

## EATON'S CARTER AVIATION REFUELLING EQUIPMENT RANGE

The following Carter ground fuelling products from Eaton are available either in stock or within short delivery times, along with an extensive stock of spare parts to support them.

### Refuelling Nozzles.

We offer into-plane refuelling nozzles in accordance with the SAE AS5877 specification which are compatible with ISO R45 and NATO Stanag 3105 aircraft refuelling connectors. Accepted by the major fuel suppliers and air forces throughout the world, the 60427, 64348, 64200 and 64250 refuelling nozzles are available with stick and ring handle options, vacuum relief valves, bonding cables, and with a range of inlet swivels, quick disconnects, dry breaks and ball valves for strainer inspection. We can supply pressure control valves with various set pressures and both BSPP and NPT female threaded inlets can be provided. Military specification nozzles are also available.



### Hydrant Couplers.

The 64900 and 64910 Hydrant Couplers fully meet the operational and test requirements of the API/EI1584 specification (3rd edition) for 4" hydrant system components, and all are fitted with a collar lock. They are available in a basic 90 degree swivel configuration, fitted with an air set pressure control/deadman valve or fitted with an electrically controlled pressure control/deadman valve which is suitable for use with Digital Pressure Control systems. Connection options are either 4" BSPP or NPT female thread and a trolley option can be provided. For lower flow rate applications a 3 inch pressure control module is available.



### Inline and Pump Bypass Valves.

The 64500 range of 3 inch and 4 inch Inline and Pump Bypass Control Valves utilise a direct operating design concept with a control module being added to the basic valve. This control module provides finer control and eliminates exterior tubing from the valve. Adjustment is simple because no complex servos are involved and the bleed point is located on the control block which allows air to be bled from the valve very easily. The control modules used on equivalent 3 inch and 4 inch valves are identical, and most of the seals in the main body of the 3 and 4 inch valves are identical. This maximises spare parts commonality and minimises the spare parts required for maintenance. Standard end connections are ANSI 150lb flanges but Victaulic adapters are also available. Both the inline and pump bypass variants are available with air reference pressure control or electrical solenoid control, and versions are available which can be used with digital pressure control systems.



### Venturis and Compensators.

The 60559 4 inch Pressure Loss Compensator is uniquely designed with features not available in other compensators or venturis. Simplicity of operation, low pressure loss, wide compensation pressure range and compact design make the 60559 Pressure Loss Compensator ideally suited for all refuelling vehicle applications.

The range of traditional venturis includes 3 inch (64086), 4 inch (64085), 4 inch x3 inch (64088) and 6 inch (64193) sizes. All venturis are available with either Victaulic or TTMA flanged ends and an optional pitot tube.

### Hydrant Pit Valves.

The 60554/61654 Hydrant Pit Valve family meets all the requirements of the API/EI1584 specification (3rd edition) for 4" hydrant system components, including the latest specified breakaway and strength levels.

The lower valve assembly contains an isolation valve which will allow the removal and servicing of the upper valve assembly and the pilot valve while the pit valve is still installed on the hydrant. The upper section (API adapter) is now furnished with a replaceable part that contains the interface with the hydrant coupler. This minimizes replacement parts expense and allows for easy replacement of the wearing surfaces. The 60554 is flanged 4 inch ANSI 150lb and can be fitted with an adapter to 6 inch ANSI 150lb. The 61654 is flanged 6 inch ANSI 150lb as standard. Both valve types can be supplied with a lanyard operated pilot valve, an air operated pilot valve or a dual air/lanyard pilot valve. We also offer a pilotless pit valve, where the major operating part of the pilot valve is incorporated within a quick disconnect actuator located on the hydrant dispenser air hose (Remote Pilot Valve), which reduces maintenance costs. Lanyard, air or dual air/lanyard operated Remote Pilot Valves are available.





### Tank Bottom Loading Systems.

Eaton's Carter bottom loading system is based on a fluid powered concept with no pneumatics or electrics required, and only fluid pressure is used to operate the system when tank loading. Bottom loading control is accomplished automatically, so when the tank liquid level reaches the pre-set level sensor the bottom loading valve closes. Our bottom loading system can operate correctly with any type of refuelling pump, positive displacement or centrifugal, without inadvertently opening.



Bottom Loading Valves are available in 3 inch, 4 inch and 6 inch sizes with flanged or Victaulic inlet connections (depending on the valve size), and can be configured for bottom loading only, or for bottom loading and offloading.



The 64079 Level Sensor has no wearing parts hence it lasts indefinitely, and vibration will have no effect on the sensor, unlike float valves.

### Tank Vent Valves.

The 64078 and 64159 Auxiliary Vent Valves are designed for venting vapour during bottom loading and for allowing inward air flow during refuelling.

The 64078 is air operated and has a double sealed externally vented actuating piston which prevents fuel incursion into the air system, and it can be interlocked with the tank bottom loading valve. The 64159 is connected directly to the tank bottom loading valve using a mechanical link. Both vent valves use a bonded poppet seal which assures leak free operation and minimal maintenance cost. They have a cracking pressure of 3 psi (0.297 Bar) and are fully open at 5 psi (0.345 Bar). The 64078 is completely interchangeable with the Meggitt F646 or F646B (but the interlock port in our Vent Valve is standard at no extra cost). The 64159 is completely interchangeable with the Meggitt F646A.



