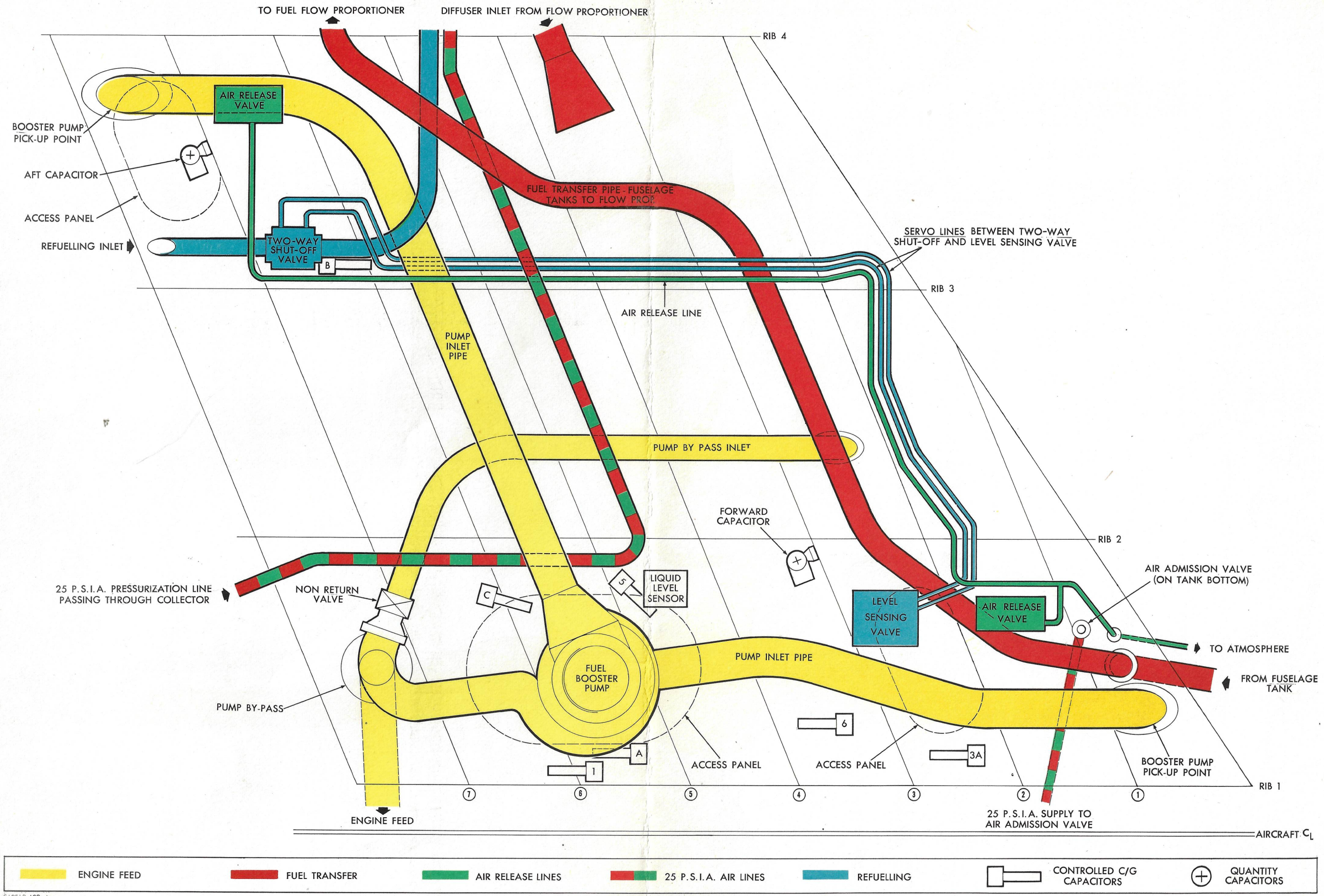
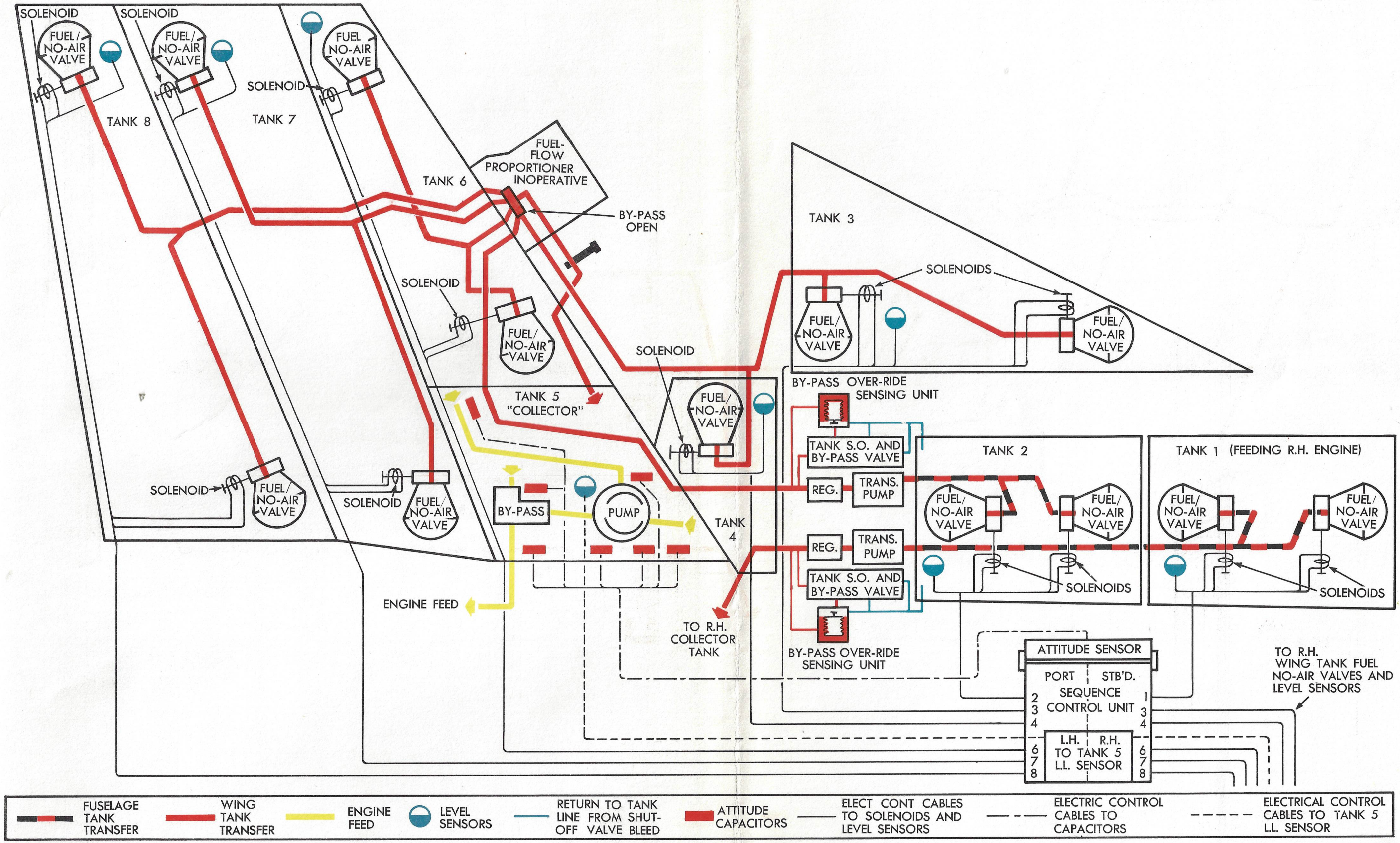


C105LD-109-1

COLLECTOR TANK COMPONENTS - FUEL SYSTEM (FLOW PROPORTIONER AND CONTROLLED C/G)

SECRET

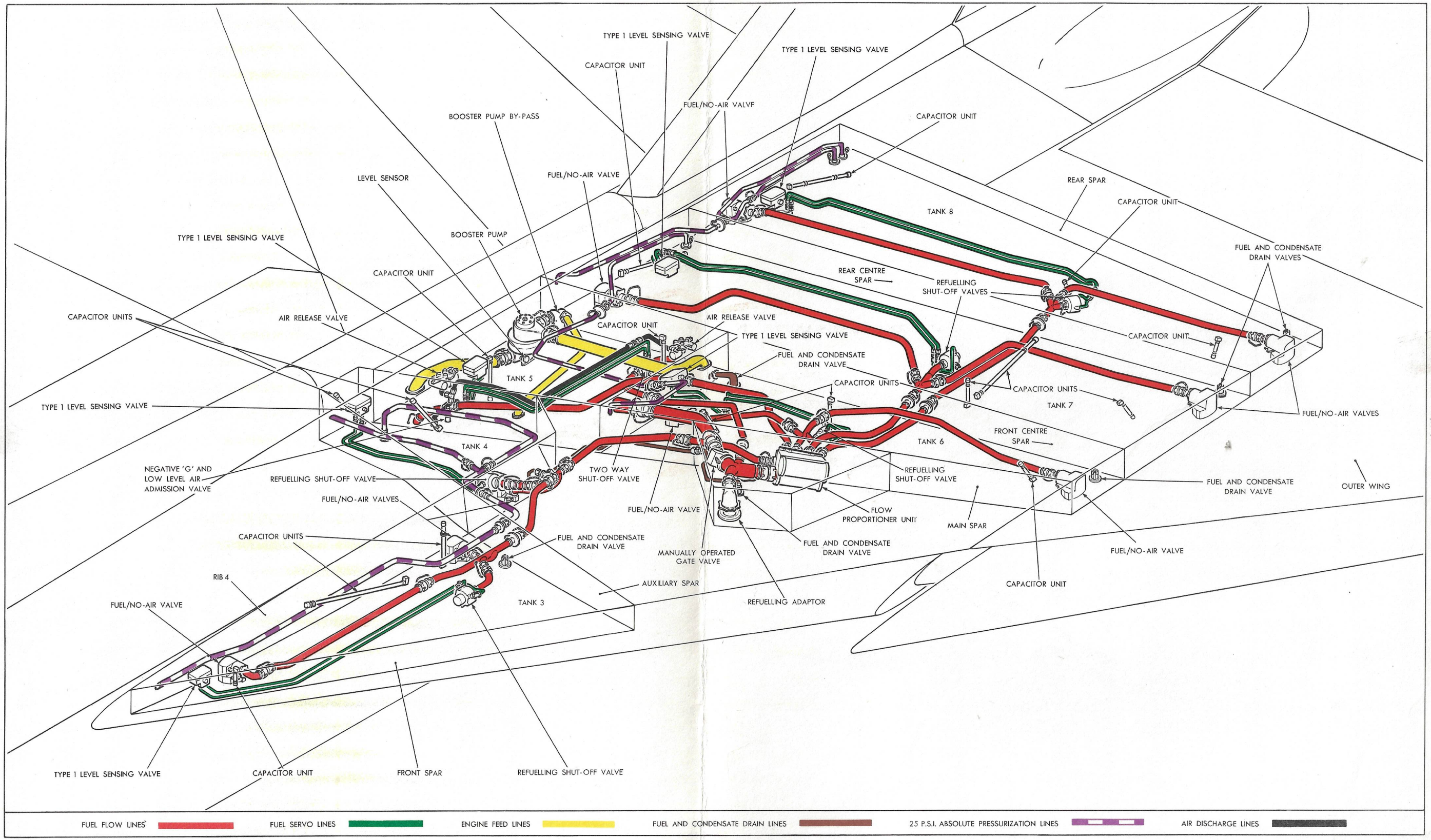


C105-LD108-1

ARROW 1

COMPOSITE FUEL SYSTEM

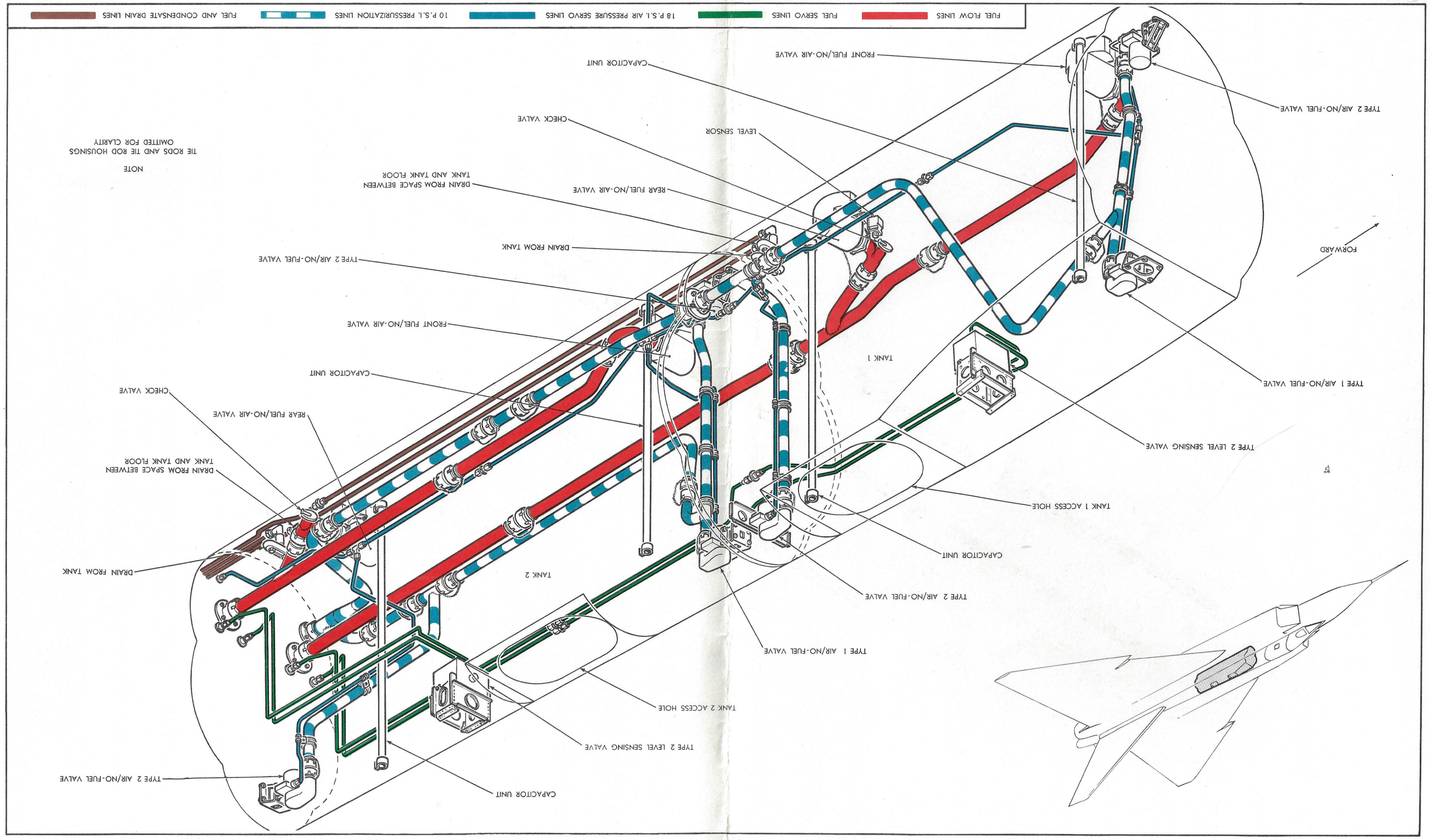
–SECRET



7M1-3410-2

LAYOUT OF WING TANK COMPONENTS

LAYOUT OF FUSELAGE TANKS COMPONENTS



NOTE

TIE RODS AND TIE ROD HOUSINGS OMITTED FOR CLARITY

(1) OIL - FUEL HEAT EXCHANGER

(2) BOOSTER PUMP LOW PRESSURE WARNING SWITCH (2) (BETWEEN FUEL ISOLATING VALVES—ITEM 3)

