

# TOP OR BOTTOM FILL? WHAT'S THE DIFFERENCE?



Ratermann Arctic Fox 6000L Top & Bottom Fill Tank

► **One of Ratermann** Manufacturing's latest offerings is the Arctic Fox tank, a highly functional micro-bulk tank that holds cryogenic gases such as liquid nitrogen. The Arctic Fox tank comes in 1,500, 2,000, 3,000, and 6,000 liter sizes and is built to Ratermann Manufacturing's specification. Key features include a heavy duty galvanized pallet base, safe and easy access control valves, lifting lugs, content gauges, complete valve isolation package, and a high-quality mirror finish. The most unique feature is the top and bottom fill. This distinctive feature allows operators with a large cryogenic transport trailer to fill the Arctic Fox tank without stopping production, saving money and increasing efficiency. Numer-

ous companies rely on Ratermann Manufacturing Arctic Fox tanks to keep their business running smoothly.

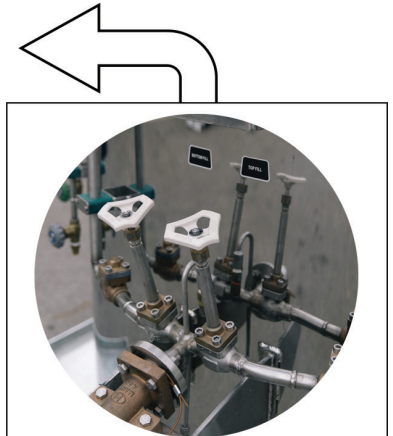
► **Cryogenic tanks are** typically filled from the top using the blow down method. The blow down method is when the pressure of the tank is reduced by blowing out the head pressure of the tank in order to fill it. Blowing down a tank wastes product and in turn costs money. Top filling also requires taking the tank offline or to not be used while it is being filled because the tank can't keep pressure, which causes the customer using the tank to shut down and stop their operation during filling.

► **However, the Arctic Fox** tank enables the user to simultaneously fill from the top and bottom, eliminating the need to use the less efficient blow down method. The bottom fill method keeps the pressure up, allowing the user to keep the machine online and keeping their operation running since the Arctic Fox maintains the required pump pressure to keep operating. The top and bottom filling method does not require a tank to be blown down and therefore prevents loss of product during the filling process.

► **For customers such as** laser cutting facilities that use nitrogen gas in their machines to cut metal

## WHY TOP FILL?

Top filling a tank requires the pressure of the tank to be reduced. In order to reduce the pressure in a tank the head pressure must be "blown down" or released from the tank. This wastes product. A tank must be taken off line and not in use while filling. This is the fastest way to fill but requires loss of product and stopping production of the equipment using the gas.



## WHEN TO USE BOTH

Top and bottom filling at the same time combines the benefits from top filling and bottom filling. By filling top and bottom, the tank fills faster without needing to waste product by "blowing down" the head pressure and doesn't require the tank to go offline so machines using the gas can keep operating during filling.

## WHY BOTTOM FILL?

Bottom filling does not require you to reduce the pressure of the tank. The tank can keep operating while being filled keeping equipment up and running. Bottom filling takes longer than top filling.

reliably  
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Top & bottom fill valves on the Arctic Fox 6000L tank

products, the Arctic Fox tank is invaluable as it permits operations and production to flow smoothly throughout the entire filling process. Because the top and bottom fill capability maintains the necessary pressure levels during the filling process, the user can continue production without halting the use of the gas. This ensures a seamless filling period for the customer unlike the process required by other tanks that rely on the top fill method.

► **Additionally, the Arctic Fox** tank features different hookup options. This flexibility allows multiple types of trucks to connect to fill the tank, including conventional micro bulktrucks with a standard

cryogenic hose and those with an inch and a half bulk hose. This way, users aren't limited in what kind of trucks they can use to fill their tanks.

► **Throughout the entire** process, the operator has complete control over the pump pressure of the Arctic Fox tank. With top and bottom filling capability, filling is much faster than any other method. And users can complete rapid tank fills without the use of specialized proprietary pumping equipment. The arctic fox tank was designed for filling to be a seamless and efficient process.

► **With the Ratermann** Manufacturing Arctic Fox tank you will be

able to maximize both production and efficiency while minimizing costs to your customer's company. The Arctic Fox tank's top and bottom fill feature and duel blow down vents ushers in a smarter, faster & overall more efficient way to fill tanks allowing companies to fill tanks faster and make more deliveries per day.

► **Contact Ratermann** Manufacturing today to see how the Arctic Fox tank can set you apart from the competition and take your business to the next level.