The 64167 and 64168 Vent Valves are 3 inch diameter inward opening, and they comply with the rollover requirements of the US DOT 406 and 407 specifications. In the past, both mechanical and air operated vent valves were outward opening and were susceptible to uncontrolled opening in the event of a tanker rollover. The 64168 is opened mechanically by a rod connected to the tank bottom loading valve and the 64167 is pneumatically operated. Both vent valves will deal with the effects of fuel flow rates generated by 6 inch pipework systems. Vapour recovery hoods with two outlets are fitted as standard.

### Aviation Adapters and Ground Units.

Eaton's Carter 2½ inch ISO45 aircraft type bayonet refuelling adapters connect to underwing nozzles or 2½ inch hydrant couplers. They are available with 3 inch or 4 inch ANSI 150lb flanges (64040 or 61409), 3 inch or 4 inch TTMA flanges (61528 or 61272), and 2½ inch NPT or BSPP threads (6958). The bayonet adapter is also available as a stand alone module without a housing (61529). These adapters are used for recirculation test or bottom loading points on refuelling vehicles, for connection to low flow rate hydrant systems, or for use as tank farm pumping system test adapters. Convenient bosses are available to mount pressure gauges or sampling ports on many models. Plastic or metal sealing caps are also available.



### API Adapters.

The 61526 4 inch API adapter connects to API 1584 compliant hydrant or bottom loading couplers and has an Aluminium body. It is flanged 4 inch ANSI 150lb flat face, and is designed to be used for bottom loading refuelling vehicles or for use as tank farm pumping system test adapters.



### Unisex Couplings.

Unisex couplings are designed in accordance with A-A-59377 (supersedes MIL-C-53071) and are completely interchangeable with similar 2 inch couplings made by Eaton Aeroquip. Unisex couplings, as the name implies, are designed to connect with each other, allowing for the connection of hose assemblies regardless of the end fitting. Our Unisex couplings incorporate a dust seal between the connected units which protects the adjoining surfaces, and they are easily repairable. The basic Unisex coupling has various accessories and inlet options available to suit system requirements, and are Tan colour as standard, with Green as an option. The 64319 series is un-valved and the 64320 series includes a ball valve.

### CCR and HIFR Nozzles.

The 64048 Pressure Fueling Nozzles and 64017 Closed Circuit Refueling (CCR) Nozzles are designed to connect to vehicles, helicopters and ground units that have receptacles in accordance with U.S. Army drawing C13219E0479 or equivalent. The nozzles provide a “tight fill” capability and limit system pressure. A positive interlock system is included so the nozzle will not open unless connected and closes automatically when disconnected. They are lightweight, rugged, and meet manual handling standards.

The 64048 Pressure Fueling Nozzles are used for Helicopter In-Flight Refuelling (HIFR), and are designed to connect to helicopters and perform hot refuelling operations while hovering above US Naval and other ships. The nozzle will limit the pressure at the helicopter adapter to 45 psi (3.10 Bar) regardless of inlet pressure, and meets the latest US Navy requirements in accordance with the Aircraft Refueling NATAOPS Manual, NAVAIR 00-80T-109 and Helicopter Procedures for Air Capable Ships, NAVAIR 00-80T-122

The 64017 Closed Circuit Refueling (CCR) Nozzles are designed to connect to vehicles, helicopters and ground units. The nozzle will limit the pressure at the helicopter/vehicle adapter to 15 psi (1.03 Bar) regardless of inlet pressure, and meets the latest U.S. Army MIL-PRF-52747F requirements (supersedes MIL-N-53094). Arctic versions are also available.



## Emergency Break Away Couplings.

Emergency Breakaway Couplings are available for use with 2, 2½, 3 and 6 to 7 inch hose sizes. They are manufactured from Stainless Steel and Aluminium Alloy and all have a very low pressure loss.

### **Model 64024**

The 64024 is a 2 inch Unisex Breakaway Coupling designed to provide emergency breakaway when the hose attached to the coupling is subjected to a side load of 200 pounds (90 kg) or more. It is manufactured in accordance with MIL-R-53076.



### **Model 64121/64226**



These couplings will separate when a pre-determined force is applied in an angular direction up to 45° from the axis of the coupling. The separation is a clean and dry break, keeping spillage to a minimum, and they are repairable (with one set of spare shear pins being carried on-board each unit). Seals are suitable for aviation jet fuels.

The 64121 can be used in 1 or 2 inch systems. 2 inch female NPT threaded inlets and outlets available as standard, with the option of BSPP. Model 64226 is the larger version for use in 2½ or 3 inch systems with 2½ inch NPT male or female threaded inlets and outlets available as standard. Many combinations of threads and flanges (including ANSI or special flanges) on the inlet and outlet ends are available to special order.

### **Model 64227**

The 64227 is a 3 inch coupling with 3 inch male or female NPT threaded inlets and outlets available as standard. The unit separates with double dry break and can be reconnected without the use of tools or replacement parts. Many combinations of threads and flanges (including ANSI or special flanges) on the inlet and outlet ends are available to special order. Different seals can be fitted to suit the product used.



### **Model 64191**



The 64191 Emergency Breakaway Fuelling Coupling was developed in conjunction with the Canadian Navy to eliminate fuel spillage at sea. The coupling meets or exceeds all of the requirements of the new NATO replenishment at sea coupling specification and is the replacement for the existing NATO “B” breakable spool. The 64191 is designed to be used with abeam, astern “lay on deck” and with Hudson Reel standard 6 or 7-inch hose. When a pulling force of approximately 1100 pounds (5 kN) is applied, the coupling will automatically disconnect and dry break on both sides with less than 100cc of fuel spillage. The coupling is light in weight and is easily connected or disconnected by one person without the need for special tools.