(3) FUEL ISOLATING VALVE (2)

(4) FUEL PRESSURE REGULATOR VALVE

(5) TANK SHUT-OFF VALVE (2)

(6) FUEL TRANSFER PUMPS (2)

(7) AIR—NO FUEL VALVE

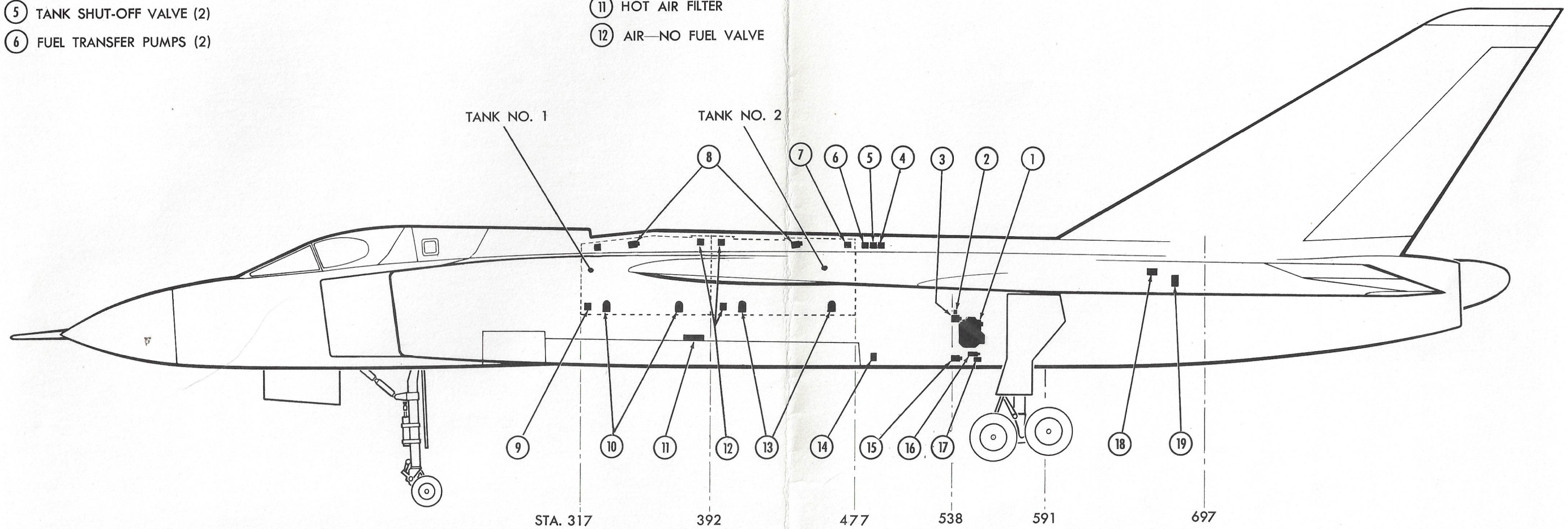
(8) LEVEL SENSING VALVE

(9) AIR—NO FUEL VALVE

(10) FUEL—NO AIR VALVE

(11) HOT AIR FILTER

(12) AIR—NO FUEL VALVE



(13) FUEL—NO AIR VALVE

(14) AIR PRESSURE RELIEF VALVE—DIFFERENTIAL

(15) FUEL CROSSFEED VALVE

(16) FUEL LOW PRESSURE COCK (2)

(17) ENGINE LINE LOW PRESSURE WARNING SWITCH (2)

(18) AIR PRESSURE RELIEF VALVE—REGULATOR (2)

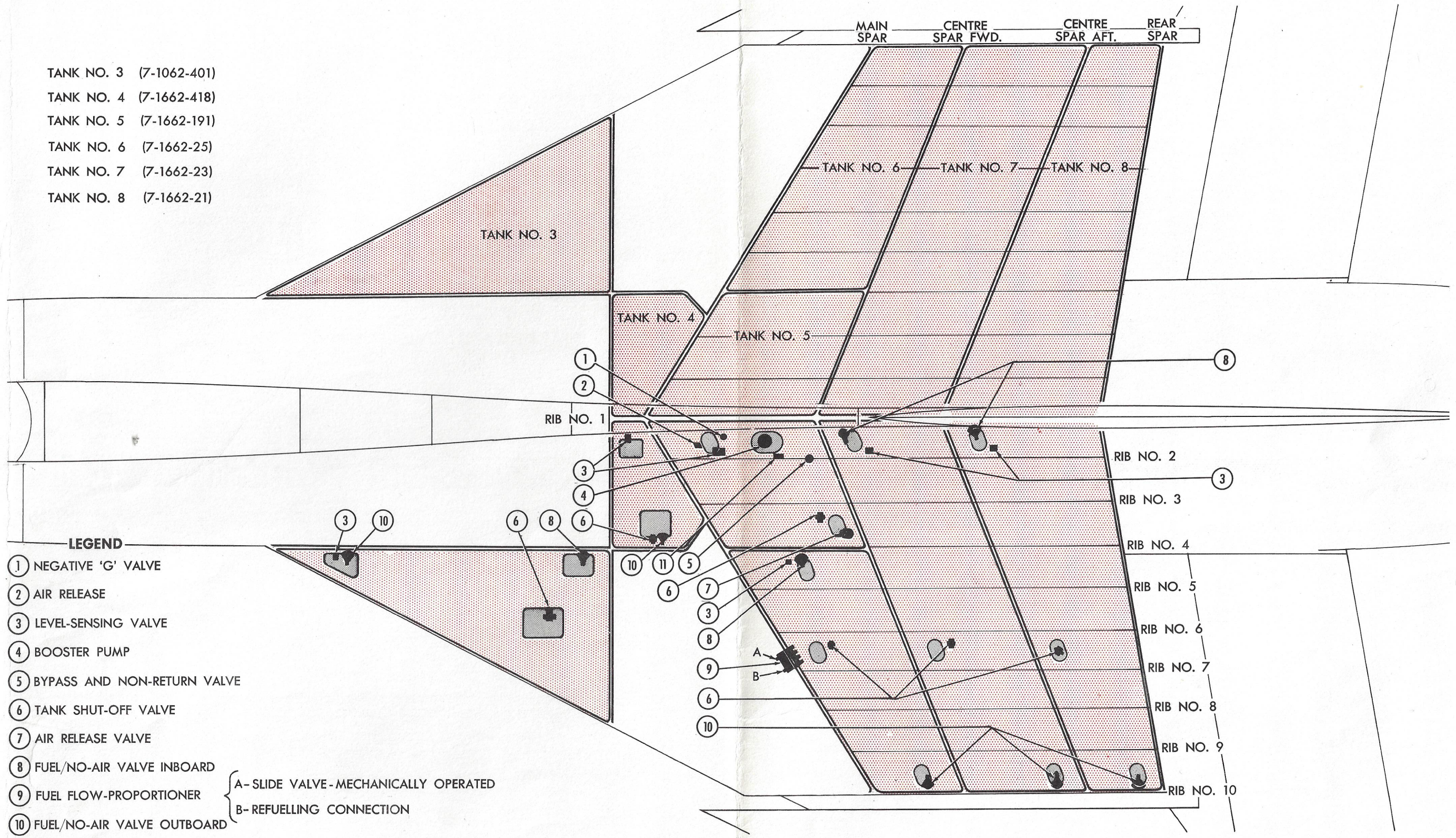
(19) AIR PRESSURE RELIEF VALVE—ABSOLUTE (2)

C105-LD-64-1

FUEL SYSTEM — COMPONENT LOCATION DIAGRAM FUSELAGE

SECRET

TANK NO. 3 (7-1062-401)
TANK NO. 4 (7-1662-418)
TANK NO. 5 (7-1662-191)
TANK NO. 6 (7-1662-25)
TANK NO. 7 (7-1662-23)
TANK NO. 8 (7-1662-21)



LEGEND

1. NEGATIVE 'G' VALVE
2. AIR RELEASE
3. LEVEL-SENSING VALVE
4. BOOSTER PUMP
5. BYPASS AND NON-RETURN VALVE
6. TANK SHUT-OFF VALVE
7. AIR RELEASE VALVE
8. FUEL/NO-AIR VALVE INBOARD
9. FUEL FLOW-PROPORTIONER
   - A - SLIDE VALVE - MECHANICALLY OPERATED
   - B - REFUELLING CONNECTION
10. FUEL/NO-AIR VALVE OUTBOARD
11. LIQUID LEVEL SENSER

