

Aircraft refueller rigid tank truck type suitable for underwing pressure and overwing gravity fuelling of aircrafts with kerosin, with a tank capacity of 20.000 l useful plus ullage 4% for expansion and 400 l for deadstock and a fuelling performance up to 1.100 l/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 (UW)
- Recirculation
- Draining the tank.

### **PERFORMANCE**

Underwing refuelling – Up 1.100 l/min.  
Overwing refuelling – 400 l/min.  
Defueling – 250 l/min.  
Bottom loading – 1.500 l/min.

### **CHASSIS MODIFICATIONS AND COMPLETATION**

Subframe according MAN 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 20.000 l gross volume. (excluding deadstock/excluding ullage).  
Total volume of 20.500 l. approx..  
Alluminium  
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.  
Piping made of aluminium alloy. All flanged connections.

Rear stainless steel ladder.  
Aluminium antislip catwalk on top of the tank and safety handrail.

### **TANK FITTINGS**

2x 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.

Radar sensor for tank content.

Calibrated SS dipstick.

1 pneumatically operated bottom valve 3" for draining the tank.

1 pneumatically operated foot valve 4" to feed the pumping system.

1 bottom loading valve 4".

### **BOTTOM LOADING**

Consisting of:

1 pneumatic high-high level shut-off valve, floater controlled, pneumatically acting (closing).

1 pneumatic high level sensor connected an In-line bottom loading valve.

1 bottom loading valve 4", pneumatically operated, valve seat inside the tank Alfons Haar PBV 100 115 90.

1 butterfly valve connected to the high level sensor in the bottom loading line upstream the bottom loading valve.

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 ½", ground type, brand MANNTEK, ISO45, with dust cap for recirculation.

## **OPERATION CABINET**

Mounted on the truck chassis directly behind driver's cabin, for housing of the complete fuelling equipment, bottom and front side panelled. Framework made of welded box type steel profiles, panelling made of metal sheets; all steel parts sand-blasted and coated, clefts between profiles and panels tightened with constant elastical plastic. Easy detachable roof made of aluminium on top of the cabinet. Lateral flaps of made of isolated panel on both sides of the cabinet to be opened upwards under gas tension.

## **PUMP ASSEMBLY**

Comprising:

- 1 self-priming vane pump, with mechanical shaft sealing and overstream valve, especially suited for aviation fuel. Alfons Haar FPOJ 80-900, up to 1.200 l/min. Hydraulically driven.
- 1 pump suction line 4", made of aluminium, mounted between tank isolating valve and pump suction stub including elastical socket.
- 1 pump suction strainer DN 100 type PF 100/1ES 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:            | VELCON or FACET or FAUDI                                           |
| flow rate:        | up to 1.300 l/min                                                  |
| working pressure: | 10 bar                                                             |
| test pressure:    | 14 bar                                                             |
| specification:    | API 1581 6 <sup>th</sup> edition, Category C, Type S-M for Jet A1. |

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-534-30.
- 1 electronic water detector.
- 1 water drain pipe with two ball valves 3/4" 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.
- 1 pressurization valve.

## **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 or Isoil |
| counter head:   | VR7887         |
| min. flow rate: | 130 l/min      |
| max. flow rate: | 1300 l/min     |
| calibration:    | litres         |
| flange:         | DN 80          |

## **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 downstream from the filter / water separator, acting as pressure control- and deadman shut-off valve.
- 1 air pressure regulator / control valve, adjustable, acting on the inline valve pressure regulator block Alfons Haar STD 16 VA + deadman block Alfons Haar STT17A.
- 1 continuous adjustable venturi pipes 3" downstream the valve.

## **UNDERWING 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, type F type.
- 1 pressure fuelling nozzle 2 ½", brand Claval or Carter 64200.

## **OVERWING REEL HOSE SYSTEM**

- 1 ball shut-off valve 3" (same as above) with stainless steel ball, fitted to the overwing reel hose line.
- 1 spoked wheel hose reel 2", hub and elbow of aluminium, for single-lay helical winding.
- 1 reel hose 1 ½", 20 m length, type C.
- 1 gravity fuelling nozzle 1 ½", brand Elaflex model ZVF 50. Jet

## **OPEN SAMPLING**

- 2 Millipore sampling connection, brand Gammon model GTP 992, fitted to filter's outlet.
- 3 sampling / drain connection at filter / water separator inlet, outlet and sump.

## **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 electro-pneumatically operated deadman control system. Timer system 90-120s.
- 1 override valve, manually operable, locked in "DEADMAN ACTUATED"-position.
- 1 metallic storage box for spiral cable handswitch.

## **DRIVE - AWAY INTERLOCK**

This system avoids the parking brake being released unless

- PTO is dis-engaged.
- lateral flaps of fuelling equipment cabinet are fully closed
- bottom loading is disconnected
- deadman switch
- nozzles in place
- outside suction connection is disconnected
- collapsible handrailing

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.

## **GAUGES**

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

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

## **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.

## **ADDITIONAL EQUIPMENT INSIDE CONTROL CABINET**

- brackets / stowings for reel hose nozzle and overwing fuelling device guiding rollers for proper hose operation.
- all swivels and reel hubs without oil plugs / lubricating nipples (non-lubricating type).
- metal plate (aluminium) with flow diagram in English language and JET A-1, flammable and no smoking logo.

## **GROUNDING / BONDING EQUIPMENT**

1 cable reel, manual rewind, with 20 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.  
1 fire extinguisher, 2 kg, ABC (inside driver's cabin).

## **OPERATION MANUAL / SPARE PARTS**

Two sets will be supplied incl. operating and maintenance instructions, diagrams and drawings, spare parts catalogue and sub-suppliers literature in English language.  
Spare parts will be available for a minimum period of ten years after delivery of the vehicle.

## **TESTS**

Pressure test of tank (0,4 bar).  
Pressure test of complete system (13 bar).  
Working pressure system (10 bar).  
Functional test of all components and systems.  
Performance test at work's test stand.  
Driving and braking test.  
Weight card for each axle.

## **CERTIFICATES**

Tank's pressure test certificate.  
Piping system's pressure test certificate.

## **PAINTING**

Painting of the complete fuelling superstructure, in WHITE colour according to the client's standards. Epoxy primer and final PU topcoat.

## **PRODUCTION**

It will be executed under the established quality control system ISO 9001.