AIRFRAMES FUEL SYSTEM

1. Purpose. The fuel system is designed to supply the turbo-prop engines and the auxilliary power unit with sufficient fuel under all circumstances.

2. Specifications. The following fuel specifications can be used:

- NATO F 34; F40; F42; F44.
- Mobil : Mobil Jet
- Esso : Esso Turbo Fuel
- Aeroshell : JP 1
- BP : BP-ATG

3. Limitations:

a. Booster pump pressure : 18 - 22 PSI.

b. Maximum temperature at FCU inlet : 80°C.

c. Maximum fuel tank quantities:

"A" Tanks - 1201 IMP gals (9282 lbs each)
"B" Tanks - 613 IMP gals (4735 lbs each)
Total - 3628 IMP gals (28034 lbs each)
Fuel density - 0.77

d. Unuseable quantity in flight:

"A" Tanks - 5.5 IMP gals approx each (42,4 lbs)
"B" Tanks - 5.5 IMP gals approx each (42,4 lbs)

e. Minimum fuel for take-off:

"A" Tanks - 3600 lbs each or
"B" Tanks - 1800 lbs each.

f. Maximum refuel pressure : 50,7 PSI.

g. Maximum refueling rate:

i. (2 wings) - 8,800 IMP gals/hr

ii. (1 wing) - 4,400 IMP gals/hr

h. Overflow through refueling vents : (Overwing refueling)

"A" Tanks - 1,210 IMP gals each
"B" Tanks - 622 IMP gals each
Total - 3,652 IMP gals.

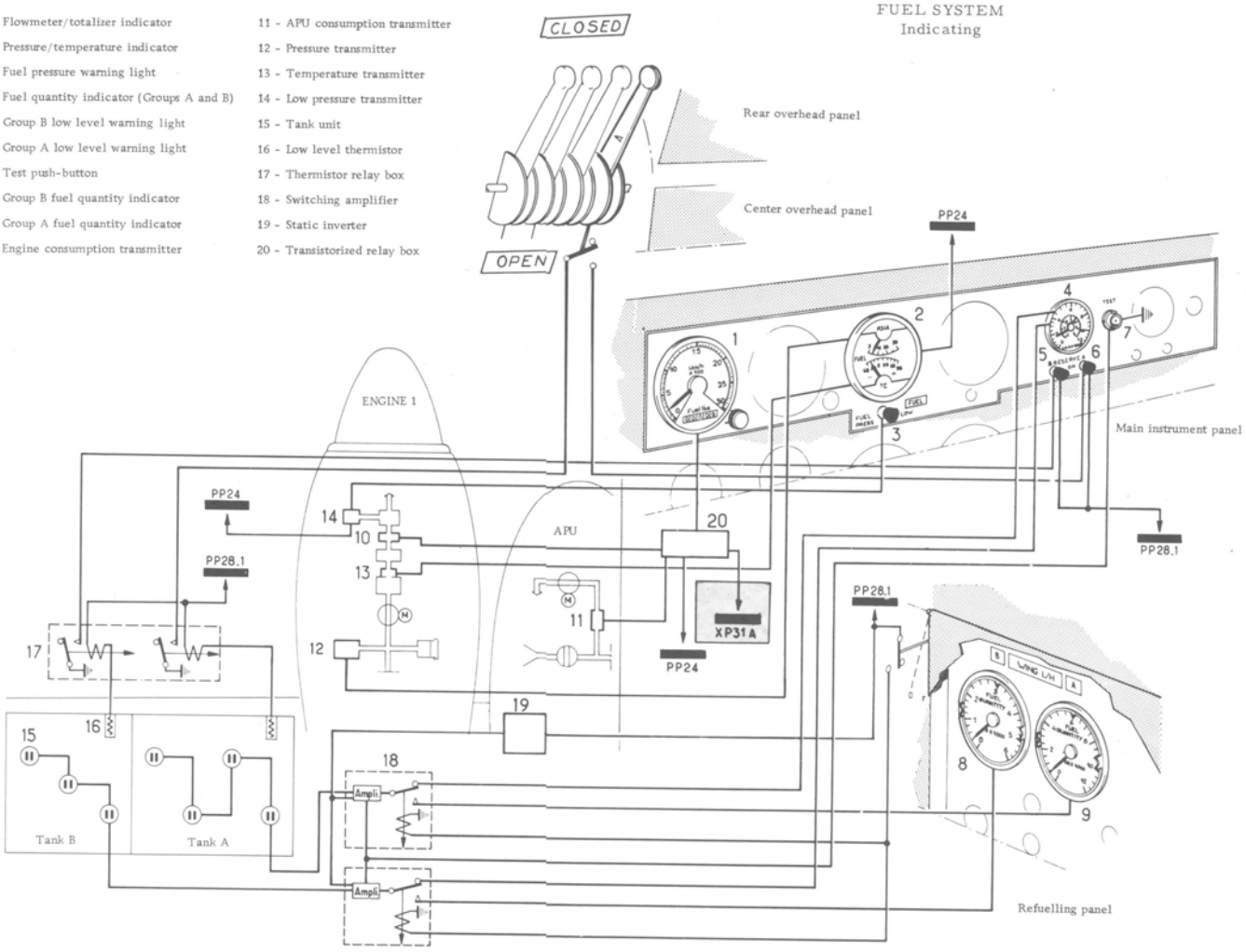
4. Components and Description of fuel tanks:

a. Tank Construction: These are structural type tanks made up by part of the spar-box of each outer wing section, outboard of the engines. Each wing comprises two groups of tanks, separated by sealed rib. The ribs inside the tanks are cut away to prevent fuel surge effects.