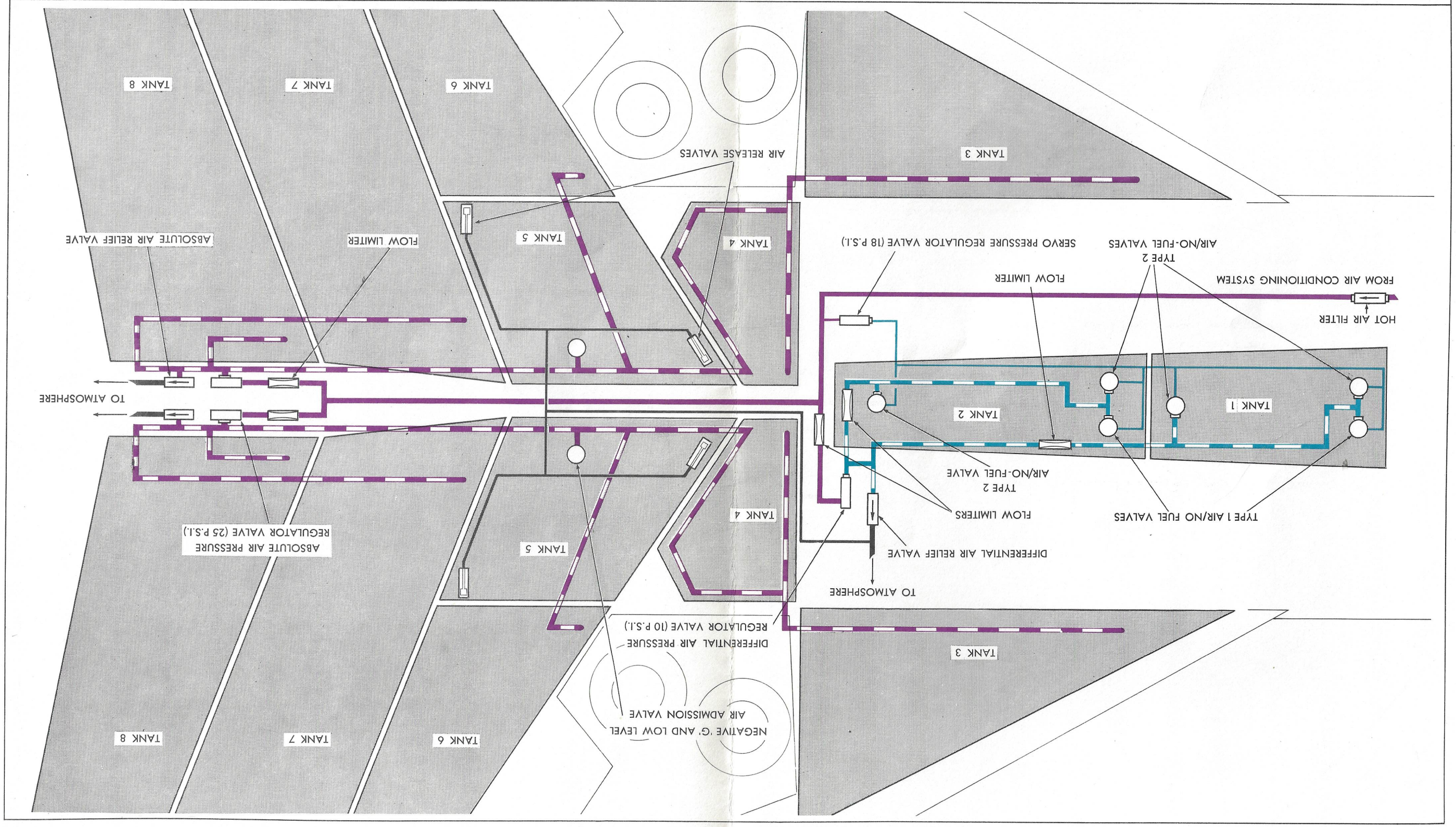
C105-LD-63-1

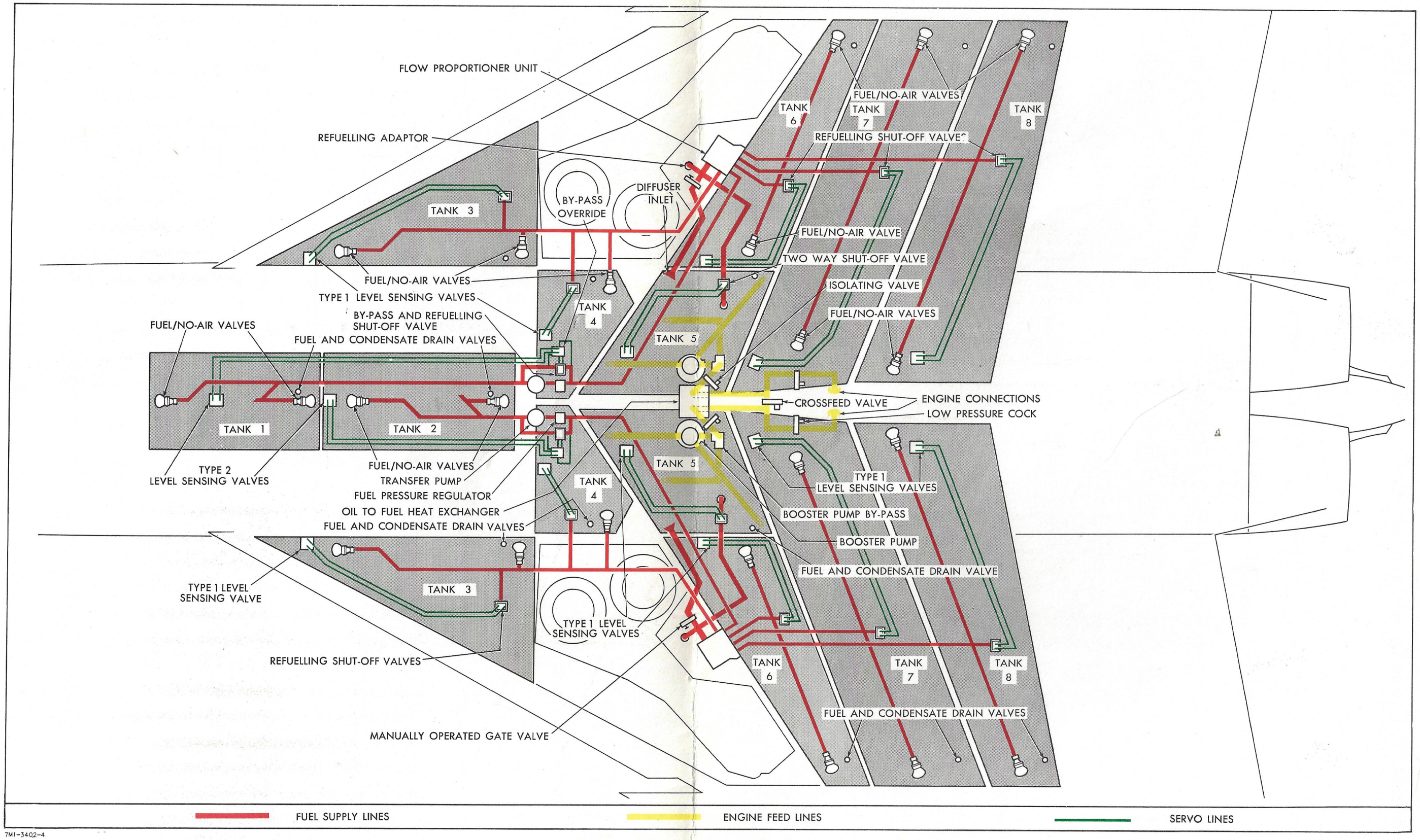
FUEL SYSTEM COMPONENT LOCATION DIAGRAM
WING
SECRET

FUEL SYSTEM - TANK PRESSURIZATION SCHEMATIC

DISCHARGE LINES
10 P.S.I. DIFFERENTIAL PRESSURE LINES
18 P.S.I. DIFFERENTIAL PRESSURE SERVO LINES
25 P.S.I. ABSOLUTE PRESSURE LINES
HIGH PRESSURE AIR LINES

