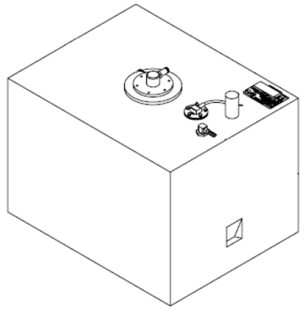

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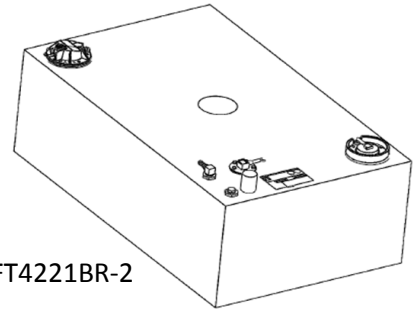

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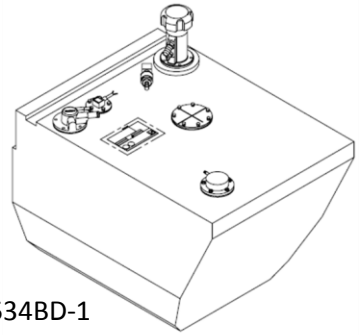

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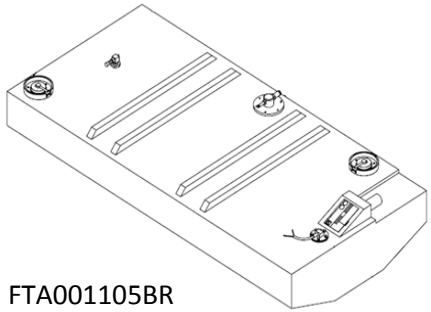

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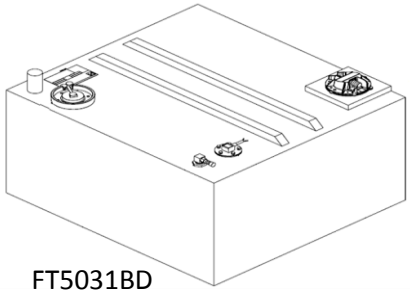

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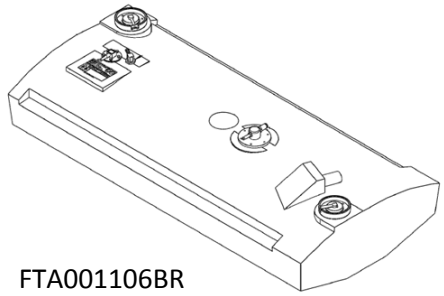

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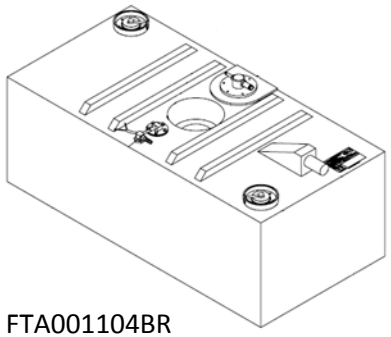

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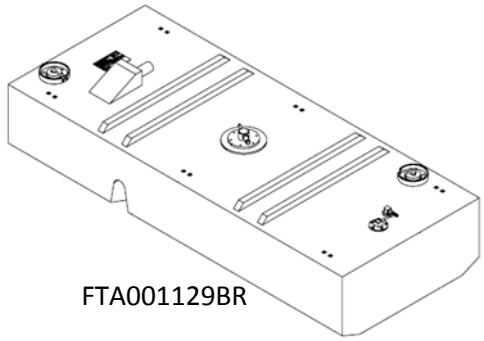

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