FUEL SYSTEM
Indicating

LEGEND

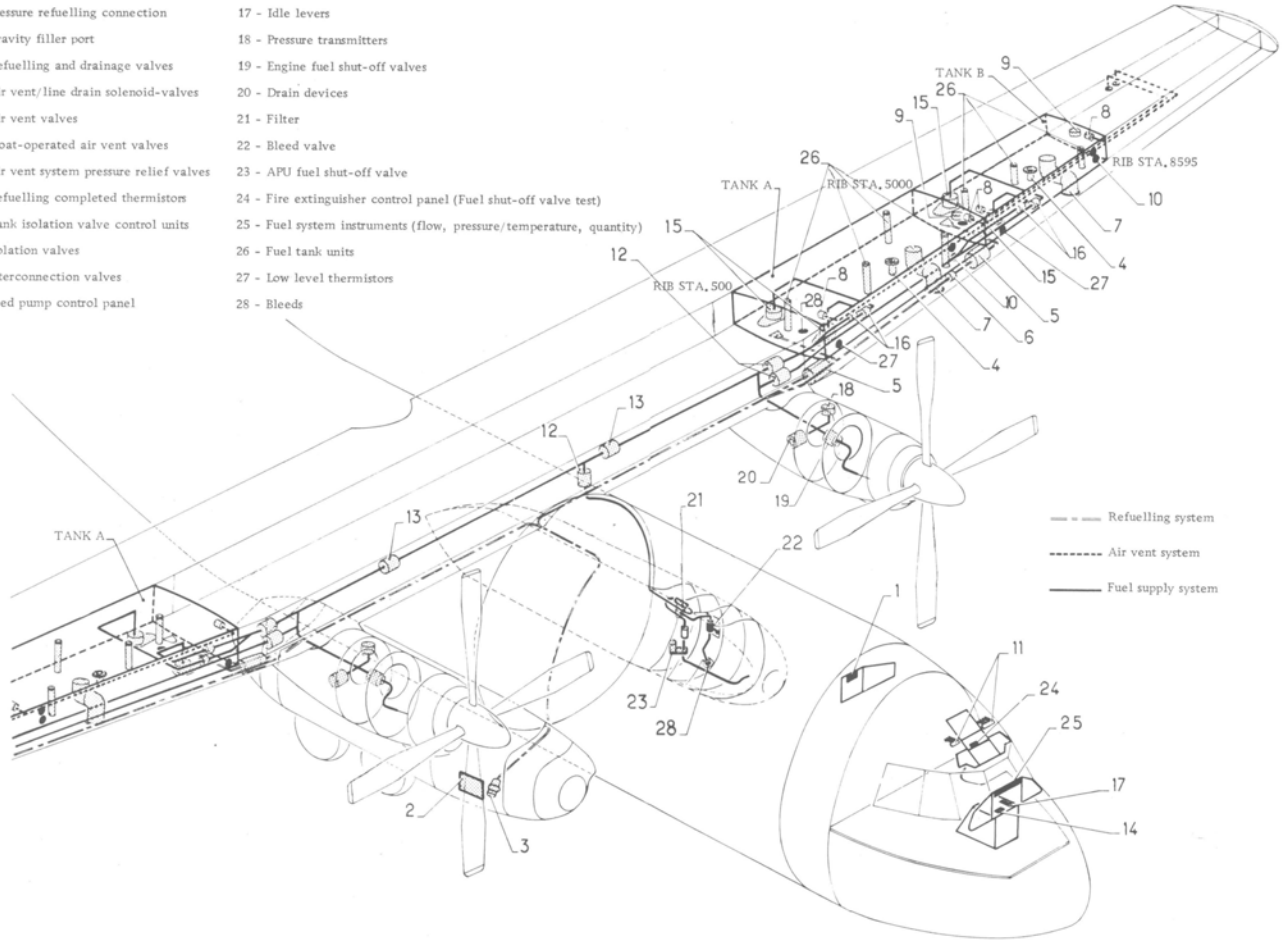
1 - Flowmeter/totalizer indicator
2 - Pressure/temperature indicator
3 - Fuel pressure warning light
4 - Fuel quantity indicator (Groups A and B)
5 - Group B low level warning light
6 - Group A low level warning light
7 - Test push-button
8 - Group B fuel quantity indicator
9 - Group A fuel quantity indicator
10 - Engine consumption transmitter
11 - APU consumption transmitter
12 - Pressure transmitter
13 - Temperature transmitter
14 - Low pressure transmitter
15 - Tank unit
16 - Low level thermistor
17 - Thermistor relay box
18 - Switching amplifier
19 - Static inverter
20 - Transistorized relay box



LEGEND

1 - Circuit-breaker panel
2 - Refuelling panel
3 - Pressure refuelling connection
4 - Gravity filler port
5 - Refuelling and drainage valves
6 - Air vent/line drain solenoid-valves
7 - Air vent valves
8 - Float-operated air vent valves
9 - Air vent system pressure relief valves
10 - Refuelling completed thermistors
11 - Tank isolation valve control units
12 - Isolation valves
13 - Interconnection valves
14 - Feed pump control panel
15 - Feed pump
16 - Check-valve
17 - Idle levers
18 - Pressure transmitters
19 - Engine fuel shut-off valves
20 - Drain devices
21 - Filter
22 - Bleed valve
23 - APU fuel shut-off valve
24 - Fire extinguisher control panel (Fuel shut-off valve test)
25 - Fuel system instruments (flow, pressure/temperature, quantity)
26 - Fuel tank units
27 - Low level thermistors
28 - Bleeds

FUEL SYSTEM
Layout



b. Tank Location:

i. "A" Groups located between ribs 500 and 5,000 on respective wings.

ii. "B" Groups located between ribs 5,000 and 8,595.

c. Tank Components:

i. A gravity - feed filling orifice on the upper wing surface. This orifice is equipped with a filter and free-access quick release cap, also an earthing plug for bonding the refueling nozzle to the aircraft.

ii. Pressure-relief valve on the upper tank surface. This device prevents air pressure build up in the tanks when they are full.

iii. Fuel contents transmitters consisting of four capacitor transmitters fixed to reinforcing flanges on the upper surface of the tanks and supported at the lower ends by guides. Two are located on the inner forward reference line and two on the inner rear reference line of the tanks.

iv. Four thermistors are fitted to the frong - spar web of each tank. They fulfill the role of level-switches, and are used to cut the electrical supply to the refueling electrical valves when the fuel reaches the 90% and 95% levels within the tanks. Two low-level thermistors are fitted to the front spar below the wing reference line, they close the low-level warning circuit when they are no longer immersed in fuel. "A" tanks 44 - 66 GLS (338,5 - 508 lbs). "B" tanks 22 -33 GLS (169,25 - 254 lbs).

v. Two float type vent-valves maintain the tank internal pressure to a value substantially equal to the ambiant pressure by means of two spring loaded seats (over pressure/negative pressure). They are fitted to the forward spar web within the tanks at a height corresponding to the full tank level. Each valve comprises:

(a). A float, which automatically shuts off the venting orifice when the fuel reaches the valve level.

(b). An in-venting valve to prevent tank collapse which opens when the internal pressure is between 0,15 and 0,2 PSI.

(c). A pressure-relief valve which opens when the internal pressure is between 1,2 and 1,5 PSI.

(d). A decanting device, eliminates water condensation which may collect within the venting collector tube. This prevents icing which would block the system.

3/.....

(e) A common collector pipe, connected to the two vent valves, reaches into the space between the aileron and wing below the horizontal wing reference line.

(f) Two fuel booster-pumps are immersed in each tank and are fixed to reinforcing flanges located on the inboard lower surface, fore and aft in the tanks:

Nominal flow rate - 330 gals/h (2,540 lbs/hr)

Pressure : 5 - 7 PSI @ 400 HZ

10 -13 PSI @ 520 HZ

13 -16 PSI @ 580 HZ

i. The fuel booster pump is driven by a 3 phase, 200 V. AC. assynchronus motor operating at frequencies between 400 - 580 HZ.

ii. Operation: When switched on, the motor drives the pump. Fuel from the tank enters the pump through an inlet filter and passes to the outlet volute casing. It applies a pressure on the by-pass valve to shut it.

iii. By-pass valve : Reduces pressure losses in the fuel system from the tank to the outlet pipe in the event of a pump failure.

(g) The "B" group tanks incorporate only three fuel level transmitters.

(h) Vent Line: The tank vent line comprises:

i. An internal pipe which extends from the top of the tank, above the maximum fuel level, to an outlet pipe formed by two half shells equipped with a transfer valve at its lower end.

ii. A vent valve connected to the tank outlet pipe, incorporates an electrical controled motor which opens and closes the valve according to selection.

iii. An overflow pipe fixed to the external valve base leads outside the wing leading edge lower surface and is provided with a flap connected by means of rods and levers to the electrical control motor. During refueling the vents are open to vent the tanks to atmosphere.

iv. A transfer valve is connected to the lower end of the tank outlet pipe, upstream of the venting device to return fuel accumulated in the valve being waisted during refueling.