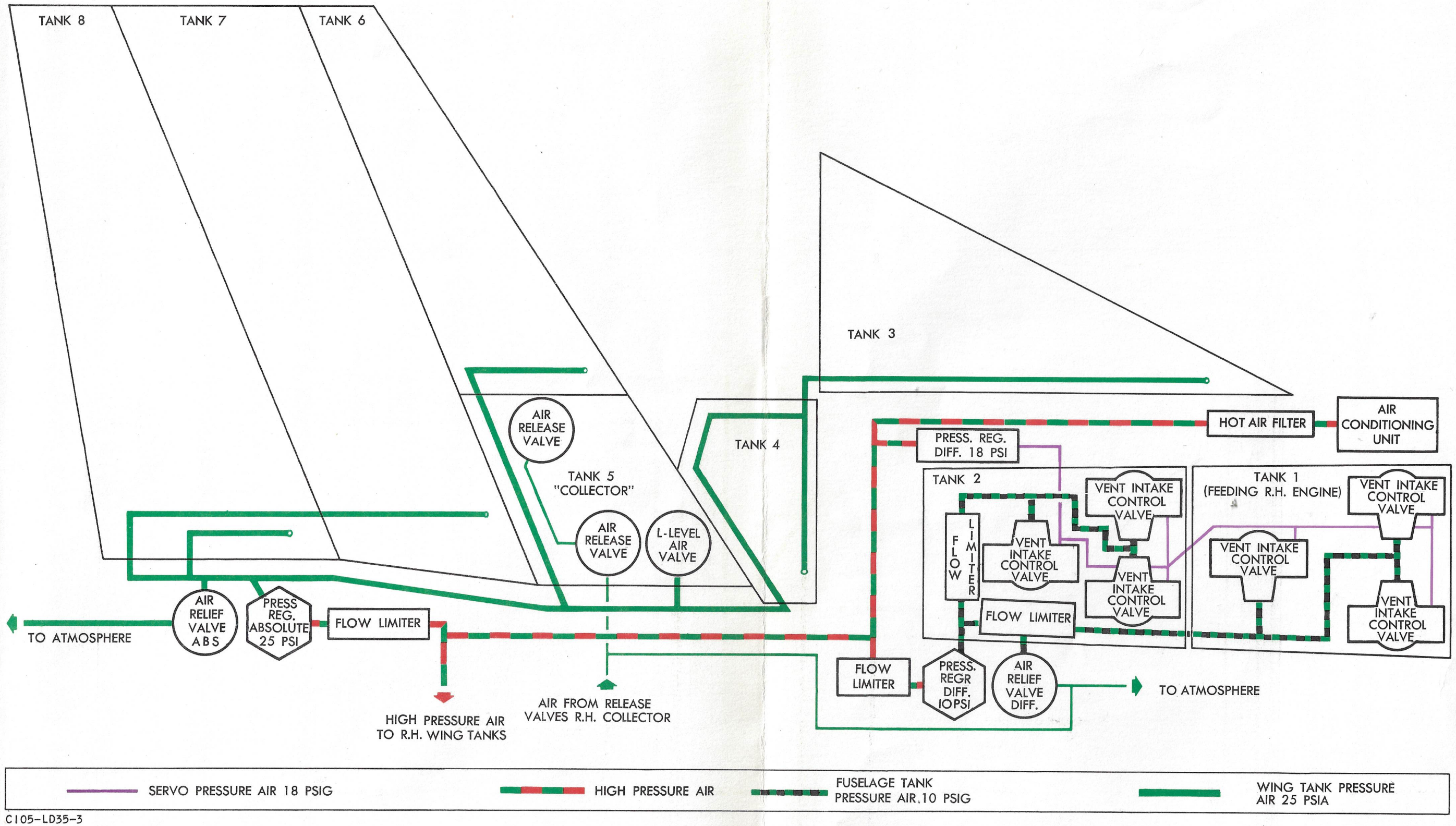
7M1-3401-4





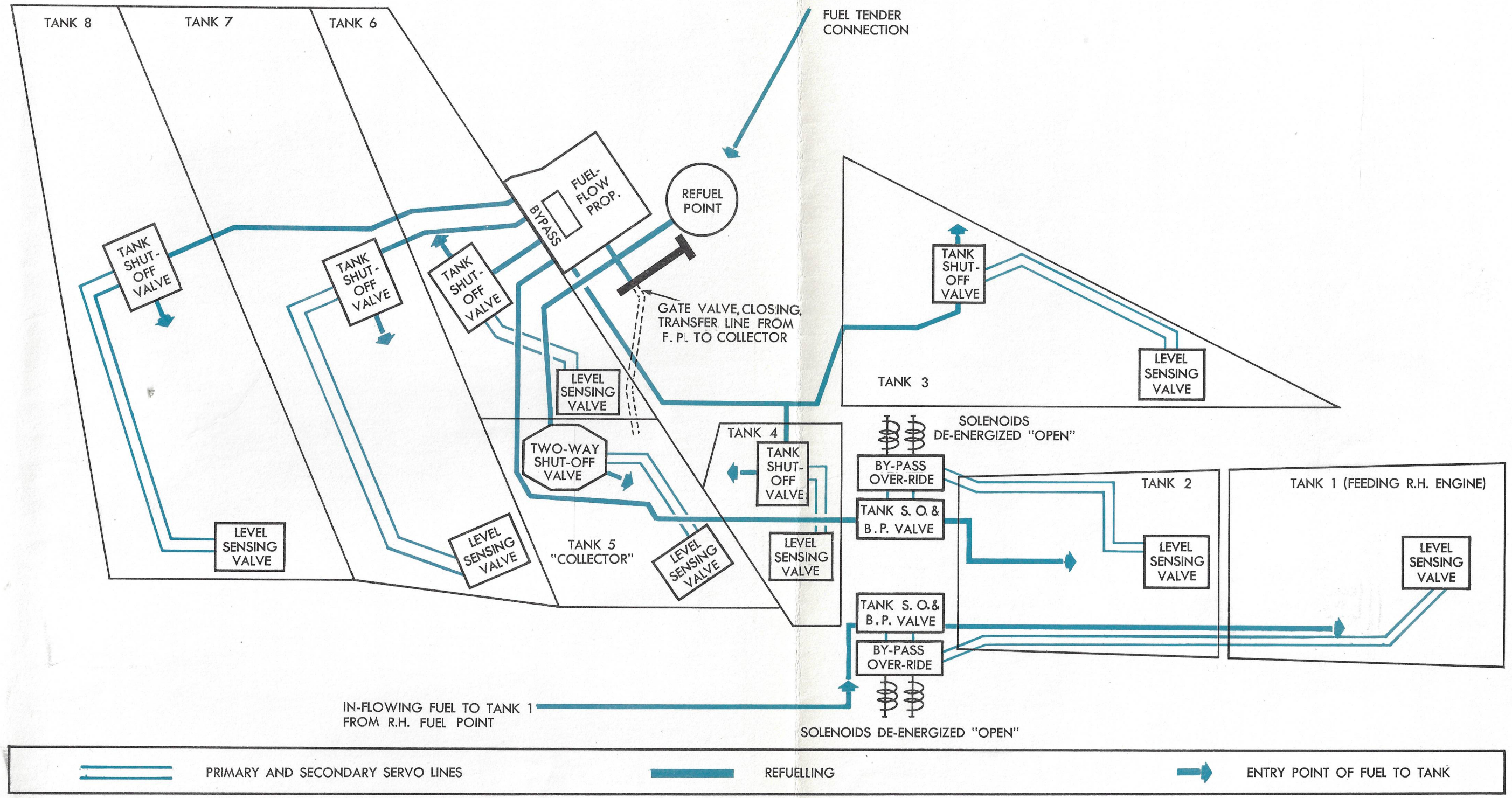
7M1-3402-4

FUEL SYSTEM - FUEL FLOW SCHEMATIC



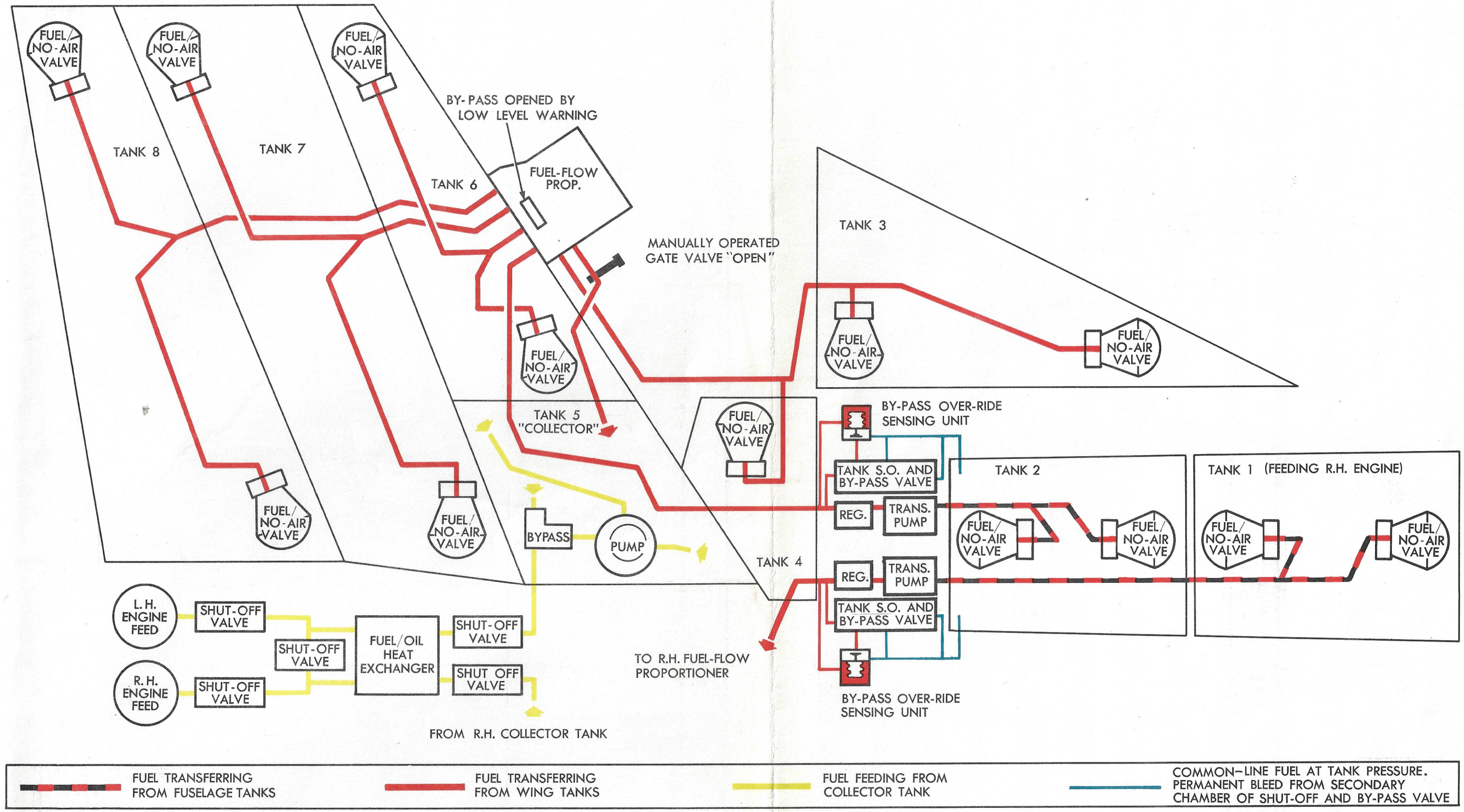
C105-LD35-3

ARROW 1
FUEL SYSTEM TANK PRESSURIZATION
SECRET



C105-LD34-3

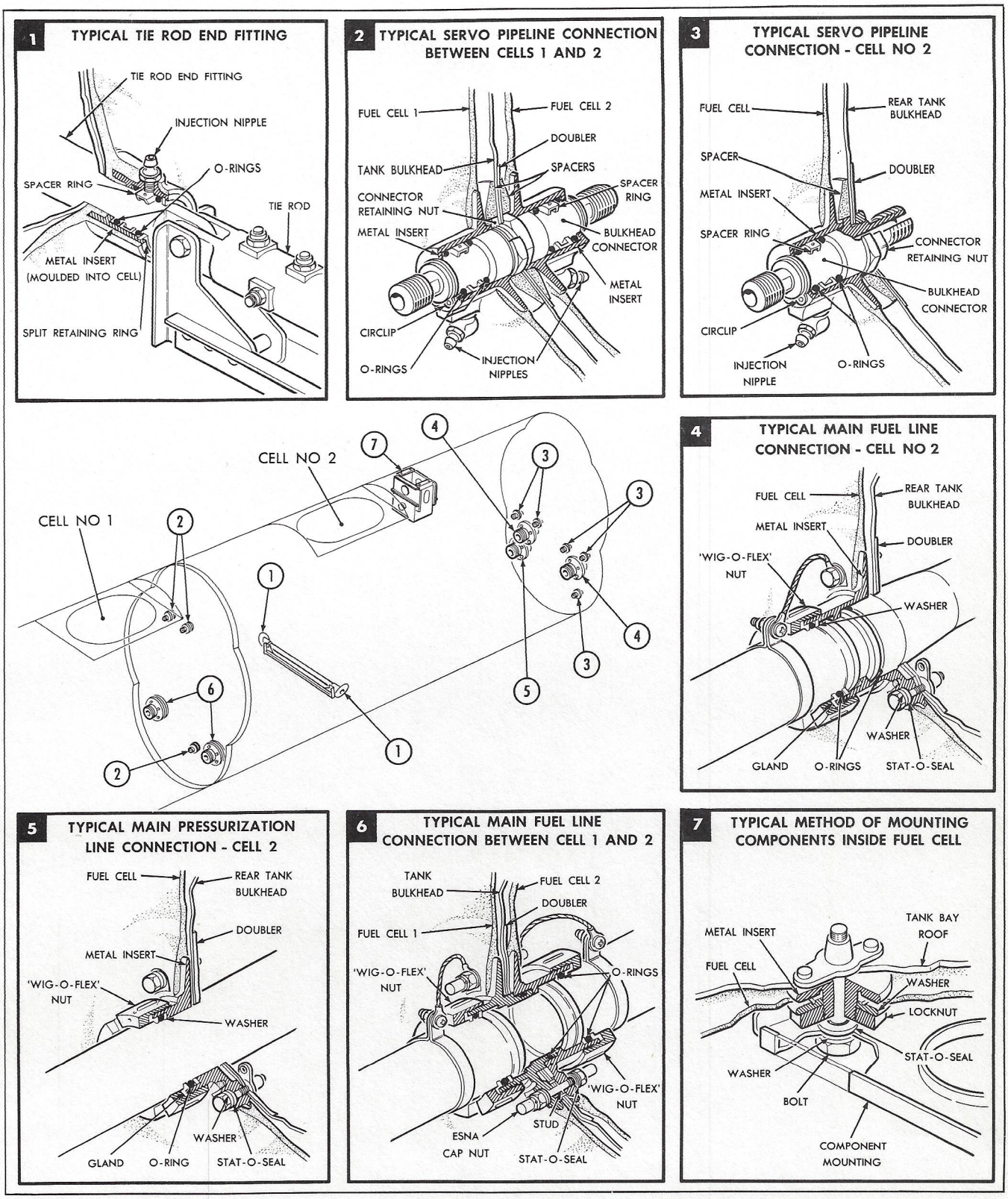
ARROW 1
FUEL SYSTEM REFUELLING
SECRET



C105-LD36-3

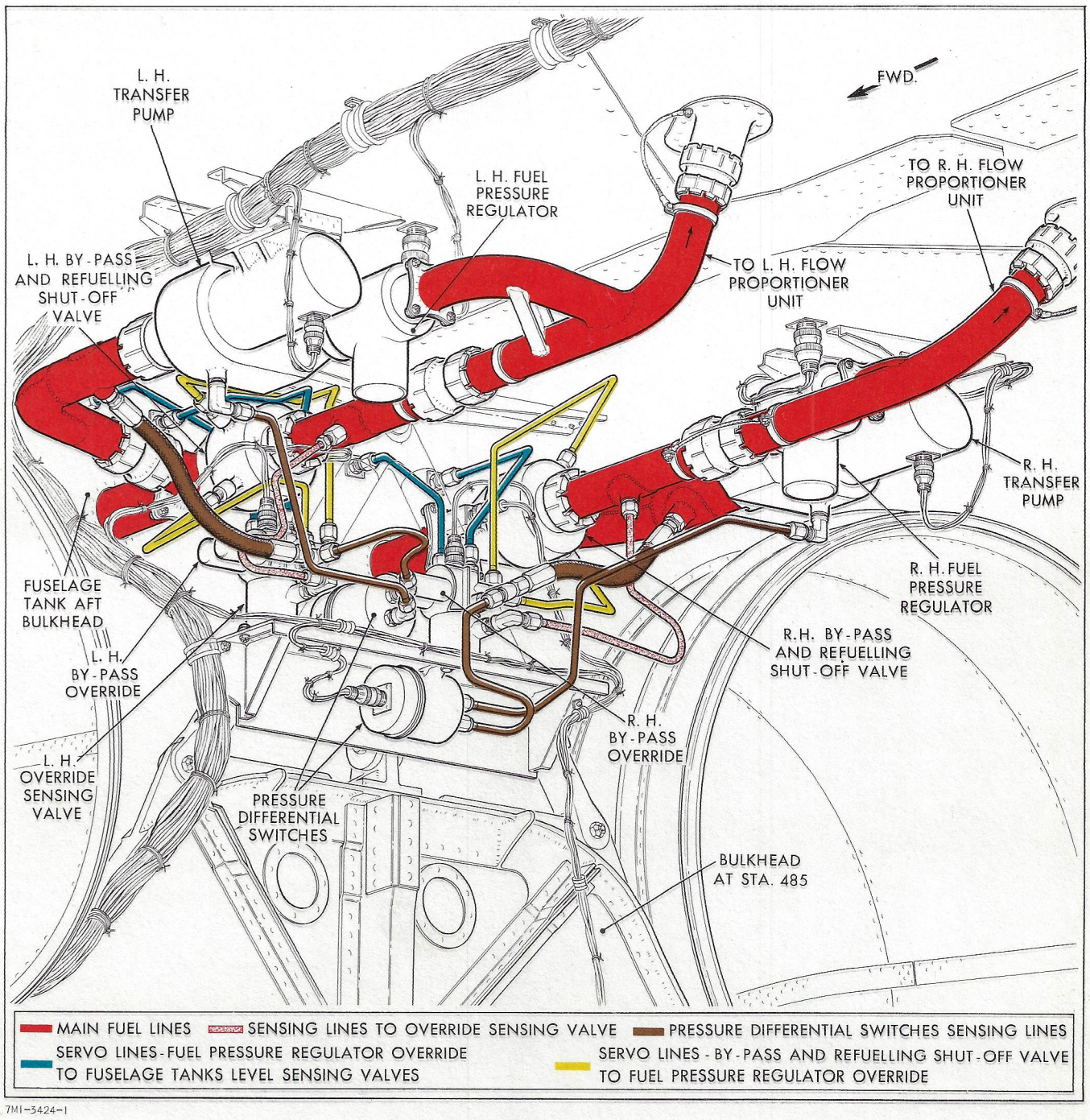
ARROW 1
FUEL SYSTEM ENGINE FEED AND TRANSFER

SECRET



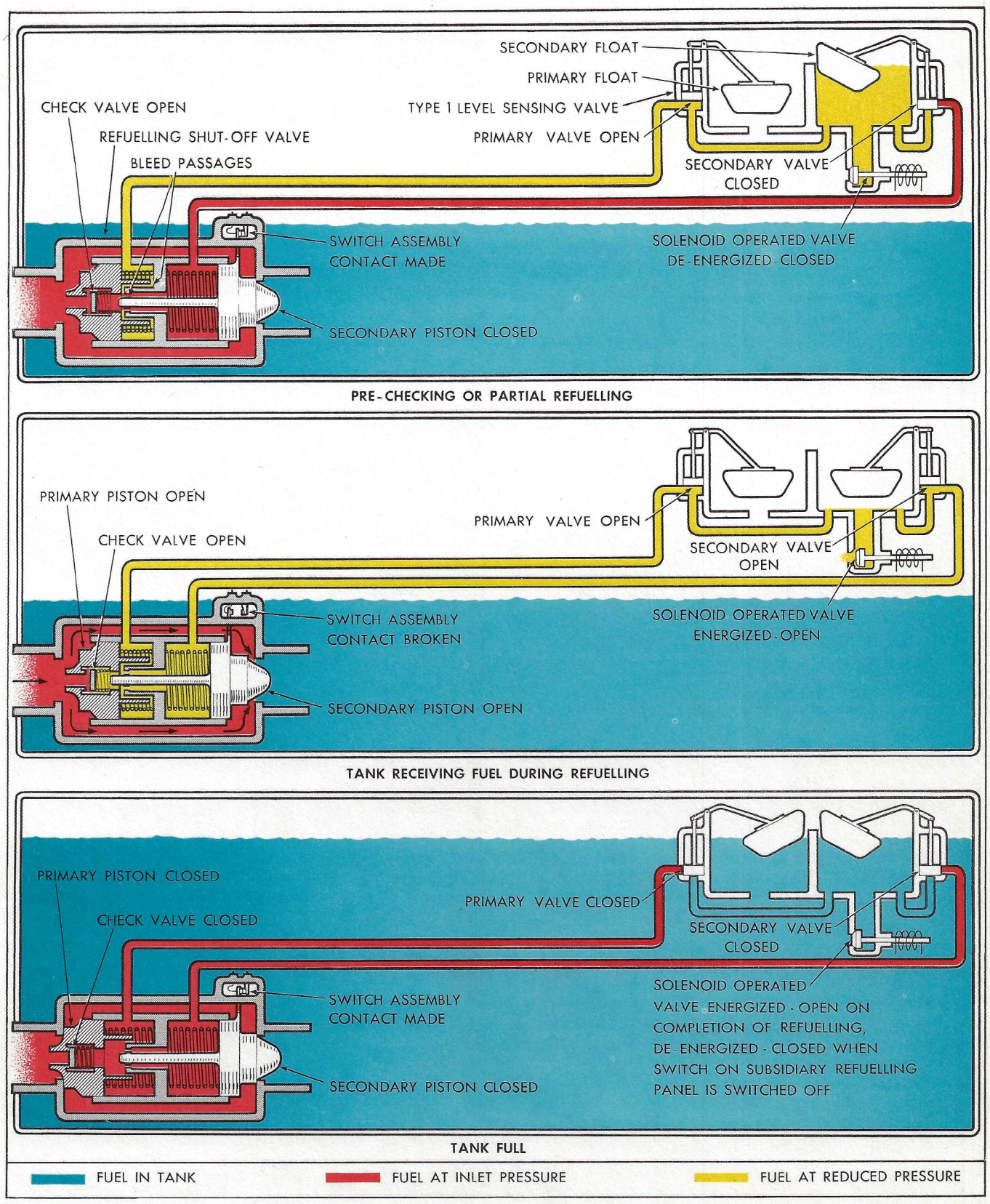
7M1-3431-1

SEALING OF FUEL CELL CONNECTIONS
FUSELAGE TANKS



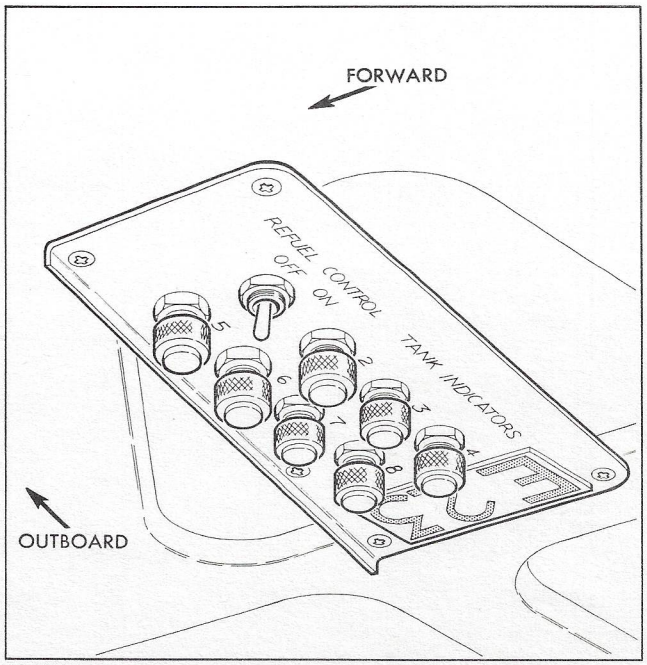
7M1-3424-1

FUSELAGE TANKS TRANSFER LINES AND COMPONENTS



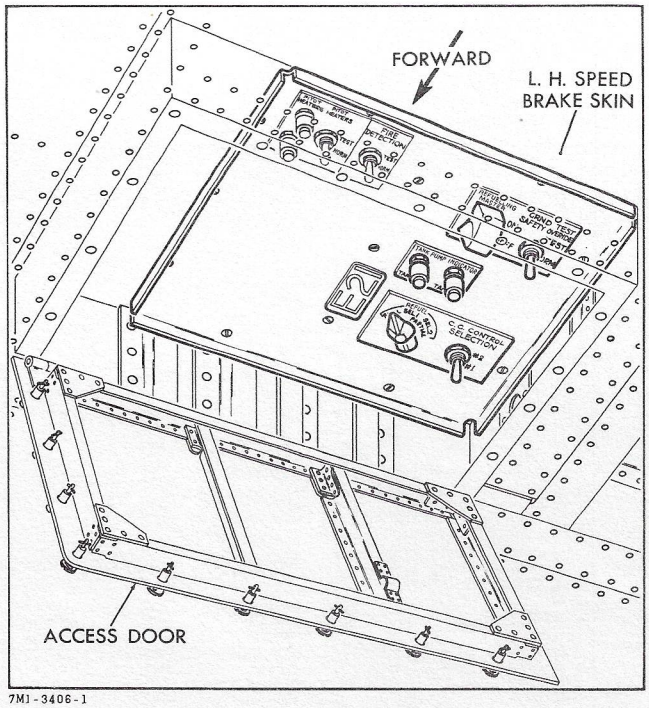
7MI-3405-2

OPERATION OF REFUELLING SHUT-OFF VALVES AND TYPE 1 LEVEL SENSING VALVES



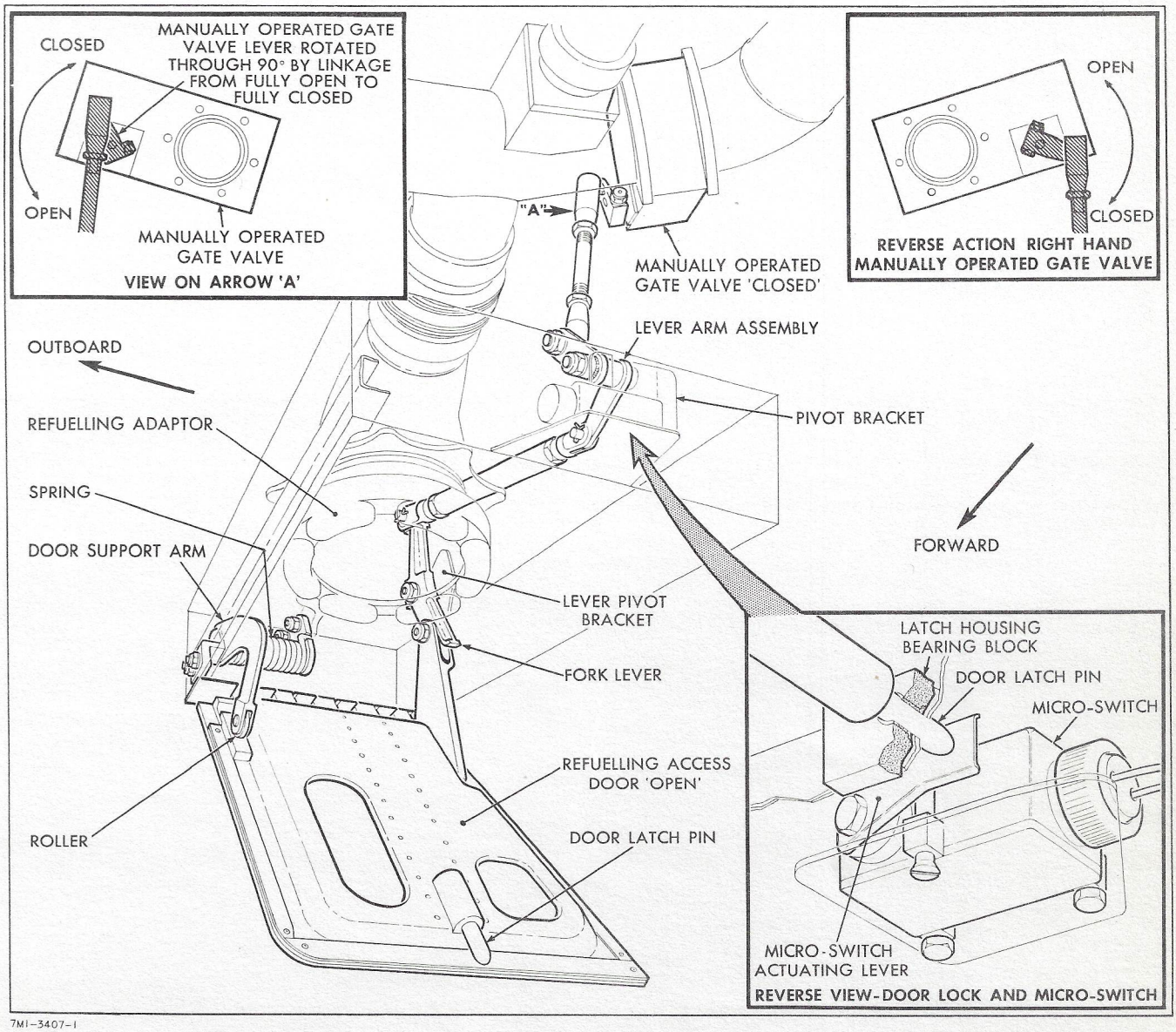
7M1-3409-1

REFUELLING PANEL IN WHEEL BAY



