

## AIRCRAFT REFUELLER 9.000 I.

Aircraft refueller rigid tank truck type suitable for underwing pressure and overwing gravity fuelling of aircrafts with kerosin, with a tank capacity of 9.000 I useful plus ullage 3% for expansion according to ADR Code and 400 I for deadstock and a fuelling performance up to 1000 I/min, including assembly of fuelling equipment cabinet and tank on a suitable truck chassis.

### OPERATIONS

- Underwing pressure refuelling
- Overwing gravity refuelling
- Loading of tank
- Self-loading of the tank
- Defuelling
- Recirculation
- Draining the tank.

### PERFORMANCE

- Underwing refuelling – 1000 I/min.
- Overwing refuelling – 400 I/min.
- Defueling – 500 I/min.
- Bottom loading – 1.500 I/min.

### CHASSIS

- Iveco Ewurocargo ML15E24WS 4x4
- Wheelbase: 4.150 mm.
- GVW – 15.700 Kg.

### DIMENSIONS AND WEIGHTS

- Overall dimensions – 8.500x2.550x3.350H approx..
- Kerbweight – 7.700 Kg. approx..
- Payload – 8.000 Kg . approx..

### CHASSIS MODIFICATIONS AND COMPLETATION

- Subframe according IVECO guidelines.
- Installation of motor stop devices in the pneumatic system
- Mounting of mudguards including brackets and mudflaps for the rear wheels.

### TANK

- Rigid tank of 9.000 I gross volume. (excluding deadstock/excluding ullage).
- 1 compartment.
- Total volume of 9.500 I. approx..
- Min. 3% ullage.
- Aluminium XTRAL 728 complying with ADR 2017.
- Biconical shape with elastic connection to the subframe.
- Baffles (2) with DN500 access hole, made of the same aluminium.
- Water sump in the lowest point of the biconical joint.
- Pressure test, 0,4 bar. Working pressure, 0,2 bar.
- Welding procedure acc. EN ISO 15614-2 and licensed welders acc. EN ISO 9606-2.
- Piping made of alluminium alloy – Test 16 bar. All flanged connections.
- Rear stainless steel ladder.
- Aluminium antislip catwalk on top of the tank.
- Aluminium safety foldable handrails.

## **TANK FITTINGS**

- 1 Nos. DN500 manhole made of aluminium with vent valve and internal safety flame trap, inspection port (Ø10") and dipstick hole acc. to ADR, API RP1004 and EN 13314 and 13317. Brand ET.
- 1 Nos. Tanks contents gauge DN150 – Brand Bayham.
- Calibrated aluminium dipstick.
- 1 pneumatically operated bottom valve 3" with both in parallel ball valve 2" and Camlock 2" for drainage plus ball valve 1" and a 1" Camlock coupling for sample is installed at the lowest point of the water sump, to drain it completely.

## **BOTTOM LOADING**

Consisting of:

- 1 automatic high-level shut-off valve, floater controlled, pneumatically acting (closing). On made Niehuaser model N17.
- 1 secondary optic high level sensor.
- 1 bottom loading valve 4", pneumatically operated, valve seat inside the tank Niehuser.
- 1 bottom loading manifold 4", made of aluminium, connected to the bottom loading valve, one flanged connection at left hand side of the refueller, equipped with:
- 1 aircraft coupling 2 1/2", ground type, brand MANNTEK, ISO45, with dust cap.

## **PUMP ASSEMBLY**

Comprising:

- 1 self-priming vane pump, with mechanical shaft sealing and overstream valve. Alfons Haar FPO 80-900.
- 1 pump suction line 3" dia., made of aluminium, mounted between tank isolating valve and pump suction stub including elastical socket.
- 1 pump suction strainer DN 100 for high solid.
- 1 outside suction connection including ball valve 3" with stainless steel ball and 1 aircraft coupling 2 1/2", ground type, brand MANNTEK ISO45, with dust cap.
- 1 pump pressure line 3 mounted between pump pressure stub and fueling system.

## **FILTER/WATER SEPARATOR**

- 1 ut. filter / water separator made in stainless steel casing and hinged cover, front loader type, fully equipped with water sump and all necessary fittings to connect the following additional:

brand:	FAUDI
model:	FW10-H-T 3/1093
flow rate:	up to 1.200 l/min

Equipped with:

- 1 piston type differential pressure gauge with double scale (bar and psi), with built-in spring return test valve to check free move of piston, brand Gammon model GTP-534-PB-30 with DP switch.
- 1 automatic water detector Slug-guard, pneumatically operated, brand FAUDI, installed in the water sump, with flip flop indicator red / green located in the panel at

the operations side, indicating free water in the water sump (red signal) and influencing the fuelling operation (shut down of fuelling operation in case of free water).

- 1 water drain pipe with two ball valves 1" with stainless steel ball and quick disconnect coupling / cap make Kamlok, leading to the maintenance side.
- 1 automatic air / gas eliminator on top of filter vessel.
- 1 gas return line with sight glass, leading from air / gas eliminator back to the tank, including necessary flexible hoses between filter and tank, pipe inside the tank leading to tank bottom to prevent free-fall of fuel, sight glass with flow indicator.