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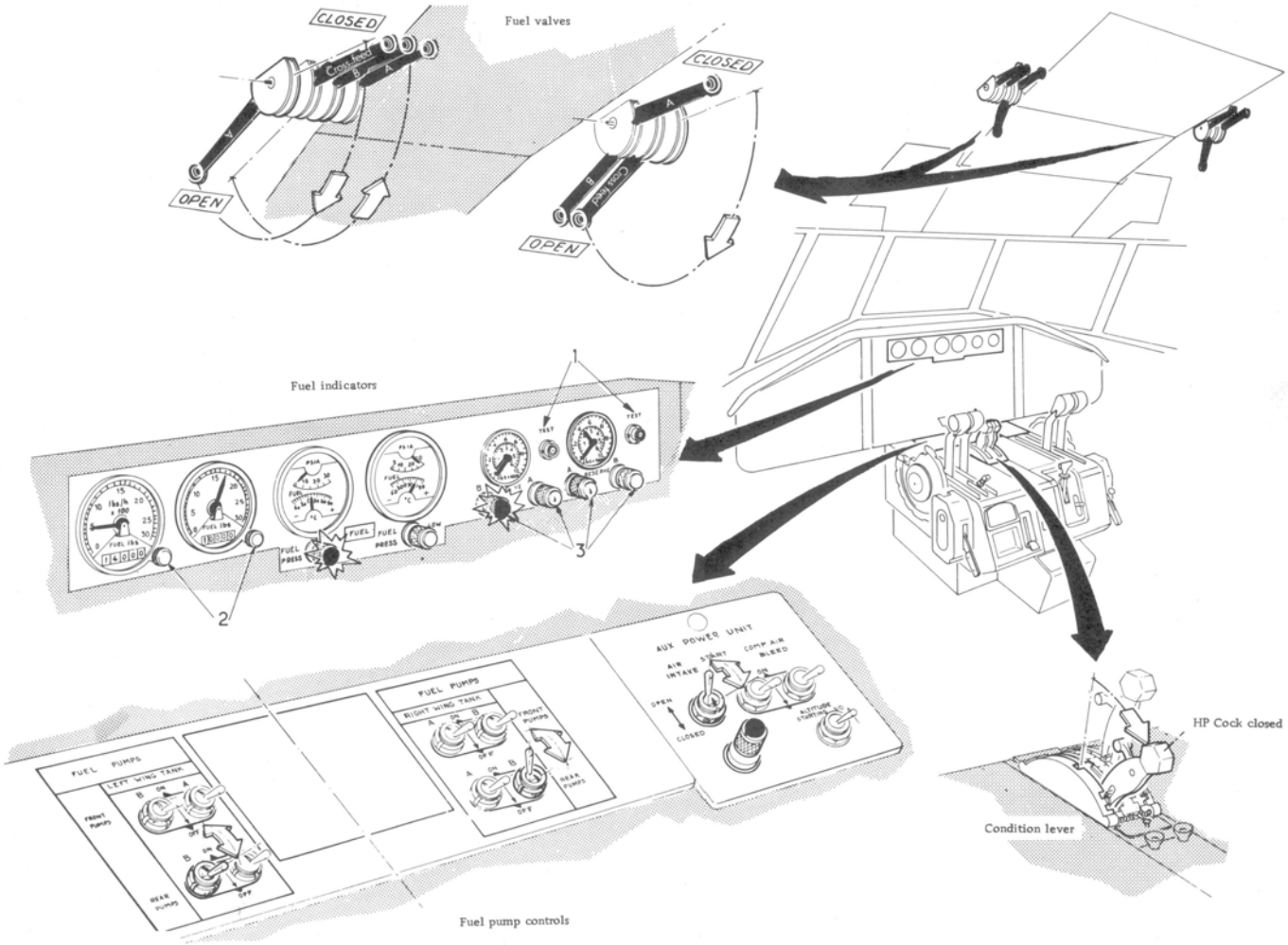
NOTE : This figure shows the following configuration :
No. 1 engine stopped
APU running
Fuel supply from R/H tank, group "B"

FUEL SYSTEM



v. A solenoid valve connects the venting line outlet pipe and the refueling line pipe and is used to vent the refueling manifold to enable the fuel between the tanks and pressure refueling connection to be drained after completion of re-fueling.

5. Fuel Selection. Selection of fuel from the fuel tanks is facilitated by means of two groups of selector levers, located left and right of the overhead panel in the cockpit which actate the fuel shut-off valves in the fuel supply line in the leading edge of the main planes:

a. The left-hand group of levers consists of:

i. An auxilliary power unit fuel selector lever.

ii. A "Crossfeed" selector-lever.

iii. An "A" tank selector lever for fuel selection from the left-hand "A" tank.

iv. A "B" tank selector lever for fuel selection from the left-hand "B" tank.

b. The right-hand group of levers consists of:

i. A "B" tank selector-lever for fuel selection from the right-hand "B" tank.

ii. An "A" tank selector-lever for fuel selection from the right-hand "A" tank.

iii. A "Crossfeed" selector lever.

c. Each "A" selector-lever actuates a micro switch, which breaks the electrical supply circuit to its applicable red low-level warning light, and will extinguish it when the lever is selected to closed.

d. The "Crossfeed" selector-levers actuate valves which interconnects the left and right-hand fuel supply systems, enabling the left-hand system to supply fuel to the right-hand engine, and visa-versa, provided that BOTH "Crossfeed" levers are selected to "OPEN" at the same time.

6. APU Fuel Selection:

a. APU selector "OPEN".

b. Any fuel-tank selector "OPEN".