# ARCTIC FOX® MINI BULK Advanced Features

## Data Sheet for 1,500L 2,000L 3,000L and 6,000 Liter

Features of the Arctic Fox® Series of Mini Bulk Tanks	1500 Liter	2,000 Liter	3000 Liter	6000 Liter
Top fill capability with Micro bulk CGA connection	☑	☑	☑	☐
Top/Bottom bulk fill connection w/inline checks & oversized plumbing for rapid fill times.	☐	☑	☑	☑
High gas output capacity	☑	☑	☑	☑
Excellent NER and product retention	☑	☑	☑	☑
External Pressure building system for rapid recovery	☑	☑	☑	☑
Vaporizer with high volume gas output capability included	☑	☑	☑	☑
Isolation valves for all components for field repairs with minimal product loss.	☑	☑	☑	☑
2" Pressure gauge and 3 1/2" easy to read Liquid level gauge	☑	☑	☑	☑
Port for testing annular vacuum levels	☑	☑	☑	☑
VHP (500 psi) gas service with other service pressures available	☑	☑	☑	☑
Strainer protected PB Regulator	☑	☑	☑	☑
Liquid withdraw options	☑	☑	☑	☑
Mounting provisions for your telemetry unit	☑	☑	☑	☑
Dual vent lines for rapid blow down capability	☑	☑	☑	☑
Dual 1/2" x 1" safeties with Heavy Duty divertor valve	☑	☑	☑	☑
Small footprint galvanized skid included	☑	☑	☑	☑
5 Year warranty on the vacuum	☑	☑	☑	☑
1 year parts and labor	☑	☑	☑	☑

Specifications	1500 Liter	2000 Liter	3000 Liter	6000 Liter
Height (inches)	88.60	115.00	121.00	130.00
Foot Print (L x W) (inches)	63.00 x 63.00	63.00 x 63.00	75.00 x 75.00	112.00 x 112.00
Pallet base (L x W) (inches)	59.00 x 59.00	59.00 x 59.00	66.00 x 66.00	94.50 x 94.50
Empty Weight with pallet (pounds)	2,976	3,401	4,404	9,480

CAPACITY				
Liquid (Liters) Gross	1,500	2,080	3,000	6,000
Liquid (Liters) Net	1,290	1,830	2,580	5,400
Liquid (Gallons) Gross	396	550	793	1,585
Liquid (Gallons) Net	341	483	682	1,426
Gas capacity (ft³) Nitrogen	29,470	41,806	58,940	123,362
Gas capacity (ft³) Oxygen	36,338	51,549	72,677	152,112
Gas capacity (ft³) Argon	35,561	50,447	71,123	148,860
Gas capacity (ft³) Carbon Dioxide (CO <sub>2</sub> ) *(1)	25,550	36,245	51,099	106,953
Capacity (Lbs) Carbon Dioxide (CO <sub>2</sub> ) *(1)	2,923	4,416	5,846	12,236

PERFORMANCE				
NER (% /day LN <sub>2</sub> )	≤0.8%	≤0.8%	≤0.8%	≤0.45%
NER (Lb/day) Carbon Dioxide (CO <sub>2</sub> )	≤2.8	≤3.8	≤4.0	≤5.6
Gas Flow (scfh) N <sub>2</sub> , O <sub>2</sub> , Ar	2,471	2,825	2,825	3,531
Gas Flow (scfh) Carbon Dioxide (CO <sub>2</sub> ) *(1)	927	1,060	1,060	1,900
Gas Flow (Lb/hr) Carbon Dioxide (CO <sub>2</sub> ) *(1)	113	130	130	218

PRESSURE RATINGS				
Max. Pressure relief setting (psig)	500	500	500	500
Operating Pressure (psig)	450	450	450	450
Design Specification	ASME VIII-1	ASME VIII-1	ASME VIII-1	ASME VIII-1

\*(1) Bulk (CO<sub>2</sub>) Package Required: Package includes bulk CO<sub>2</sub> flange and bulk CO<sub>2</sub> CGA inlet, Orange Research gauge with Buna seals

All specifications are subject to change without prior notice.  
All dimensions are measured from the floor to the top of the tank.



**ARCTIC FOX® 1500L**  
1500 Liter Mini Bulk, VHP500  
Part # MBK-1500VHPL



**ARCTIC FOX® 3000L**  
3000 Liter Mini Bulk, VHP500  
Part # MBK-3000VHPL



**ARCTIC FOX® 6000L**  
6000 Liter Mini Bulk, VHP500  
Part # MBK-6000VHPL

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