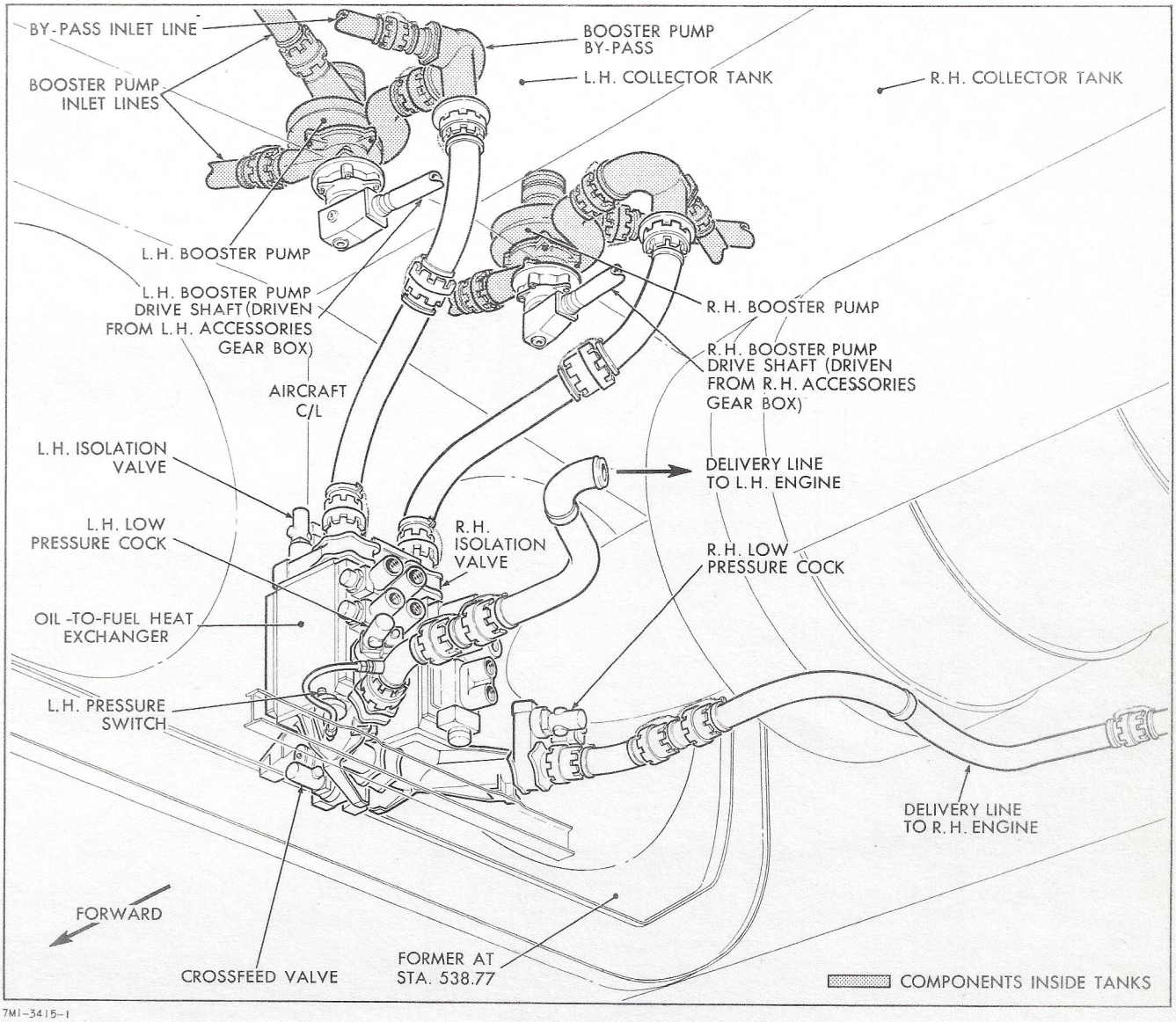
7M1-3406-1

REFUELLING AND TEST PANEL



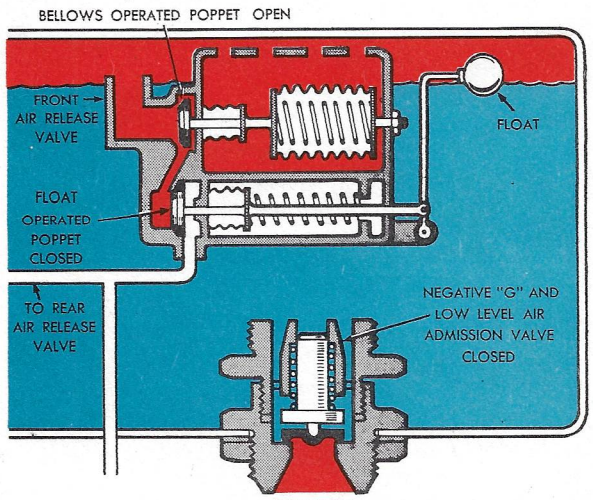
7MI-3407-1

REFUELLING ACCESS DOOR AND MANUALLY OPERATED GATE VALVE

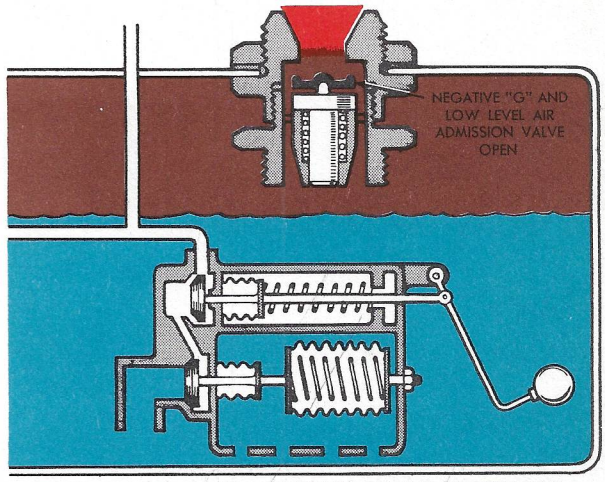


7MI-3415-1

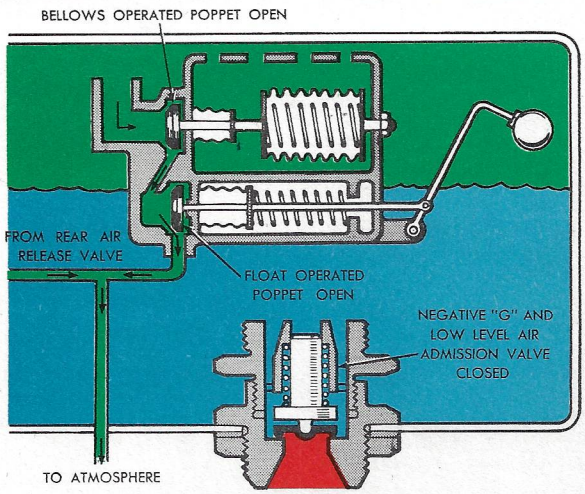
LAYOUT OF ENGINE FEED COMPONENTS



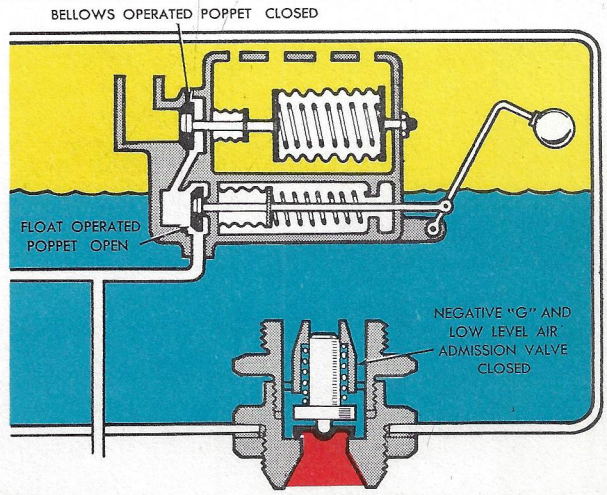
NORMAL



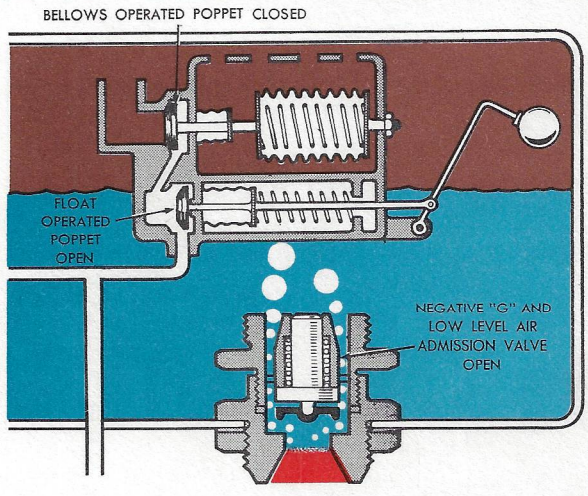
AIR ADMISSION DURING INVERTED FLIGHT CONDITIONS



AIR RELEASE FROM COLLECTOR TANK



AIR RELEASE SUSPENDED WHEN COLLECTOR TANK PRESSURE IS BELOW NORMAL



LOW LEVEL AIR ADMISSION

FUEL

AIR PRESSURE BELOW 11 P.S.I. ABSOLUTE

AIR PRESSURE 11 TO 13 P.S.I. ABSOLUTE

AIR PRESSURE 13 TO 25 P.S.I. ABSOLUTE

AIR PRESSURE 25 P.S.I. ABSOLUTE

NOTE BELLOWS OPERATED POPPET CLOSES WHEN COLLECTOR TANK PRESSURE DROPS TO 13 P.S.I.A. AND RE-OPENS WHEN PRESSURE RISES TO 14 P.S.I.A.