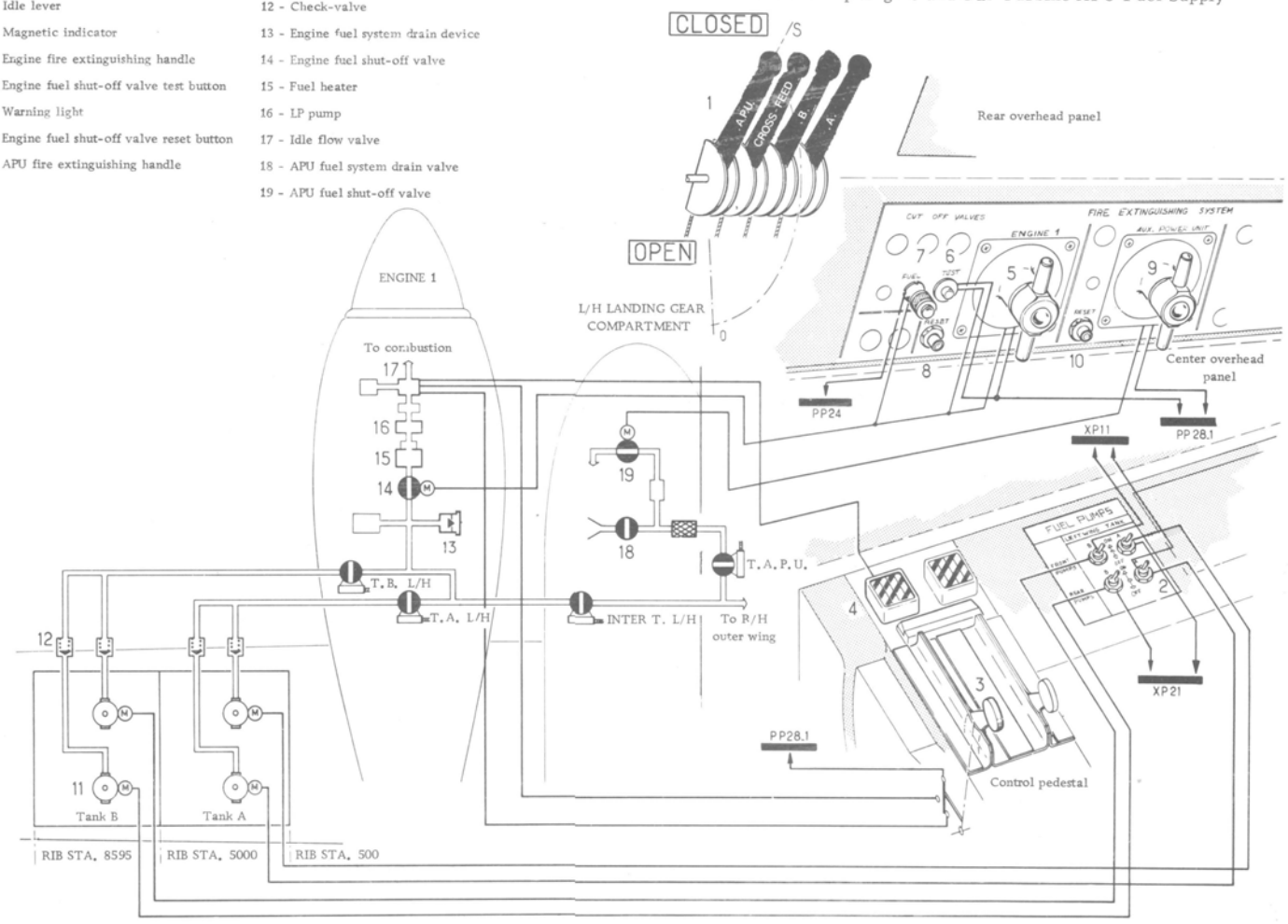
c. The crossfeed selector in the same group as the selected fuel tank "OPEN".

d. Fuel is supplied by gravitational force to the inlet of the APU fuel pump from where it is automatically regulated.

LEGEND

1 - Tank isolation valve control unit
2 - Feed pump control switches
3 - Idle lever
4 - Magnetic indicator
5 - Engine fire extinguishing handle
6 - Engine fuel shut-off valve test button
7 - Warning light
8 - Engine fuel shut-off valve reset button
9 - APU fire extinguishing handle
10 - APU fuel shut-off valve reset button
11 - Feed pump
12 - Check-valve
13 - Engine fuel system drain device
14 - Engine fuel shut-off valve
15 - Fuel heater
16 - LP pump
17 - Idle flow valve
18 - APU fuel system drain valve
19 - APU fuel shut-off valve

FUEL SYSTEM
Turbo-Prop Engine and Gas Turbine APU Fuel Supply



7. Monitoring: (Located on panel 23)

a. Two fuel flow meters indicate the fuel demand of the engine HP fuel pumps and incorporate a fuel consumption totalizer to afford a means of determining the fuel used over any fixed period. The left-hand totalizer indicates an approximate fuel consumption of the APU during ground running.

b. Two fuel pressure/temperature gauges. The fuel pressure gauges are absolute pressure gauges so as to indicate the gravitational pressure acting on the fuel in the supply lines when the booster pumps are not switched on. The temperature scales in the gauges provide an indication of the fuel temperature at the FCU inlet, normally 15 - 22°C.

c. Two dual fuel quantity indicators, each one indicating the fuel quantity of its applicable "A" and "B" tank. The scale of the "A" tanks is graduated in 500 lb units, while that of the "B" tanks is graduated in 250 lb units. Each gauge is provided with a quantity test button which alters the gauge reading when depressed, and allows the needles to return to their original indications if the quantity indication system is functioning correctly.

d. Four red low-level warning lights, one for each fuel tank. The "A" tank lights, illuminate when the quantity of fuel remaining in the "A" tanks is 44 - 66 IMP gals. (338,5 - 508 lbs). These lights can be extinguished by selecting the appropriate "A" selector "CLOSED". The "B" tank lights illuminate when the quantity of fuel remaining in "B" tanks is 22 - 44 IMP gals. (169,25 - 245 lbs). The "B" tank low-level warning lights can <u>not</u> be extinguished in flight.

8. Electrical Controls:

a. The eight fuel booster pumps are switched either on or off by means of their respective switches, located on the centre control pedestal.

b. The engine fuel shut-off valves, are closed, by pulling the fire "T" handle or pressing the fuel shut-off test button appropriate to the engine which will cause the appropriate valve to shut, the red warning light will illuminate, and is re-opened by pressing the appropriate reset button. The red warning light is then extinguished

c. The APU shut-off valve is energized closed when the APU fire "T" handle is pulled, and opened when the APU reset button is pressed. No indication is provided for the APU shut-off valve when it is closed.