## **METER**

- 1 ut. bulkmeter 3" (mechanical fuel meter), with counter head, roller type with resettable large number counters (five digits) and non-resettable totalizer (eight digits) and rate-of-flow indicator, counter head and rate-of-flow-indicator directly mounted and mechanically driven:

brand:	Satam
model:	ZC 17 80/80.
counter head:	Veeder root R/VR7887
min. flow rate:	130 l/min
max. flow rate:	1300 l/min
calibration:	decaliter
flange:	DN 65

## **INLINE PRESSURE AND DEADMAN CONTROL**

Inline mounted fuelling pressure control system, in addition to the coupler mounted hose-end pressure controller, acting as secondary pressure control as well as deadman control, consisting of:

- 1 inline pressure control valve 3", make Alfons Haar, model AOA80 AV, fitted upstream from the filter / water separator, acting as pressure control- and deadman shut-off valve, fuel- / air operated, pressure balanced and held open by a regulated supply of air at the required pressure (reference pressure), deadman control is achieved by exhausting the air set reference pressure causing the control valve to close.
- 1 air pressure regulator / control valve, adjustable, acting on the inline valve pressure regulator block Alfons Haar STV 17A + deadman block Alfons Haar STT11AV.
- 1 continuous adjustable venturi pipes 3", brand Haar model VEN 80/DR, acting on the inline pressure control valve.

## **REEL HOSE SYSTEM**

- 1 ball shut-off valve 3" with stainless steel ball, fitted to the underwing reel hose line.
- 1 spoked wheel hose reel 2", hub and elbow of aluminium, for single-lay helical winding.
- 1 reel hose 2", 20 m length, brand Conti / Elaflex, type PHD-F
- Hose ended with 2" unisex coupling to be connected on demand to:
  - o 1 pressure fuelling nozzle 2 ½", brand Carter, type 60427 CDEF4 6K, including dust cap, 100 mesh strainer, grounding cable, vacuum breaker, HEPC with 45 psi spring, UK-style-handle, with unisex valved coupling,
  - o 1 gravity nozzle DN38 ZVF50 Elaflex with unisex valved coupling.

## **OPEN SAMPLING**

- 2 Millipore sampling connection, brand Gammon model GTP 235, fitted to filter's inlet/outlet.
- 1 sampling / drain connection at filter / water separator sump.
- 1 sampling / drain connection at tank's water sump, inlet and outlet.

## **DRIVING SYSTEMS**

- 1 hydraulic drive for fuelling pump, driven from engine's p.t.o., consisting of:
  - o 1 hydraulic drive system of fuelling pump using hydraulic motor Parker
  - o 1 pump speed indicator, mechanically driven via fully closed gear box and flexible shaft.
  - o 1 electrically operated pump speed control with reset to idle speed in case of deadman release.
- 1 hydraulic drive for hose reels, connected to refuelling pump's drive, consisting of:
  - o 1 hydraulic tank 100 l, with dipstick and strainer (volume required to avoid overheating and lamination of hydraulic oil during operation in extreme conditions)
  - o 1 hydraulic pump.
  - o 1 hydraulic motors, brand Parker, with roller chain drive (can be re-tightened) for hose reel drive.
  - o 1 hose reel controls, lever type, positions "OUT", "STOP", "IN", including adjustable speed control; hose reel control apparently placed to the reels at operating stand for easy one man operation.
- And all necessary control valves, high-pressure hoses, tubes and fittings

## **PNEUMATIC SYSTEM**

The standard chassis air system is supplemented with:

- 1 pressure protection valve which ensures that priority air supply is always available for vehicle's brake system.
- 1 auxiliary air reservoir with drain valve.
- 1 micron filter / dryer and lubricator.

## **DEADMAN REMOTE CONTROL**

Acting on the inline pressure control valve and the truck's / tractor's engine to idle speed, electrically-pneumatically operated (pneumatic pressure loss stops fuelling operation), including:

- 1 electrically / pneumatically operated deadman control system, brand Fluid Transfer model deadman timer system including handswitch, spiral cable appr. 14 m length, lamp and solenoid valve, solenoid valve fitted into pneumatic supply line of the deadman shut-off valve.
- 1 override valve, manually operable, locked in "DEADMAN ACTUATED"-position.
- 1 aluminium storage box for spiral cable and handswitch.

## **DRIVE - AWAY INTERLOCK**

This system avoids the parking brake being released unless

- PTO is engaged.
- Lateral shutters of fuelling equipment cabinet are fully closed
- bottom loading is disconnected
- outside suction connection is disconnected
- collapsible handrailing
- defuelling assembly is stowed

An override switch is installed in the control panel with a LED red lamp installed in the dashboard showing that interlock override is engaged. When regular interlock is engaged, an amber light in the dashboard is activated.

The interlock system controls additionally the tank isolating- / foot valve, the hose reel blockings (if fitted) as well as the complete pneumatic control system (vehicle in driving position - no air pressure in auxiliary systems, vehicle in fuelling position - interlock activated and auxiliary systems operable).

## **GAUGES**

Following parameters are indicated in bar and psi by glycerine damped gauges, grouped together in a panel, each gauge labeled in English language

- pump vacuum
- pump pressure
- venturi pressure underwing reel hose
- hydraulic pressure
- pressure control system air reference pressure

All gauges, excluding hydraulic gauge, are equipped with test connections, male part with dust-cap.

## **OPERATING STATION**

All indicators, controls and operation handles etc. are conveniently grouped and easily reachable to an illuminated operating station inside the pump cabinet at operation side, for easy one man operation, clearly labelled with bolted plastic plates. An additional flow diagram is fitted for sufficient information. Labelling is executed in English language.

## **GROUNDING / BONDING EQUIPMENT**

- 1 cable reel, spring rewind, with 30 m grounding / bonding cable (steel, PVC coated) and brass crocodile clip.
- 1 earthing / grounding strip, fitted to truck's chassis frame.
- Earthing / grounding clamps at tank water sump, bottom loading connections and drain-sample point of filter / water separator.

## **EXTINGUISHERS**

- 2 fire extinguishers, 9 kg each, dry-powder (A,B,C) on both side of the chassis.