7MI-3404-2 BLACK

COLLECTOR TANK - AIR ADMISSION AND AIR RELEASE DIAGRAMS

WIDTH OF CHAMBERS
IN PROPORTION TO TANK CAPACITIES

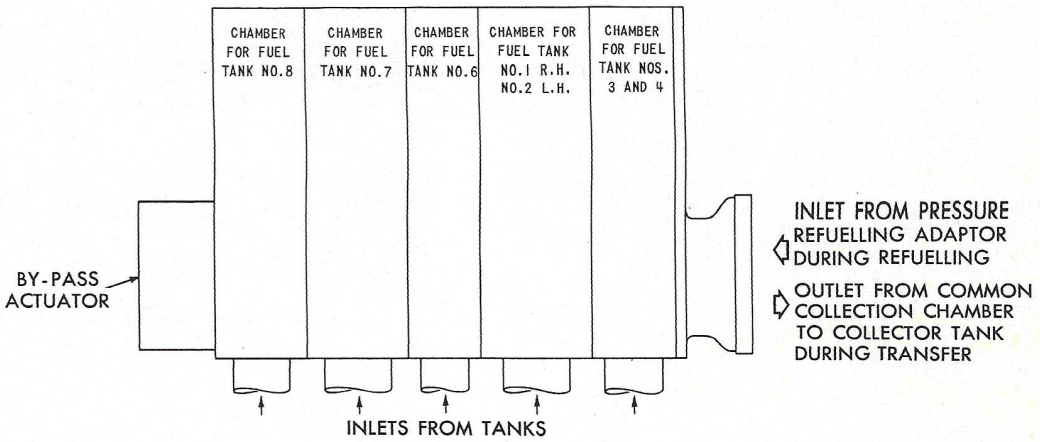
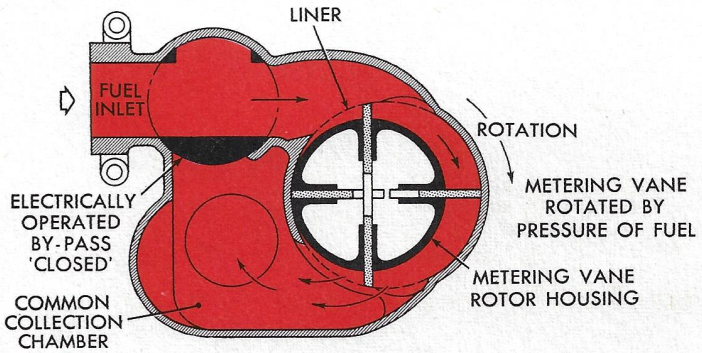
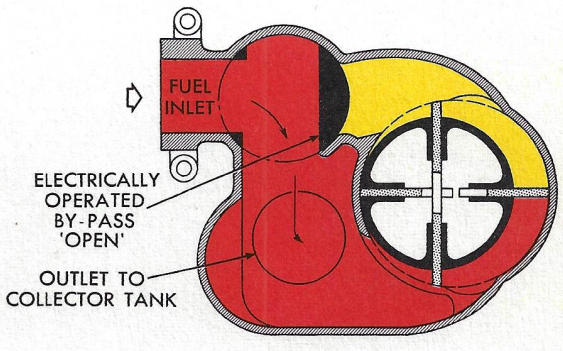


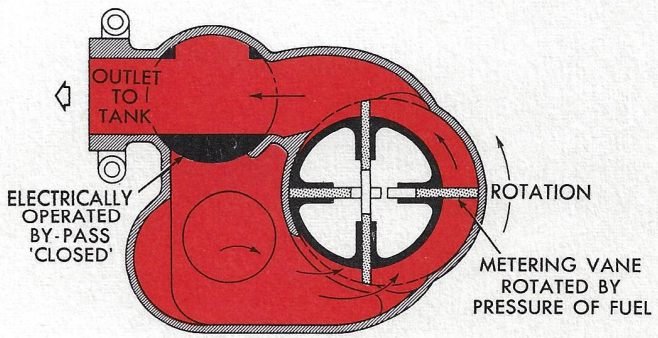
DIAGRAM OF COMPLETE FLOW PROPORTIONER



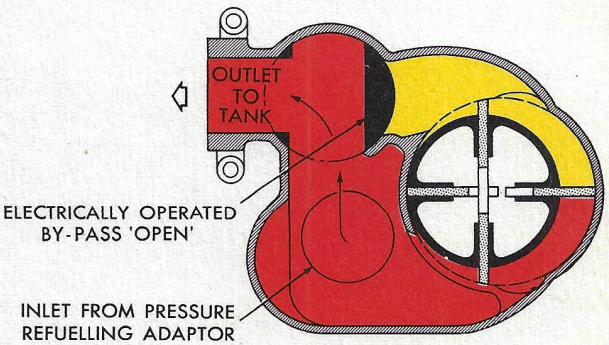
NORMAL TRANSFER



EMERGENCY TRANSFER



PARTIAL REFUELLING



FULL REFUELLING

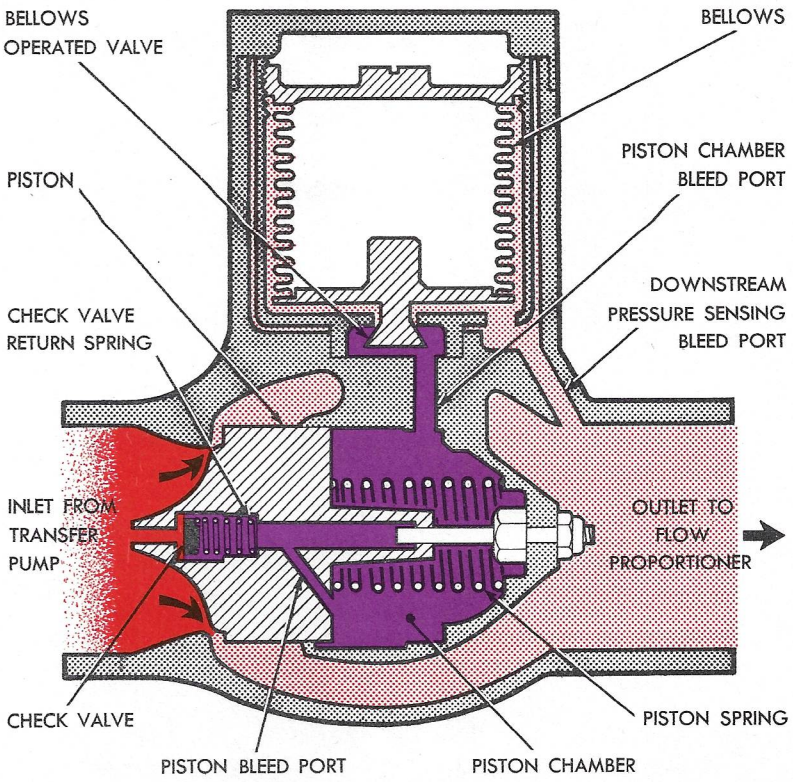
CROSS SECTION DIAGRAMS TYPICAL FOR EACH CHAMBER

FUEL UNDER PRESSURE — RESIDUAL FUEL AT METERING VANE INLET

C-105-LD-83-1

FUEL FLOW - PROPORTIONER UNIT

SECRET



DESCRIPTION

FUEL DELIVERED BY THE TRANSFER PUMP OPENS THE PISTON AND CHECK VALVE AGAINST THE RETURN SPRINGS. THE FUEL THEN FLOWS PAST THE PISTON TO THE FLOW PROPORTIONER, AND ALSO PAST THE CHECK VALVE THROUGH THE BLEED PORT INTO THE PISTON CHAMBER.

OUTLET PRESSURE IS SENSED IN THE BELLOWS CHAMBER, AND WHEN THE PRESSURE RISES TO 25 P.S.I.A., THE BELLOWS START TO COLLAPSE AND CLOSE THE BELLOWS OPERATED VALVE. THE VALVE FULLY CLOSES AT 27 P.S.I.A.

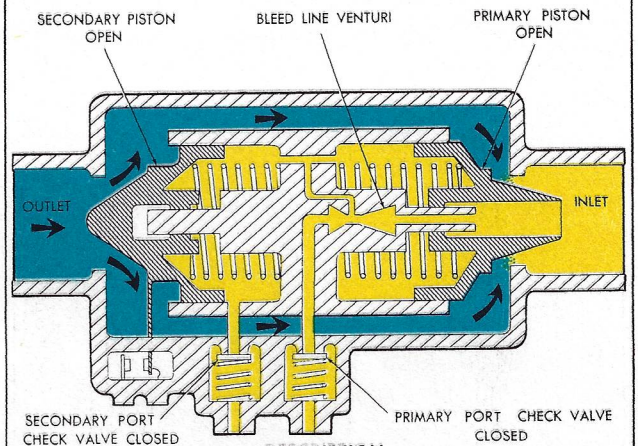
THE BELLOWS OPERATED VALVE RESTRICTS THE BLEED FLOW FROM THE PISTON CHAMBER, AND THE RESULTANT BACK PRESSURE, ASSISTED BY THE RETURN SPRING MOVES THE PISTON TOWARDS ITS SEATING TO RESTRICT FUEL DELIVERY AND MAINTAIN THE OUTLET PRESSURE AT 25-27 P.S.I.A.

THE CHECK VALVE PREVENTS REVERSE FLOW SHOULD THE INLET PRESSURE FALL BELOW THE OUTLET PRESSURE.

	FUEL AT TRANSFER PUMP DELIVERY PRESSURE
	FUEL AT 25-27 P.S.I.A.
	PRESSURE VARYING BETWEEN 25 P.S.I. AND INLET PRESSURE DEPENDING UPON PISTON POSITION

7M1-3419-1 BLACK

FUEL PRESSURE REGULATOR SCHEMATIC



DESCRIPTION

WHEN THE TRANSFER PUMP IS INOPERATIVE, PRESSURE AT THE VALVE INLET IS BELOW TANK PRESSURE. THIS REDUCED INLET PRESSURE IS FELT WITHIN THE PRIMARY AND SECONDARY PISTON CHAMBERS AND CLOSES THE CHECK VALVES. PRESSURE AT THE VALVE OUTLET NOW OPENS THE SECONDARY PISTON, ALLOWING THE PRESSURE TO OPEN THE PRIMARY PISTON, AND THE BY-PASS FLOW TO COMMENCE.

THE PRIMARY PISTON IS MAINTAINED IN THE OPEN POSITION BECAUSE OF THE DIFFERENCE IN PRESSURE BETWEEN THE FUEL ACTING ON THE FACE OF THE PISTON, AND THE FUEL AT THE INLET.

NOTE

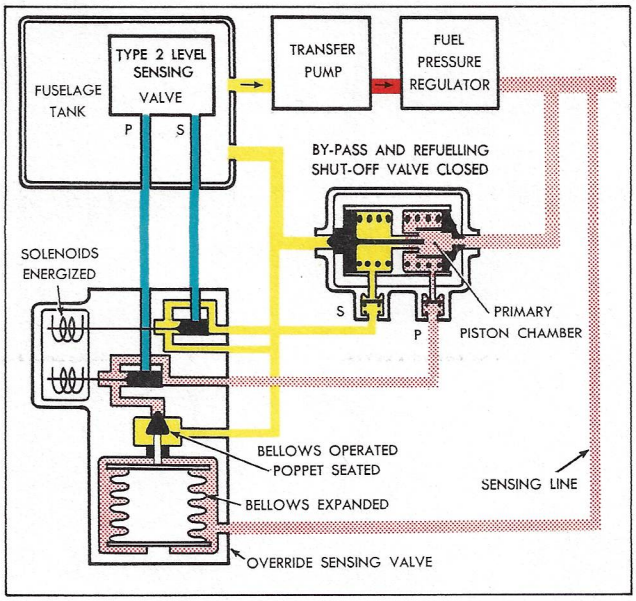
THE BLEED LINE VENTURI IS FITTED IN THE PRIMARY BLEED LINE TO ENSURE QUICK OPENING OF THE VALVE DURING OVERRIDE OF THE FUEL PRESSURE REGULATOR (SEE FIG. 16). THE PRESSURE IN THE PISTON CHAMBERS IS DERIVED FROM THE THROAT OF THE VENTURI. THIS REDUCES THE PRESSURE IN THE PISTON CHAMBERS TO BELOW INLET PRESSURE.

FUEL AT FUSELAGE TANK PRESSURE

FUEL AT REDUCED PRESSURE

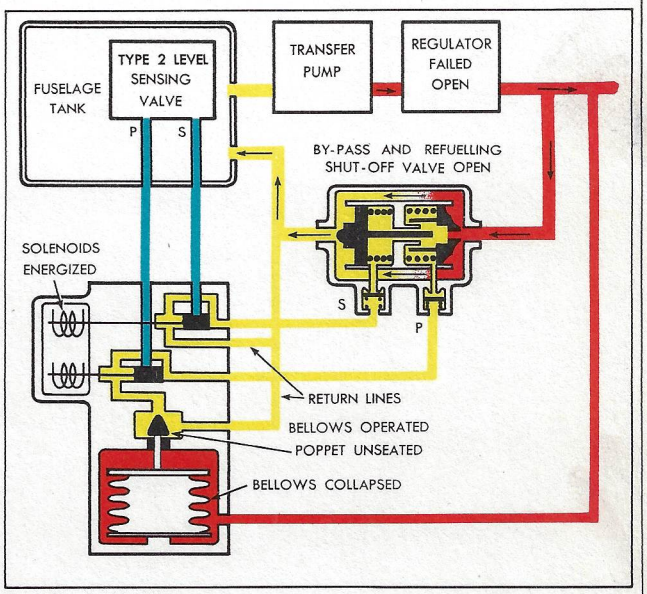
7M1-3433-1

BY-PASS FLOW THROUGH THE BY-PASS AND REFUELLING SHUT-OFF VALVE



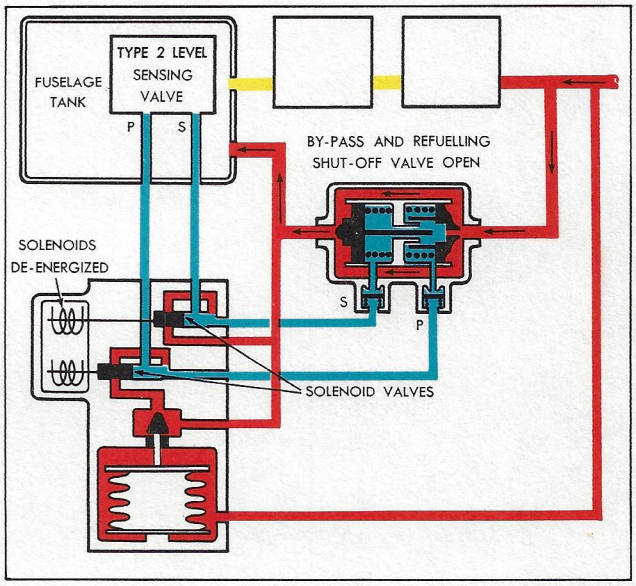
NORMAL

DURING NORMAL OPERATION, THE SOLENOIDS ARE ENERGIZED WHEN THE TRANSFER PUMP IS SWITCHED ON, AND THE SOLENOID VALVES CLOSE OFF THE PRIMARY AND SECONDARY SERVO LINES TO THE LEVEL SENSING VALVE, AND OPEN THE PRIMARY AND SECONDARY SERVO LINES FROM THE BY-PASS AND REFUELLING SHUT-OFF VALVE. THE OUTLET PRESSURE OF 25 P.S.I.A. IS INSUFFICIENT TO CONTRACT THE BELLOWS, SO THE BELLOWS OPERATED VALVE REMAINS CLOSED. THIS BLANKS OFF THE PRIMARY SERVO LINE AND TRAPS FUEL IN THE PRIMARY CHAMBER OF THE BY-PASS AND SHUT-OFF VALVE WHICH PREVENTS THE VALVE FROM OPENING AND FEEDING FUEL BACK TO THE TANK.



REGULATOR FAILED OPEN

IF THE REGULATOR FAILS, IT FAILS IN THE OPEN POSITION AND THE FUEL OUTLET PRESSURE RISES. AT 28 P.S.I.A., THE PRESSURE BEGINS TO OPEN THE BELLOWS VALVE AND AT 30 P.S.I.A. IT IS FULLY OPEN. THIS ALLOWS THE FUEL TRAPPED IN THE PRIMARY CHAMBER OF THE BY-PASS AND SHUT-OFF VALVE TO DISSIPATE, AND THE VALVE TO OPEN AND BY-PASS EXCESS FUEL BACK TO THE TANK.