NOTE: To safeguard against an abortive start, due to fuel starvation, press the reset button of the APU shut-off valve to ensure that the valve is open before initial starting of the APU.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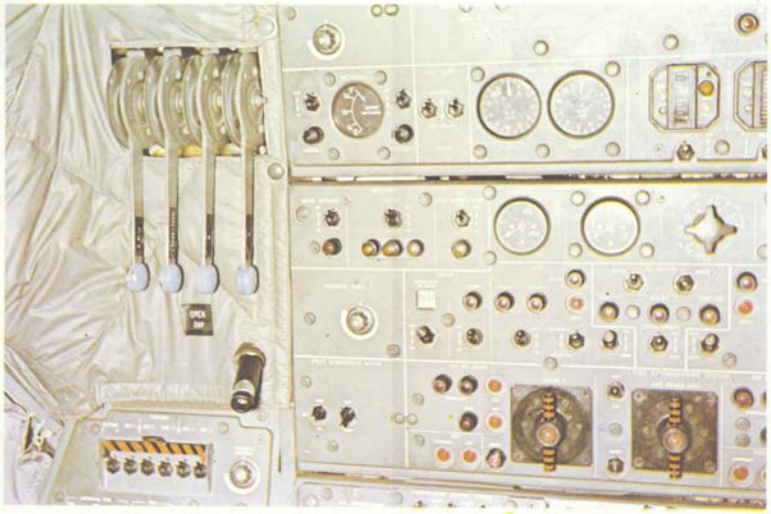
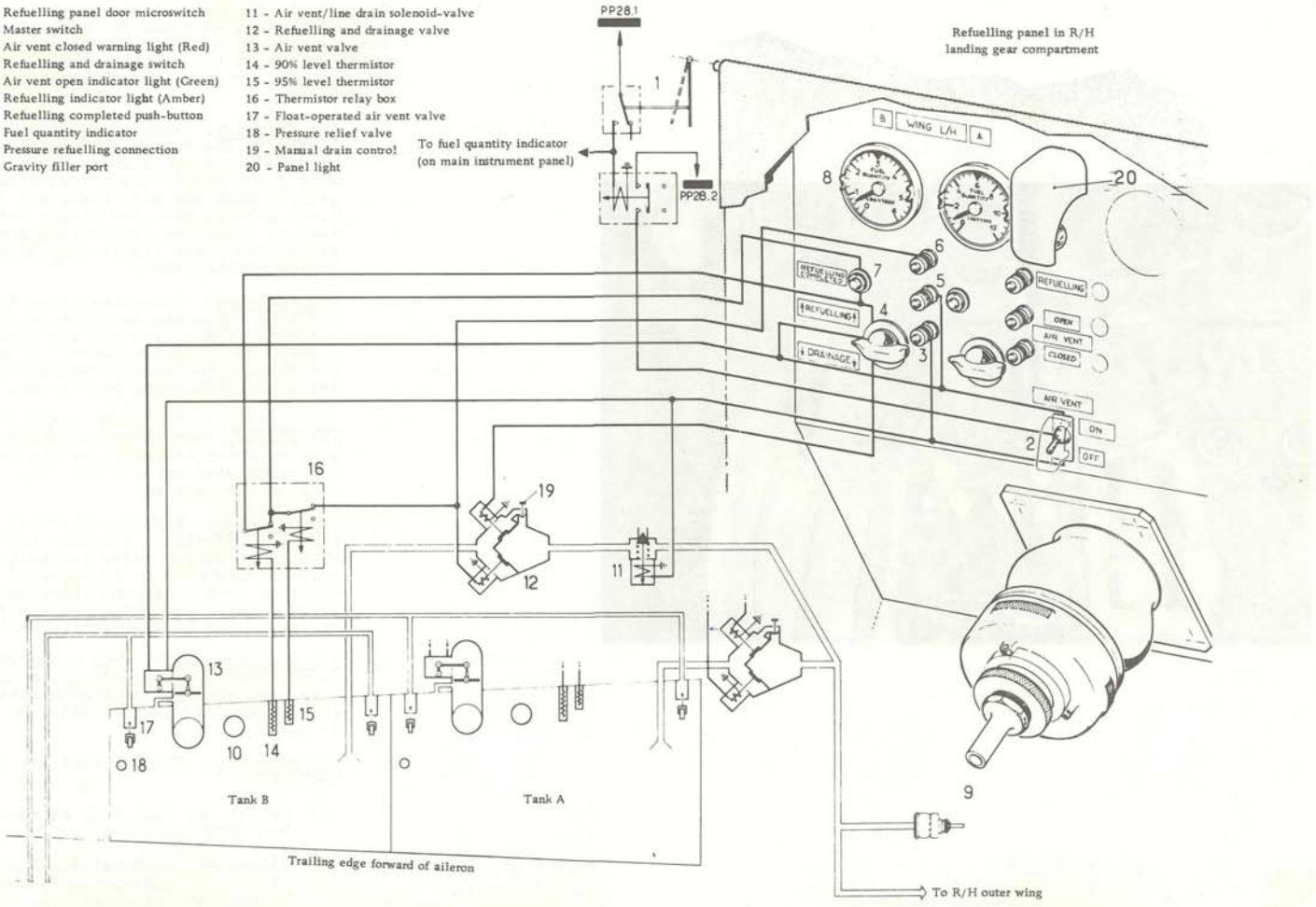
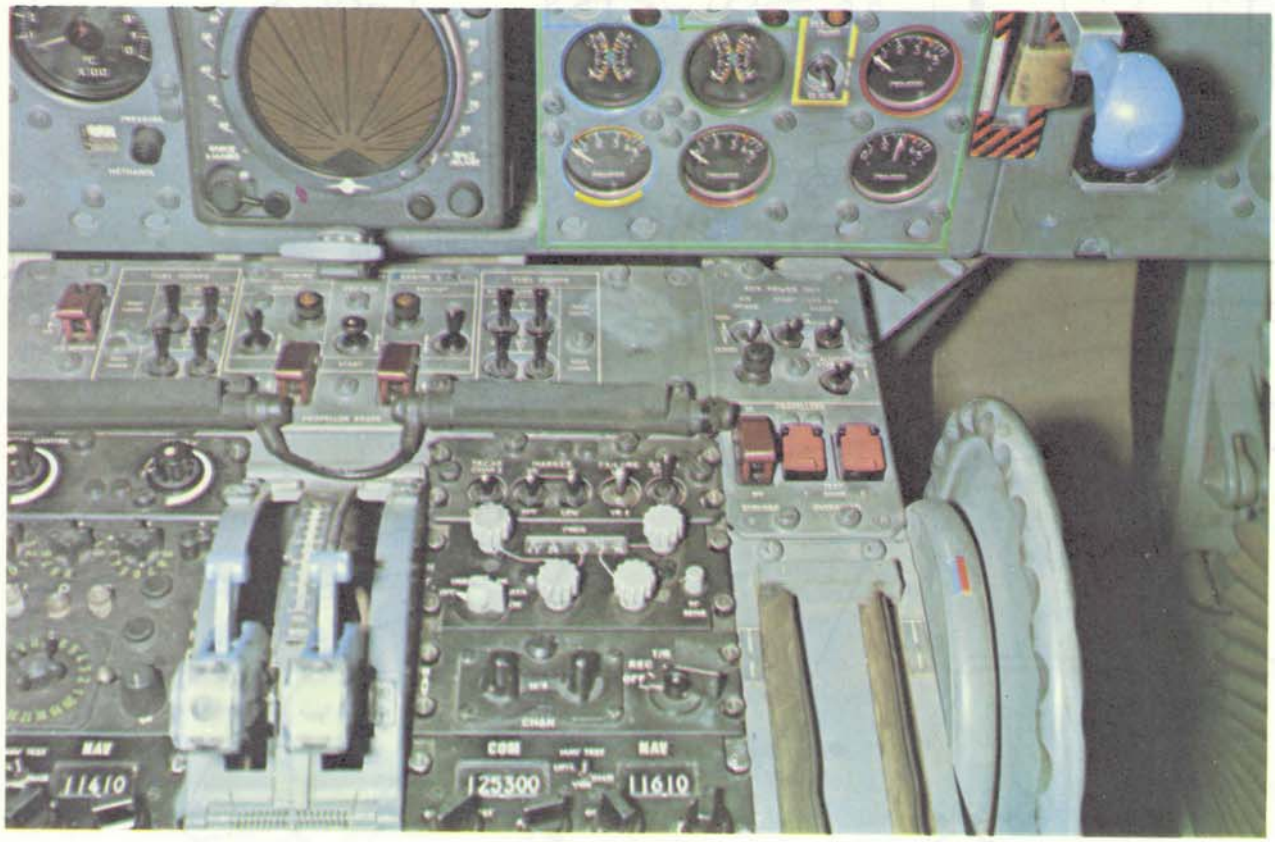


FUEL SYSTEM
Pressure Refuelling

LEGEND

1 - Refuelling panel door microswitch
2 - Master switch
3 - Air vent closed warning light (Red)
4 - Refuelling and drainage switch
5 - Air vent open indicator light (Green)
6 - Refuelling indicator light (Amber)
7 - Refuelling completed push-button
8 - Fuel quantity indicator
9 - Pressure refuelling connection
10 - Gravity filler port
11 - Air vent/line drain solenoid-valve
12 - Refuelling and drainage valve
13 - Air vent valve
14 - 90% level thermistor
15 - 95% level thermistor
16 - Thermistor relay box
17 - Float-operated air vent valve
18 - Pressure relief valve
19 - Manual drain control
20 - Panel light

