



# Schrader® News



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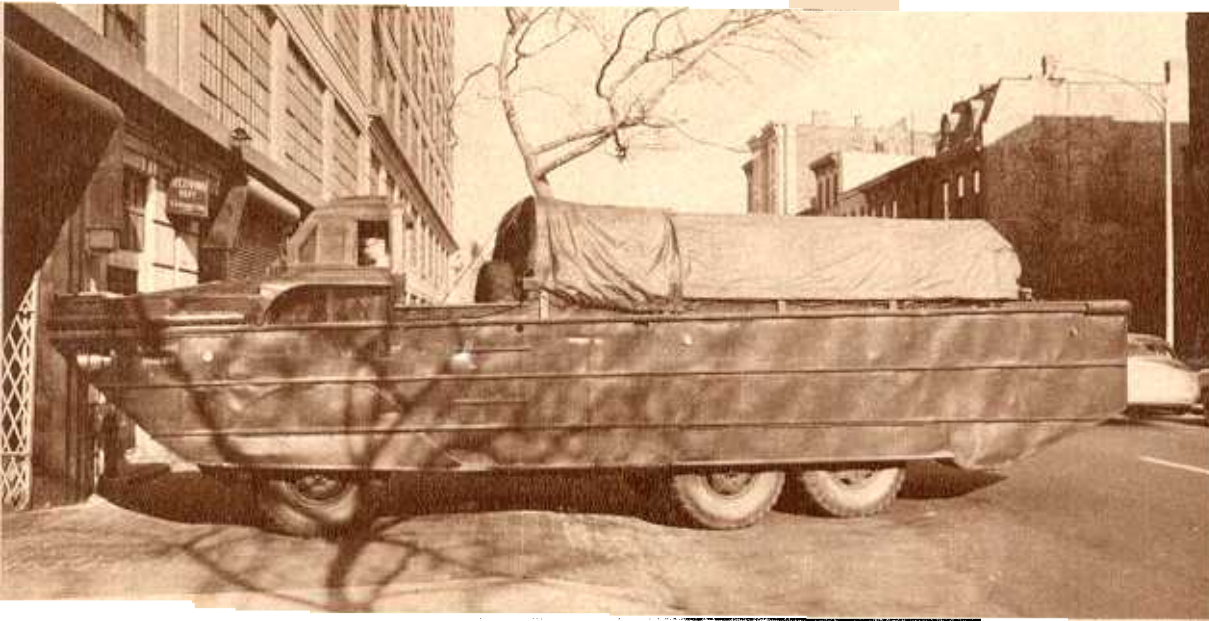
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**THE DUCK COMES HOME TO ROOST**

STORY PAGE 2

# SCHRADER ENGINEERS DESIGN NEW RUNNING INFLATION SYSTEM



The Army Superduck is shown on arrival at the Schrader Plant in Brooklyn, where engineers will install the new, improved Schrader Running Inflation System.

It has often been proclaimed that engineering genius, unselfish cooperation and the ability to produce unlimited quantities of equipment has made American Industry one of the strongest links in our chain of national defense. An outstanding example of this cooperation and "know-how" during World War II was in the development of the Army Duck (Dukw), one of the most versatile military vehicles ever produced. Here is the story of how a product developed by Schrader for a peacetime application became a vitally important part of one of our great pieces of military equipment.

In the early nineteen-thirties, Schrader designed and patented a Rotating Joint for use in a running inflation system on automotive vehicles. This Rotating Joint permitted the tires on a vehicle to be inflated or deflated at the will of the driver while the vehicle was in operation. Many of these rotating joints and component parts that made up the running inflation system were installed on test cars by automotive and tire engineers to enable them to determine the best tire pressures for the smoothest, safest operation of the car and tires under all kinds of operating conditions.