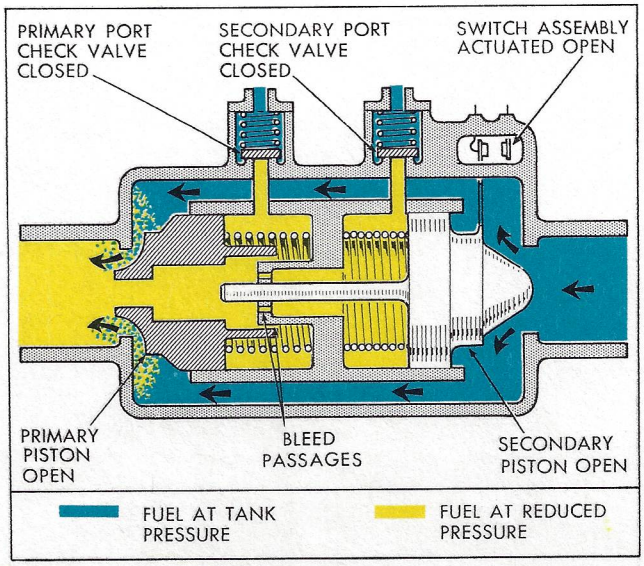
REFUELLING

DURING REFUELLING, THE TWO SOLENOID VALVES ARE DE-ENERGIZED. THIS OPENS THE PRIMARY AND SECONDARY SERVO LINES TO THE LEVEL SENSING VALVE, AND CLOSES THEM TO THE OVERRIDE SENSING VALVE. THE LEVEL SENSING VALVE AND THE BY-PASS AND SHUT-OFF VALVE NOW CONTROL REFUELLING. SEE PARA. 74

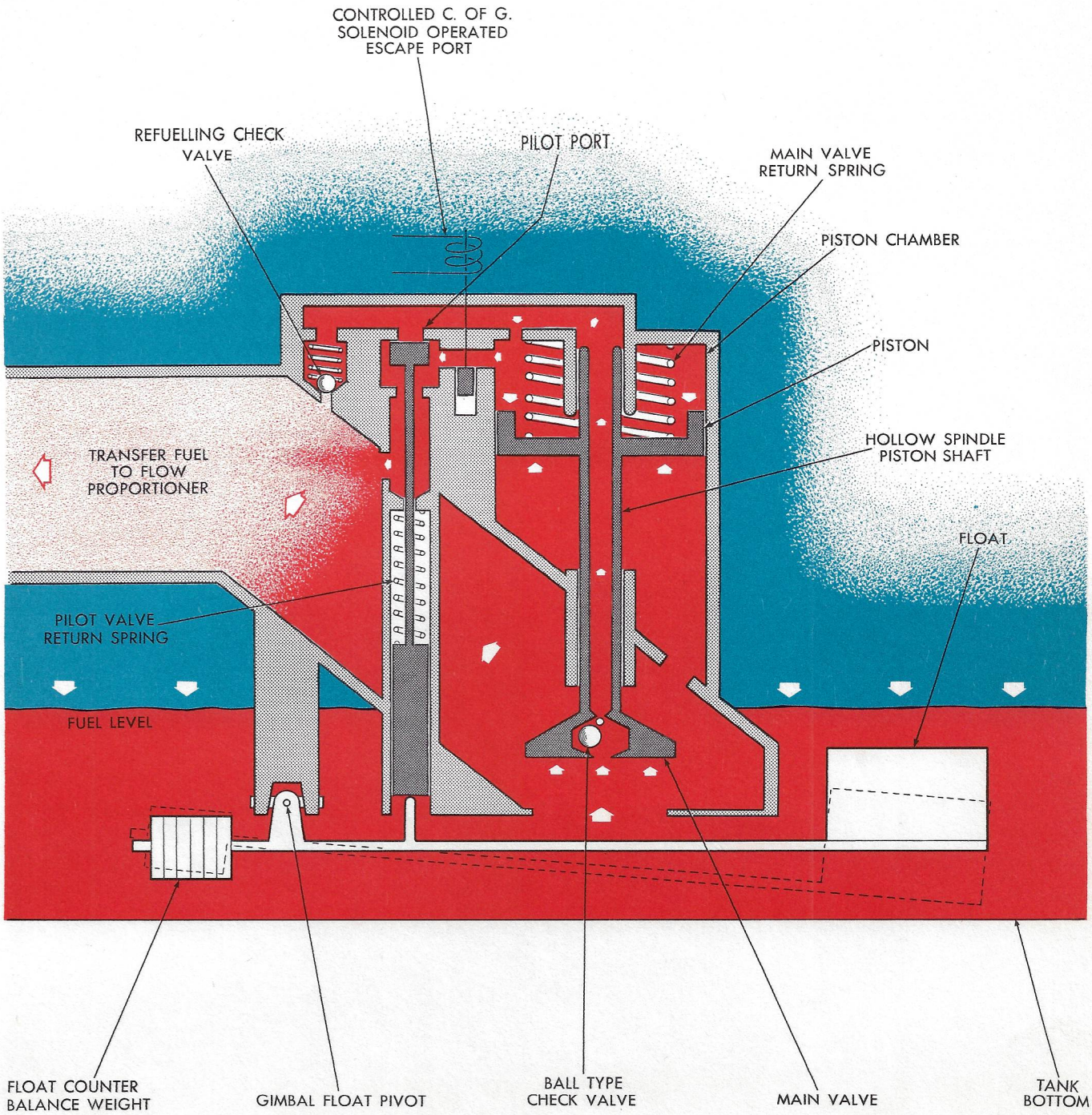
FUEL AT 25-28 P.S.I. | FUEL IN EXCESS OF 28-30 P.S.I. | FUEL AT REDUCED PRESSURE | REFUELLING SERVO LINES AT REDUCED PRESSURE

7M1-3416-3

BY-PASS OVERRIDE SCHEMATICS

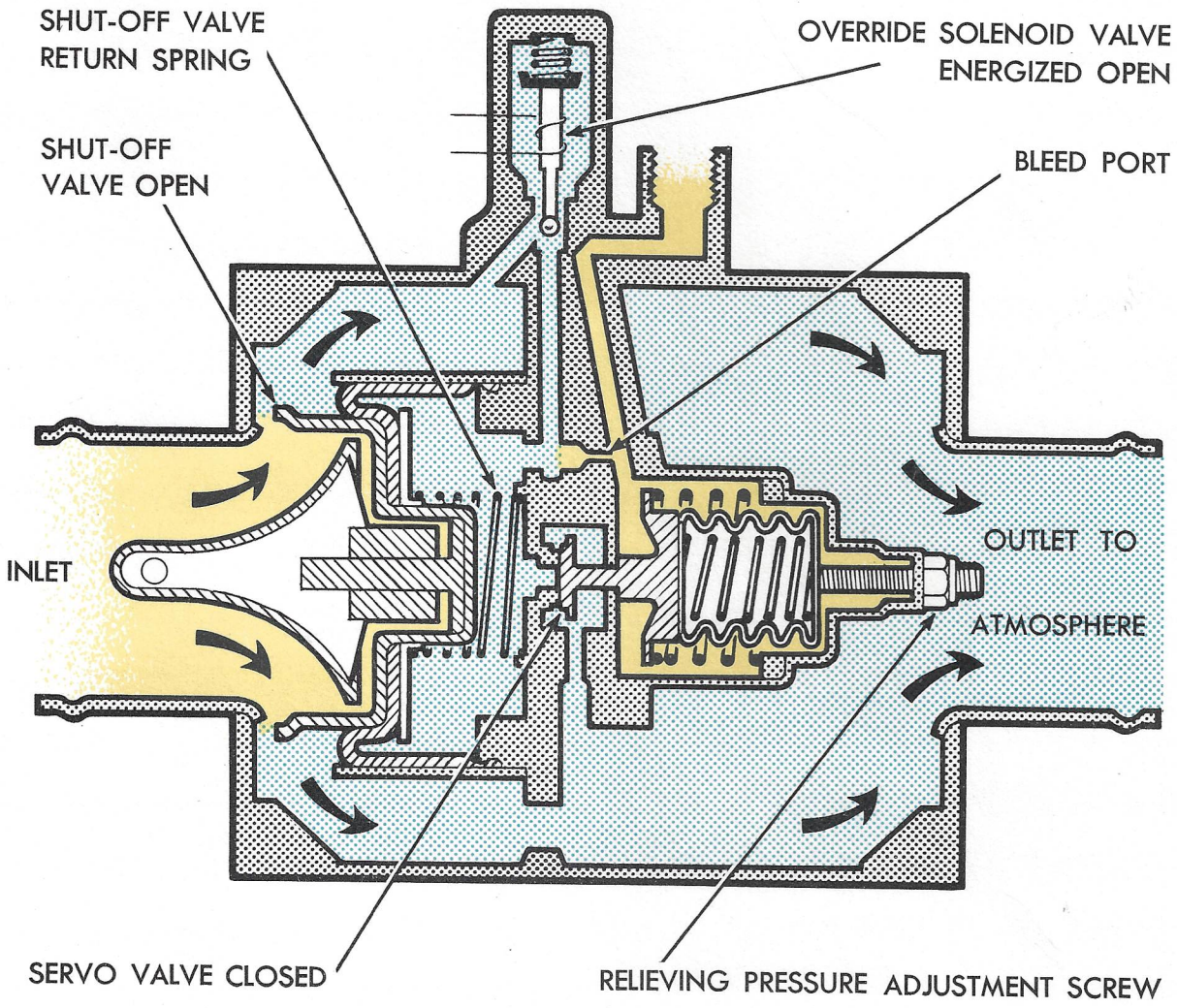


TWO WAY SHUT-OFF VALVE - REVERSE FLOW SCHEMATIC



C105-LD-107-1

FUEL/NO AIR VALVE (ARROW)

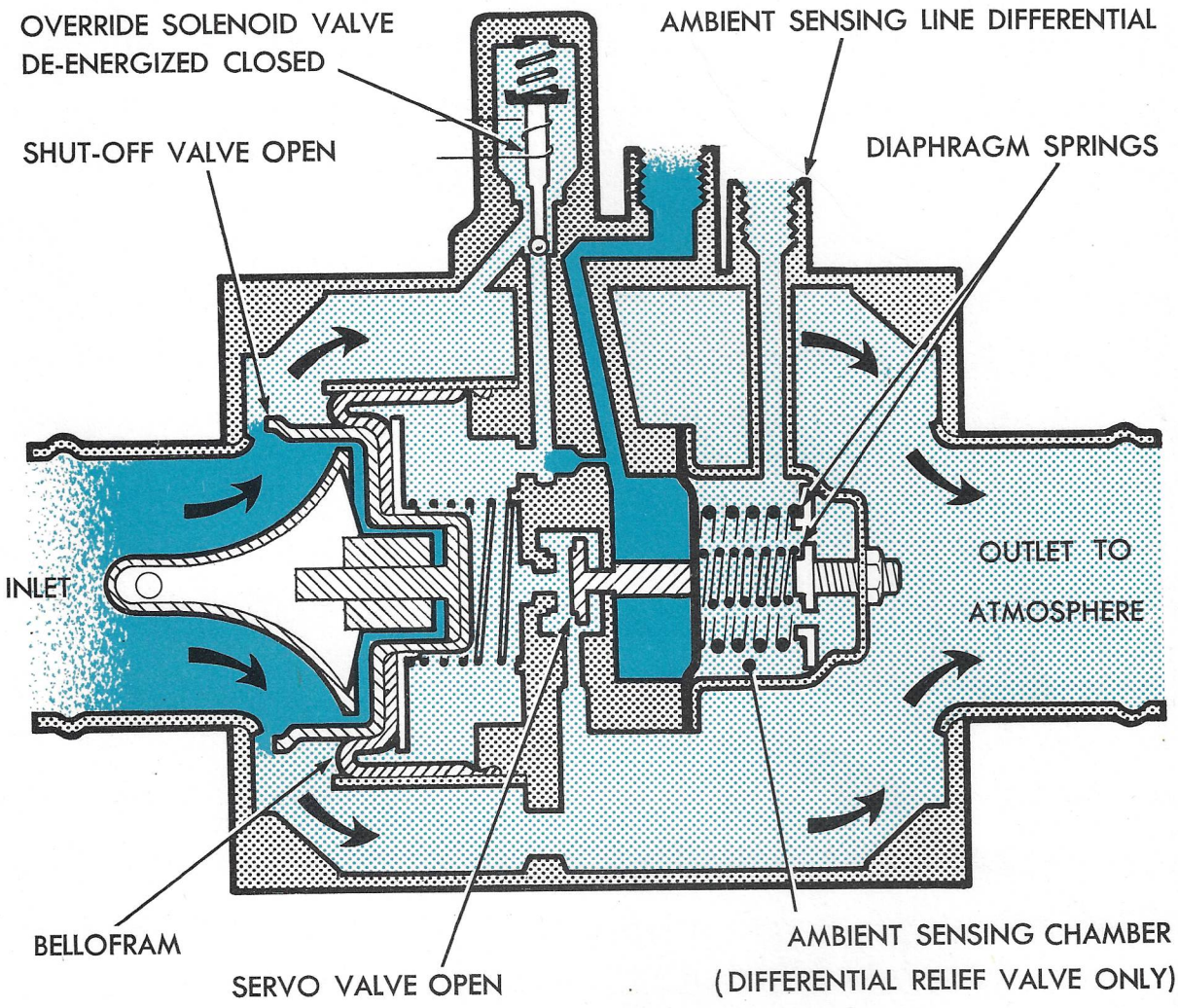


AIR AT ATMOSPHERIC PRESSURE

TANK PRESSURE AIR IN EXCESS OF 25 P.S.I.A. (RELIEF VALVE OPENS AT 26 - 27 P.S.I.A.)