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9. Refueling:

a. Pressure refueling is carried out from a single station located at the front of the right-hand side main under= carriage nacelle.

b. Operation: A safety micro switch is actuated by the refueling panel door and energizes the circuit when the door is opened, ensuring the energization of the vent-valve switch on the refueling panel (covered by a red gaurd). Four vent valves closed, warning lights, are illuminated:

i. 1st Sequence: When the vent-valve switch is se= lected to the "ON" position, it energizes a double-winding motor which opens the fuel tank refueling vent lines permitting a fuel flow rate of 8,800 gals/h, when two more tanks are refueled, or, 4,400 gals/h, when any single tank is being re= fueled. When the vent valves are open, their associated green lights are illuminated and red lights extinguished.

ii. 2nd Sequence: Refueling below 90%. By selecting the tank refueling switches to the refuel position, the refueling valves are energized open and is allowed to enter the tanks. An amber light on the refueling panel when illuminated, indicates that its associated valve has opened.

iii. 3rd Sequence: 90% level - isolation. At 90%, a thermistor, fitted to a wheatstone bridge, actuates a relay which de-energizes the refueling valve and its associated amber light, thus isolating the tank from refueling.

iv. 4th Sequence: Refueling between 90 and 95%. To complete refueling, a button below the amber light of each refueling valve re-energizes the appro= priate valve when it is pressed. This causes the valve to open again and illuminates the associated amber light. Refueling non continues for as long as the button is depressed, until 95% is reached.

v. 5th Sequence: 95% Level - isolation. At 95%, a second thermistor de-energizes the refueling valve once more and its associated amber light is extin= guished as the valve closes. No further refueling is possible.

vi. 6th Sequence: Closing vent and draining refueling manifold:

(a) Select the fuel tank selector switches to the "OFF" position.

(b) Select the vent-valve switch to the "OFF" position, this energizes the vent valve motors in the reverse direction, closing the valves and extinguishing the four green vent valve open lights and illuminates the four red lights

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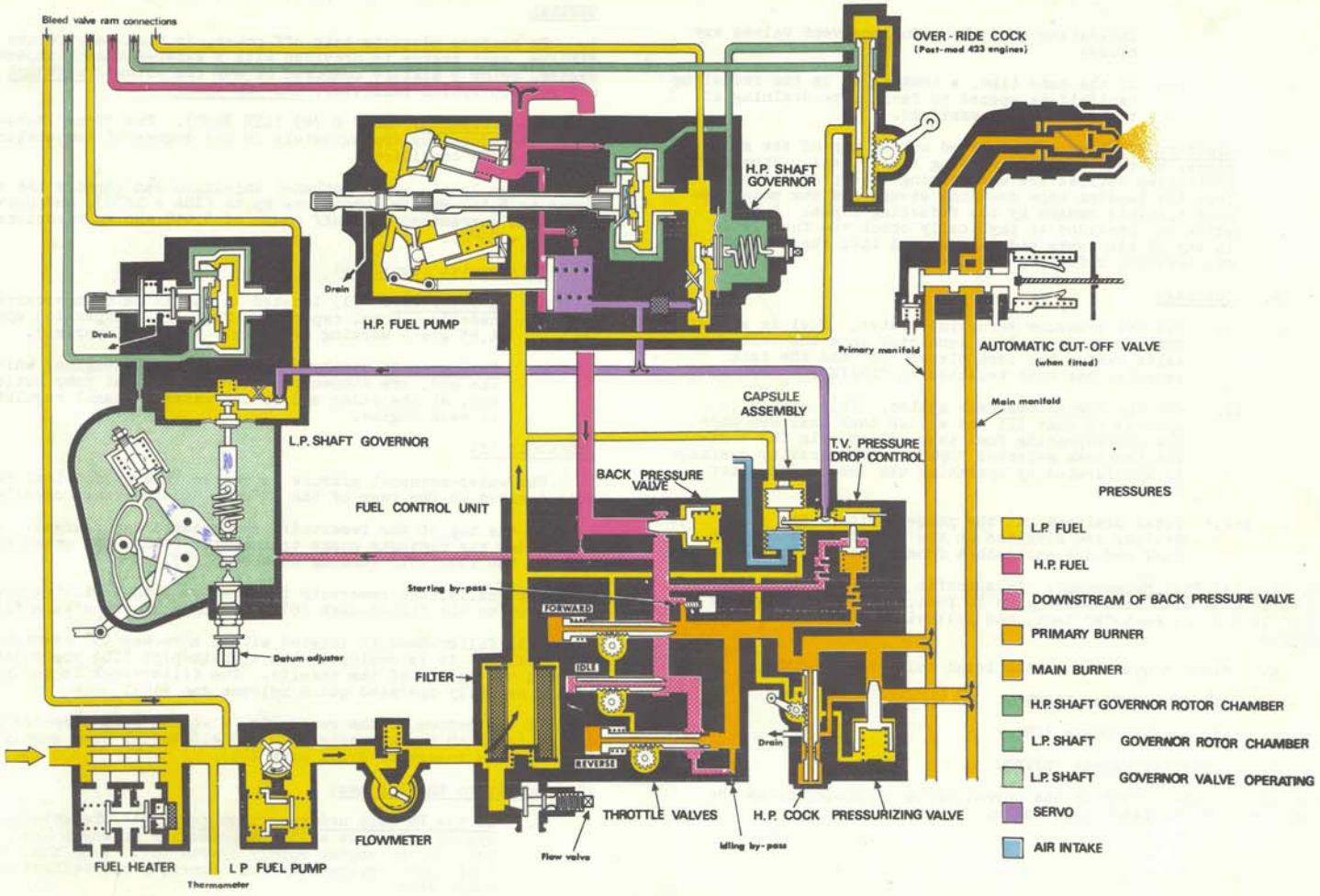

Bleed valve ram connections
OVER-RIDE COCK
(Post-mod 423 engines)
H.P. SHAFT GOVERNOR
Drain
H.P. FUEL PUMP
Drain
AUTOMATIC CUT-OFF VALVE
(when fitted)
Primary manifold
Main manifold
CAPSULE ASSEMBLY
T.V. PRESSURE DROP CONTROL
L.P. SHAFT GOVERNOR
BACK PRESSURE VALVE
FUEL CONTROL UNIT
Starting by-pass
FORWARD
IDLE
REVERSE
Datum adjuster
FILTER
Drain
FUEL HEATER
L P FUEL PUMP
Thermometer
FLOWMETER
Flow valve
THROTTLE VALVES
Idling by-pass
H.P. COCK
PRESSURIZING VALVE
PRESSURES
L.P. FUEL
H.P. FUEL
DOWNSTREAM OF BACK PRESSURE VALVE
PRIMARY BURNER
MAIN BURNER
H.P. SHAFT GOVERNOR ROTOR CHAMBER
L.P. SHAFT GOVERNOR ROTOR CHAMBER
L.P. SHAFT GOVERNOR VALVE OPERATING
SERVO
AIR INTAKE

FUEL SYSTEM

indicating that the refueling vent valves are closed.

