

### Customer Challenges:

Military dive teams must be ready to respond to emergency situations at a moment's notice. Their Scuba gear, tanks, supplies, and inflatable rafts must fit in a trailer that can be transported to the nearest launch site. Time, speed and space are critical in successfully carrying out their operations. Tasked with reducing response time, the military sought a more efficient process to inflate and deflate their inflatable rafts at the launch point. Vaccon collaborated with military engineers to develop a solution to address these specialized needs.

### Application Requirements:

<b>Space Constraints:</b>	The raft must be completely deflated in order to be rolled up and packed back into its case to save space inside the trailer
<b>Corrosion resistant material:</b>	The inflation equipment must operate in a salt water environment without corroding
<b>Pressure limit:</b>	The raft has a 3.5 PSI inflation pressure limit; over-inflation risks damaging the raft
<b>Custom threads &amp; fittings:</b>	Inflation equipment exhaust and vacuum port threads must mate with raft inflation port threads; air supply connections must use quick disconnect fittings
<b>Limited air supply:</b>	Compressed air supply is restricted to Scuba tanks
<b>Special regulator:</b>	The standard Scuba regulator is a dual stage model which supplies air at roughly atmospheric pressure; to provide the necessary (minimum) 50 PSI for the pump, a single stage regulator must be used



### Vaccon Solution:

Vaccon developed a solution for the military to rapidly inflate rafts in the field using a Scuba tank air supply. Dive teams are more mobile and responsive, allowing them to deploy quickly and reach dive sites or emergency scenes faster. Vaccon modified a standard CDF air amplifier pump with custom threaded vacuum and exhaust ports to mate with the raft's inflation port. To avoid corrosion, the pump was manufactured out of nickel plated brass. The Vaccon solution is compact, fast, cost-effective and meets all the military's application requirements.



### Vaccon Benefits:

<b>Saves money:</b>	The CDF uses ambient air in combination with a small amount of Scuba tank compressed air for rapid inflation
<b>Saves time:</b>	Inflation time of 45 seconds and deflation time of 75-90 seconds was achieved with two CDF pumps to simultaneously inflate the raft's dual air chambers; teams can get under way rapidly once on site
<b>Saves space:</b>	Raft is completely deflated to be packed in its case; saves critical space in dive trailer
<b>Efficient:</b>	CDF air amplifiers are efficient -- air consumption is only 29 cu. ft. for inflation and 40 cu. ft. for deflation, leaving 11 cu. ft. of air in in an 80 cu. ft. Scuba tank
<b>Safe:</b>	Modified CDF air amplifier is preset to 3.5 PSI output pressure; rafts cannot be overinflated or damaged
<b>Durable:</b>	Manufactured from nickel plated brass to avoid corrosion when used in salt water

For more information on the CDF Air Amplifier Series, visit the [CDF Product Page](#)

To see the custom CDF pump in action inflating and deflating a military raft, view the [application video on YouTube](#)

# Application Note: CDF Series Raft Inflation/Deflation

## Raft Inflation Procedure:



1 Packed and deflated raft



2 Raft is unrolled for inflation



3 Raft ready to be inflated



4 Inflated raft (dive trailer in background)



5 Dive team deployed



6 Custom raft inflation kit, includes 2 pumps and regulator



7 Custom CDF Air Amplifier pump illustrated.

Vaccon offers standard and modified CDF Series pumps for this application.

The CDF Air Amplifier pumps may also be used for inflation-deflation functions and testing in the following industries (NAICS/SIC codes):

- 336612/3732: Rigid inflatable boats (RIBs), inflatable plastic/rubber boats
- 423860/5088: Dunnage, inflatable packaging/shipping material
- 336413/3728: Aircraft escape slides
- 326199/3069: Inflatable pools, flotation devices, air mattresses, carnival bounce houses, inflatable advertising balloons/blimps
- 336390/3714: Automotive airbags
- 339930/3942: Inflatable toys, dolls
- 339113/3842: Pneumatic/air (medical) splints, inflatable stretchers
- 237120/4600: Petroleum pipeline pneumatic testing equipment
- 326211/3011: Tire manufacturing and testing
- 236117/1531: Inflatable shelters
- 333924/3537: Inflatable loading dock seals

Note: For many applications, only one CDF pump is necessary.