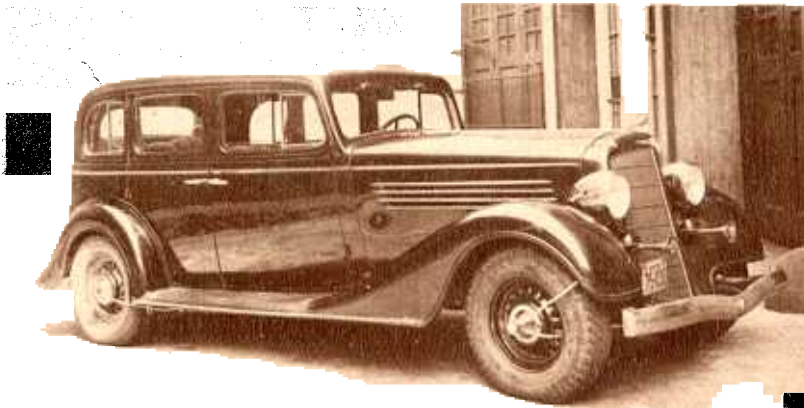
Back in the early stages of World War II, automotive engineers called upon Schrader to help work out a running inflation system similar to the type installed on their test vehicles; but this time for a more important purpose. It was to be installed on a six wheel amphibious vehicle then being designed and the success of which depended on its ability to operate under the most adverse conditions...in the water, on surfaced roads, or across soft sandy beaches, snow, mud and swamps without bogging down. This meant that the tire pressures must be capable of adjustment up or down by the operator, while the vehicle was in motion, to provide proper traction for the wheels at all times. Engineers used the basic principle of the orig-

inal Schrader rotating joint and redesigned it into the hub of the wheels on this new vehicle; thereby providing the necessary pressure connection between the vehicle and its tires. In addition to this, the piping of the inflation system was worked out diagrammatically and a series of valves for controlling the pressure of air in the tires were provided. Because the Schrader Plant was working at full capacity in the production of other vitally needed parts for motor transport, aircraft and other necessities, they did not make the rotating joints used on the Army "Duck" in World War II. However, they gave the vehicle manufacturers the right to manufacture rotating joints for government use on a no-charge basis and,

in addition, supplied the many standard valves used in the system.

So highly regarded was the "Duck" in military circles, that at the end of the war, General Dwight D. Eisenhower wrote in his "Crusade in Europe" that "the quantity production of the 'Duck' an amphibious vehicle proved to be one of the most valuable pieces of equipment produced by the United States during the war." Schrader is proud of its part in the design of the all important inflation system.

Since World War II, the Schrader Company has been working with Army Ordnance Research and Development engineers at Headquarters, Ordnance Tank-Automotive Command, Detroit, Michigan, in the development of a more comprehensive inflation system for use on a new Superduck. This new vehicle is much more powerful and somewhat larger in size than the original "Duck" of World War II. The new inflation system will permit the operator of the Superduck to pre-select the running pressure of the tires required for the next period of operation. By the throw of a single



One of the early test cars equipped with the Schrader Running Inflation System.

lever at the critical moment, the operator can almost instantaneously change pressure in the tires without slowing down the vehicle or hindering its vital function in any way. The time required to change pressures up or down has been materially reduced... this is tremendously important during operation of the Superduck under off-road conditions.

Among the valves, regulators, and other component parts developed for the system, a unique pressure tank called the "7th wheel" is distinctive. This tank parallels the pressure of the air to the tires when it is called for by the operator of the vehicle and serves as a medium of control. As in the past, the tire pressures can be adjusted in all tires at the same time or singularly as required. The new system is capable of providing air to one or more tires faster than it can leak out even though the tires have been punctured several times. This permits the vehicle operator to keep all tire pressures equalized, which is vitally important to the function of the vehicle.



A control panel like this permits the driver to select the operating pressures he wants at anytime.

Logistically and tactically, the amphibious truck is used to carry troops, ammunition and other vital supplies inland from the vessels, discharging their cargoes at some distance off-shore. It saves time needed to unload such cargoes from landing craft at the beach line and reload them onto conventional modes of land transportation. It is also used to accomplish retrograde movements of cargo and personnel from inland points to vessels anchored off-shore.

Although the original installation of the new running inflation system was installed on one of the Superducks over a year ago for experimental purposes, a model of this versatile amphibious vehicle was delivered to the Schrader Plant several months ago where it will undergo exhaustive tests after the installation of the pre-production model of the new Schrader Running Inflation System.