(c) At the same time, a vent valve in the refuelin manifold is opened to facilitate draining of the fuel in the manifold.

c. Gravity Refueling: Is carried out on top of the main= planes by removing the overwing filler caps. Special protection devices are used during this process to pro= tect the leading edge de-icing strips and the mainplane from possible damage by the refueling pipes. A dip= stick is provided to physically check the fuel level in any of the tanks and is inserted into the tank at the overwing refueling office.

d. Drainage:

i. Via the pressure refueling system. Fuel is sucked through the refueling connector once the vent- valve switch has been placed "ON" and the tank selector has been selected to "DRAIN".

ii. Via the engine drainage system. This system is located in zone III and allows tank drainage once the corresponding fuel tank selector in the cock= pit has been selected "OPEN". This gravity drainag is accelerated by operating the immersed booster pumps.

iii. Total drainage via the purge device. The purge devices are situated at the lowest point of each tank and are accessible from under the mainplanes.

10. Special Fuel Management. In specific cases where take-off is to be made with less than 3,600 lb fuel, in each "A" tank or 1,800 lb fuel in each "B" tank, the following procedure is to be adopted:

a. Minimum quantity in the least full tanks : 220 lb.

b. All tank valves "OPEN".

c. All booster pumps "ON".

d. Crossfeed valves "OPEN".

11. After take-off and in the normal climb attitude, close the fuel cocks of the least full tanks.

WATER - METHANOL SYSTEM (AIRFRAME)

GENERAL

1. To restore adequate take-off power, in high temperature conditions, each engine is provided with a water-methanol injection system, using a mixture composed of 44% (in volume) methanol without anti-corrosion inhibitor, and 56% water.

2. Specification. NATO S 747 (AIR 3650). The "Tyne" take-off power is reduced by approximately 1% per degree of temperature above the ISA conditions.

3. At sea level, water-methanol injection can restore the engine power to 5,540 shp in conditions up to (ISA + 18°C), and provides a minimum guaranteed take-off power of 5,440 shp in condtions up to (ISA + 20°C).

4. This system comprises:

   a. A reservoir. (1) located in the RH main undercarriage nacelle. Total capacity : 71,5 gls - Expansion space: 1,43 gls - Working capacity : 70 gls (Imperial).

   b. Two separate supply systems. (One per engine) which, at one end, are connected to the electrical pump outlet and, at the other end to the water-methanol regulator of each engine.

RESERVOIR (1)

5. The water-methanol mixture is stored in a cylindrical reservoir located at the rear of the RH main undercarriage nacelle.

6. On the top of the reservoir, are located two flanges: one supporting the contents guage transmitter (60E), the other supporting the reservoir venting connector (7).

7. Externally, the reservoir is provided with a filling pipe (5) connected to the filler-neck (6) which is equipped with a filter.

8. This filler-neck is located within a recess (9) provided in the nacelle: It is equipped with a drain-pipe (16) protruding through the bottom of the nacelle. The filler-neck is equipped with a manually operated quick release cap (10).

9. At the bottom of the reservoir, a welded well supports a flange to which are connected the two electrical pump supply pipes (19) and the reservoir drain pipe (24).

10. Supply to the Engines:

   a. In the RH main undercarriage nacelle: The water-methanol system comprises a single reservoir on which are connected the two engine supply sytems (8). From this reservoir, each separate system comprises the following components:

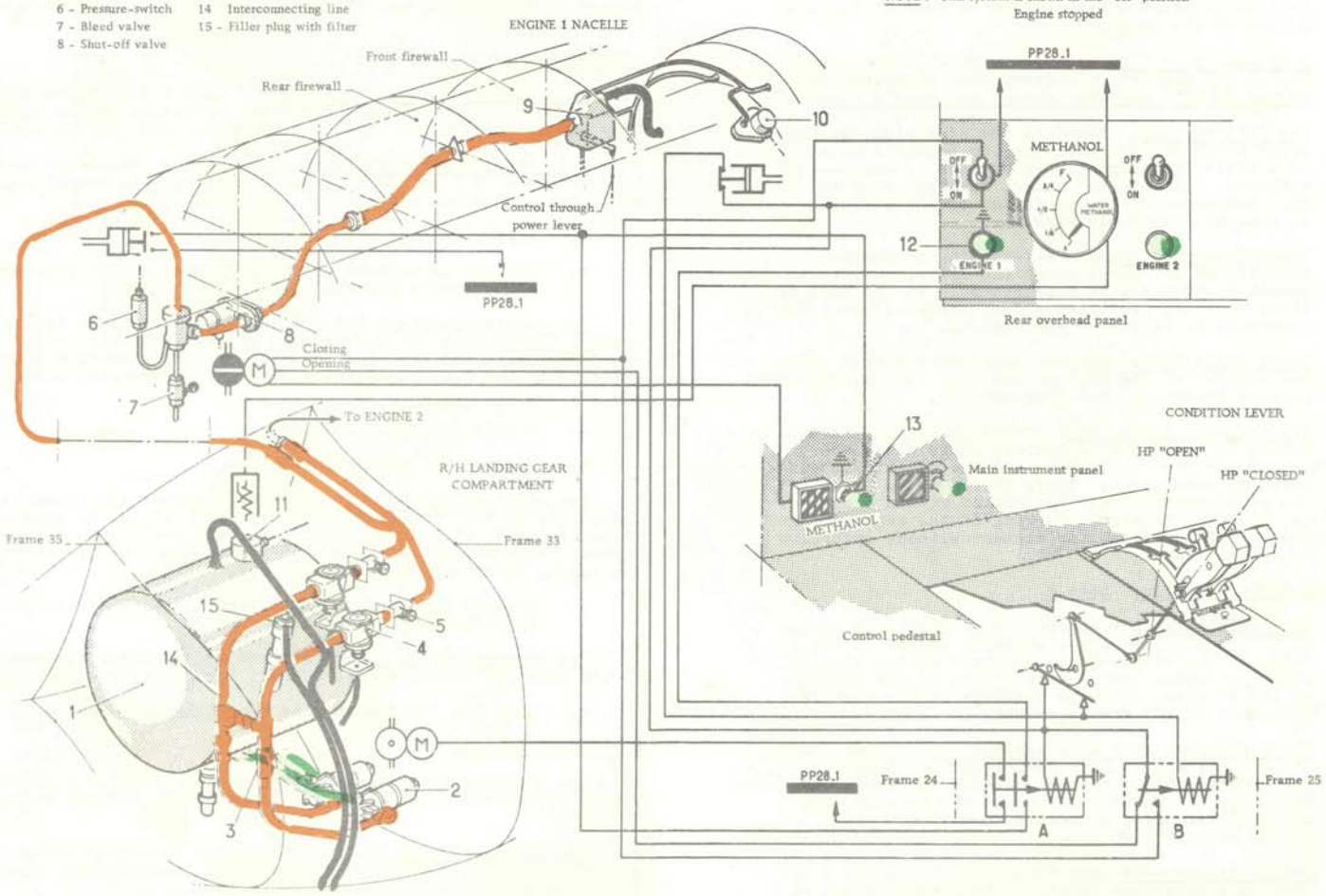
      i. Two electrical pumps (25 K 1), (25 K 2). These are centrifugal pumps with an incorporated pressure - release valve, adjusted between 21 and 23 psi for a flowrate of 489 imp. gls/h. They are driven by suppressed electrical motors, both units forming a whole.

WATER-METHANOL SYSTEM

LEGEND

1 - Tank
2 - Pump
3 - Check-valve
4 - Filter
5 - Stop cock
6 - Pressure-switch
7 - Bleed valve
8 - Shut-off valve
9 - Control unit
10 - Torquemeter transmitter
11 - Quantity transmitter
12 - Pump relay operation indicator light
13 - Pressure indicator light
14 - Interconnecting line
15 - Filler plug with filter

NOTE : This system is shown in the "off" position
Engine stopped



Supply voltage : 28 V DC.

Maximum operating time of six minutes followed by a six minute period of rest.

ii. Two non-return valves (20). Located downstream o the pumps and upstream of the by-pass pipe, these devices prohibit a return flow in case of failure of one of the pumps.

iii. A by-pass pipe (25). Connects the two systems beyond the non-return valves, thus allowing the supply of both engines through the single pump.

iv. Two filters (12). Fixed in the same plane as the upper level in the reservoir, to permit removal of a filtering element without loss of water-methanol. An integral valve, spring-loaded to 25,7 psi ensures the by-passing of the mixture in case of filter-blockage.

v. Pressure-connections. Self-sealing pressure-connections are provided at the filter outlets to permit fluid pressure measurement. At the base of these devices, is fitted a drain-cock allowing the reservoir to be purged and drained.

vi. Drain-wells (13). Located under each filter allow the exhaust of the mixture via pipe (14) during a purging operation or filter-removal.

vii. Two Shut-off cocks (11). Manually-controlled and locked in the "Open" position, these cocks are placed between the filters and the nacelle/fuselage bulkhead connectors. Their object is to isolate the water-methanol system located within the nacel= le, in order to permit purging of the reservoir and removal of the filtering element without excessive loss of mixture.

In the engine nacelle. Zone 3

i. One drain-cock (per engine) (3). This is a mecha= nically controlled cock, normally locked in the "Closed" position. It is equipped with a pipe, which protrudes through the bottom of the nacelle, on the LH side, allowing drainage of the mixture contained in the engine system.

ii. One pressure-switch with maximum setting(per engine) (61 E1) (61 E 2). This device indicates whether the water-methanol system operates correctly and energizes the warning light located on panel 23, when the mixture pressure is normal (8,9 psi). Supply voltage : 28 V DC.

iii. One isolation cock (per engine) (21 K 1) (21 K 2). This is a gate-type valve, controlled by means of an electrical jack. It provides water-methanol supply to the regulator of each engine, when the injecting conditions are met.

3/.....

Supply voltage : 28 V DC.
This device is located in nacelle zone 3.

CONTROL AND MONITORING

1. Electrical Supply. The control and monitoring circuits are fed through bus-bars PP 28 - 1, PP 28 - 2, PP 24 and PP 25, contained in the control box 10, located in the cockpit, forward of frame 13.

CONTROLS

1. Two main control switches (27 K 1 - 27 K 2). These are two-pole switches, controlling the overall operation of the system. They are located on the upper control panel 820, in the cockpit.

2. Two contacting-relays (24 K 1 - 24 K 2). These are energized by switches 27 K 1 and 27 K 2, and permit the electrical supply to reach the electrical pumps.

a. Supply voltage : 28 V DC.

b. Located in control box 412, located in the fuselage (RH) between frames 24 and 25.

3. Two inverting-relays (26 K 1 and 26 K 2). These devices control the opening and the closing of the isolation cocks, in accordance with the position occupied by the "CONDITION LEVER" (micro-switches 6.K5 and 6.K6) and by the torquemeter switches m1 and m2.

a. Supply voltage : 28 V DC.

b. Located in control box 412.

4. Two micro-switches (6.K5 and 6.K6). These are mechanically controlled by the "CONDITION LEVERS". They allow the opening of shut-off valves 21 K 1 and 21 K 2, for all positions of these control levers comprised between 0° (rich) and 50° by cutting off the supply to relays 26 K 1 and 26 K 2.

a. Located in control box 15, located at the rear of frame 13 within the freighthold.

5. Two torquemeter switches (m 1 and m 2). Allow the opening of the shut-off valves when the shaft torque is above 50 psi.

a. They are located in zone 1 of the power-plant.

MONITORING DEVICES

1. One contents gauge transmitter (60 E). This is a potentiometric transmitter, energized via gauge 59E. Working voltage : 28 V DC.

2. Contents gauge (59 E). Indicates the reservoir contents in accordance with the position taken by the potentiometer wiper of transmitter 60 E.

3. Two pressure warning lights (62 E 1 - 62 E 2). These light up when the pressure of the mixture is above 8,9 psi. They are

4/....

energized by pressure-switches 61 E 1-61 E 2.

a. Supply voltage : 28 V DC.

b. Located on panel 23, in the cockpit.

4. Two pump electrical supply warning lights (62 E 3 - 62 E 4). These light up when the electrical pumps are supplied with electrical power. Located on upper control panel 820.

5. Two isolation position indicators (22 K 1 and 22 K 2). These are magnetic type indicators which show the position of the isolation cocks (shut or open).

a. Supply voltage : 28 V DC.

b. These devices are energized by end-of-travel switches fitted to the cocks, and are each located above the corresponding torquemeter indicator on panel 23.

OPERATION

1. System Pressurization. (Only one engine system explained - both identical).

a. Switch 27 K 1 "ON".

b. Switching relay set (24 K 1).

c. Electrical pump 25 K 1 is supplied and pressurizes system.

d. Light 62E 3 as well as 62E 1 illuminated (Latter at 8, 9 psi).

e. Isolation cock 21 K 1 shut and the corresponding indicator 22 K 1 indicates "SHUT".

ISOLATION COCK OPENING

1. The control relay 26 K 1 of isolation cock 21 K 1 is electrically supplied in parallel by: on the one hand, torquemeter switch 1, and, on the other hand, by the "CONDITION LEVER" micro-switch 6 K 5, both of which must be de-energized, to allow opening of the isolation cock.

POSITION OF "CONDITION LEVER"

1. When the lever is in the "Fuel cock open" position, the micro switch 6K,5 is set to the rest position, cutting off the first supply circuit to control relay 26 K 1.

2. Engine torque. When this torque exceeds the minimum value of 50 psi, the torquemeter m 1 is open, cutting off the second supply circuit to control relay 26 K 1 (75 psi).

3. When both these conditions are met, control relay 26 K 1 is set to the rest position.

4. Isolation cock 21 K 1 is energized and moves to the "OPEN" position, the water-methanol mixture reaches the engine regulator.

5/.....

5. The position-indicator, associated to cock 22 K 2, energized by the end-of-travel switch, moves to the "OPEN" position.

MINIMUM PERMISSIBLE QUANTITY FOR T/O

65% full tank.

MINIMUM PERMISSIBLE UTILISATION TEMPS

Water/Methanol Mixture - 15°C.

ASSENTIAL PRE-FLIGHT CHECKS (Fire Precaution)

a. Security of bonding wires and intact.

b. Absence of mixture leaks.