EXTRACT FROM 7M1-3418-1

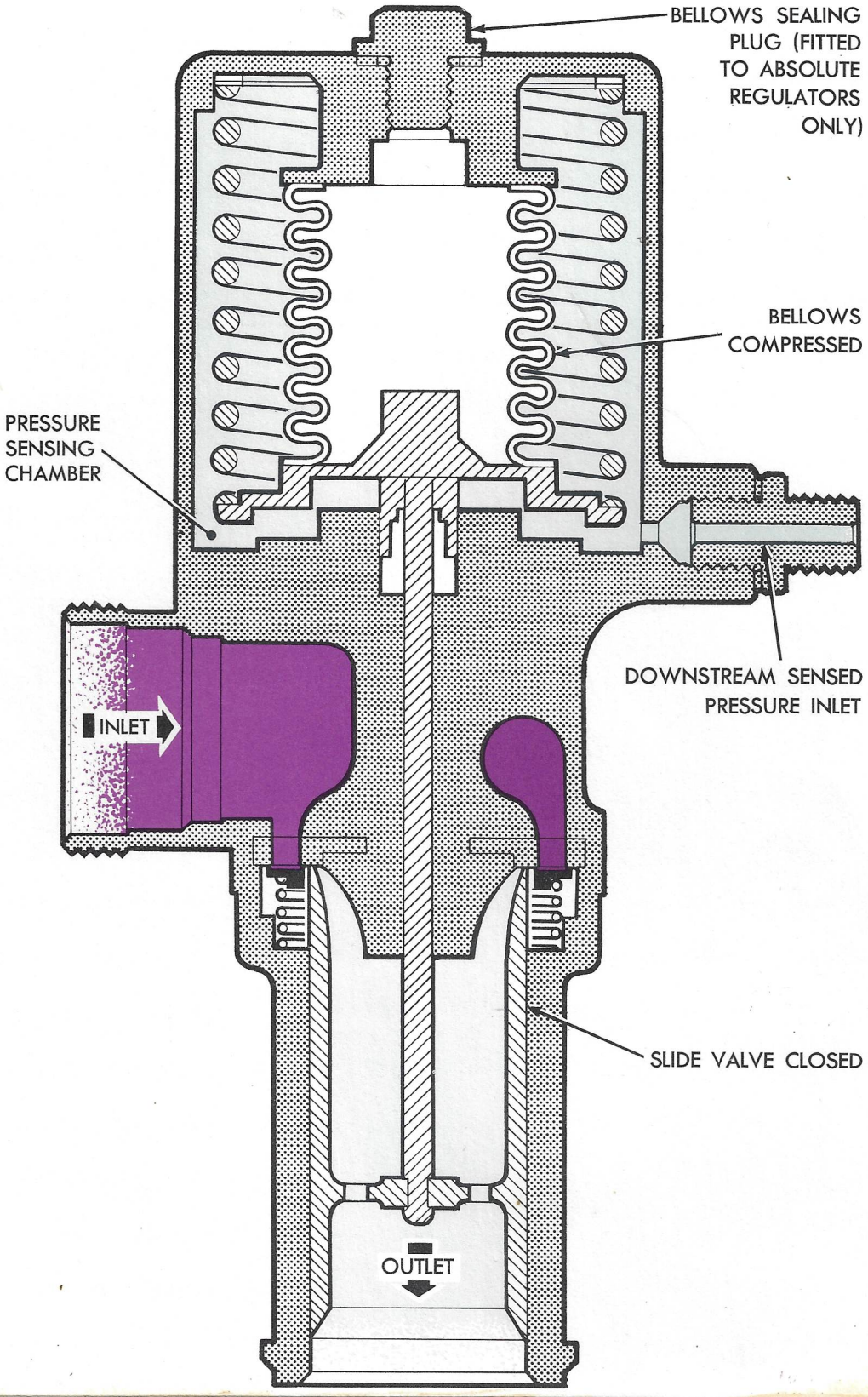
ABSOLUTE AIR PRESSURE RELIEF VALVE SCHEMATIC



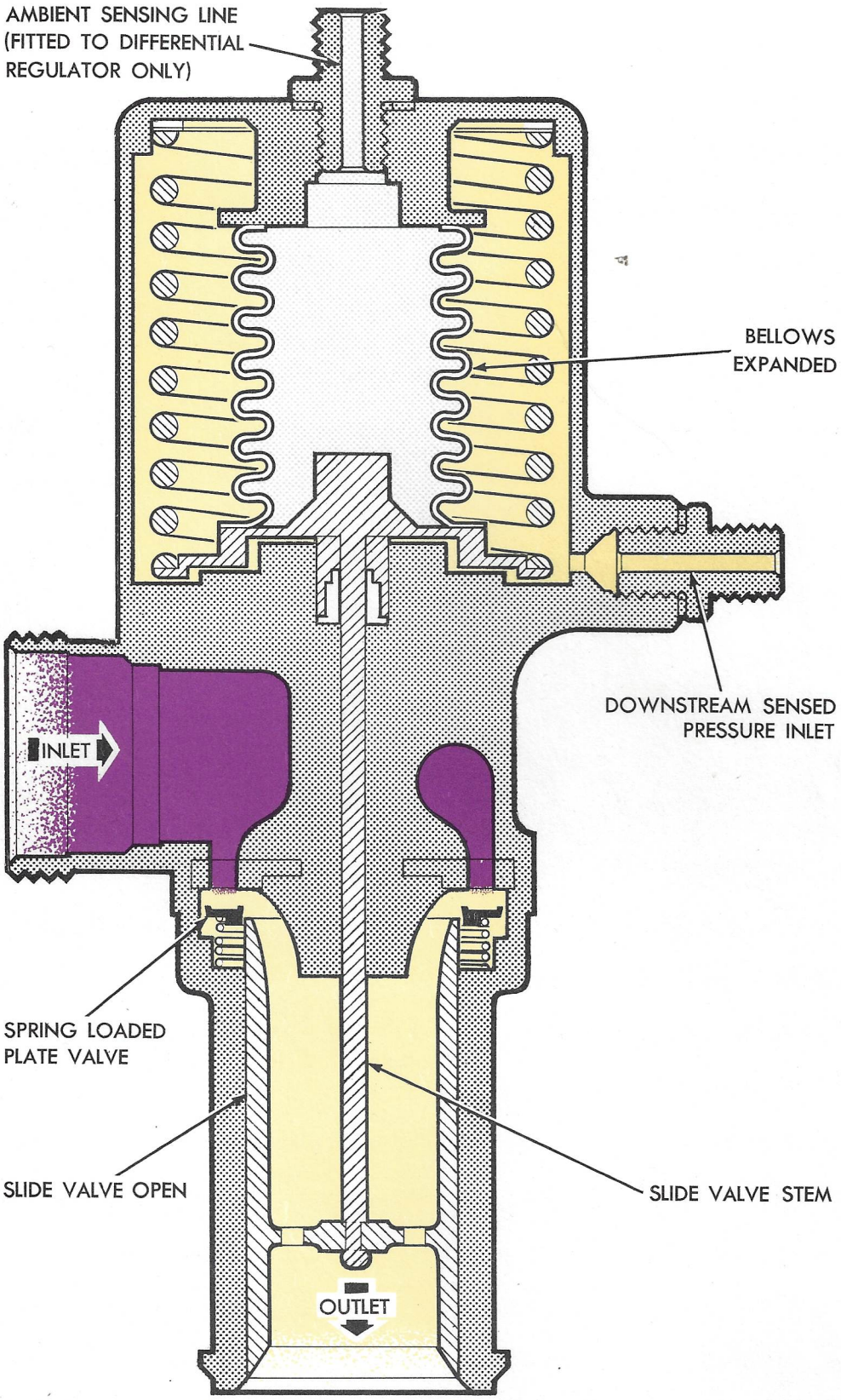
AIR AT ATMOSPHERIC PRESSURE

TANK PRESSURE AIR IN EXCESS OF 10 P.S.I.G. (RELIEF VALVE OPENS AT 10.5 - 11 P.S.I.G.) EXTRACT FROM 7M1-3418-1

DIFFERENTIAL AIR PRESSURE RELIEF VALVE



ABSOLUTE AIR PRESSURE REGULATOR SCHEMATIC



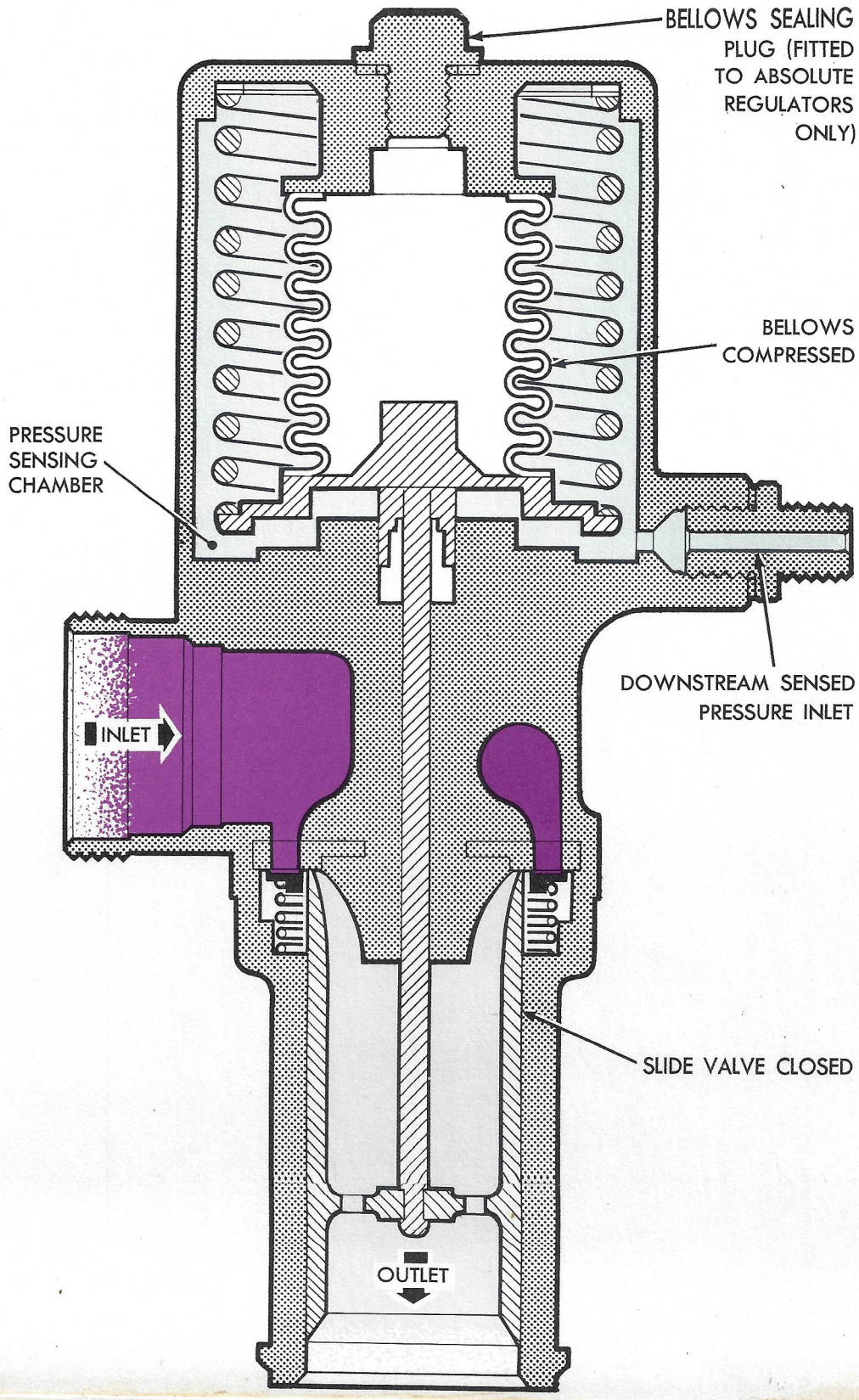
AMBIENT AIR PRESSURE

HIGH PRESSURE AIR (85 P.S.I.G.)

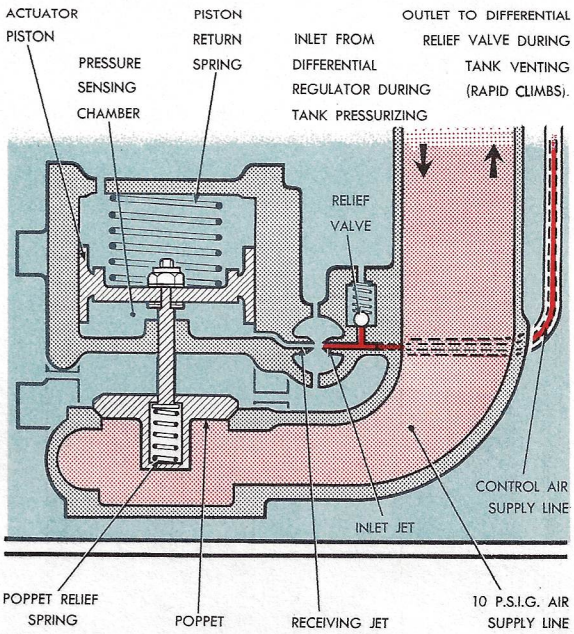
FUSELAGE TANK PRESSURIZING AIR AT 10 P.S.I.G.

EXTRACT FROM 7M1-3417-1.

DIFFERENTIAL AIR PRESSURE REGULATOR SCHEMATIC



ABSOLUTE AIR PRESSURE REGULATOR SCHEMATIC



DESCRIPTION

THE LOWER TYPE 2 VALVE IS NORMALLY IMMERSED IN FUEL AND THE AFT TYPE 2 VALVE IS IMMERSED IN FUEL DURING CLIMBS. DURING IMMERSION THE FUEL ISOLATES THE RECEIVING JET FROM THE INLET JET, PREVENTING 18 P.S.I. AIR PRESSURE FROM ENTERING THE PRESSURE SENSING CHAMBER. THE PISTON RETURN SPRING AIDED BY THE FUEL HEAD HOLDS THE POPPET ON ITS SEATING, PREVENTING FUEL FROM ENTERING THE 10 P.S.I.G. AIR SUPPLY LINE.

WHEN THE VALVE BECOMES UNCOVERED BY FUEL DUE TO A CHANGE IN ATTITUDE OF FLIGHT OF THE AIRCRAFT, THE 18 P.S.I.G. AIR PRESSURE PASSES FROM THE INLET JET TO THE RECEIVING JET INTO THE PRESSURE SENSING CHAMBER, COMPRESSING THE PISTON AGAINST ITS SPRING AND OPENING THE POPPET.

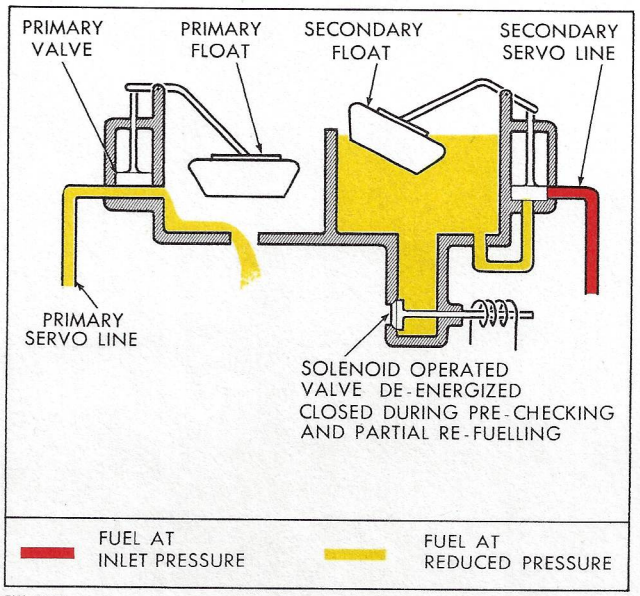
IN THE EVENT OF A DROP IN TANK PRESSURE, THE POPPET WILL OPEN AGAINST THE POPPET RELIEF SPRING SHOULD 10 P.S.I.G. SUPPLY LINE PRESSURE EXCEED TANK PRESSURE BY 1.5-1.75 P.S.I.

A RELIEF VALVE IS FITTED IN THE CONTROL AIR SUPPLY LINE TO RELIEVE EXCESS PRESSURE WHICH WOULD CAUSE THE VALVE TO OPEN EVEN WHEN IMMERSED IN FUEL.

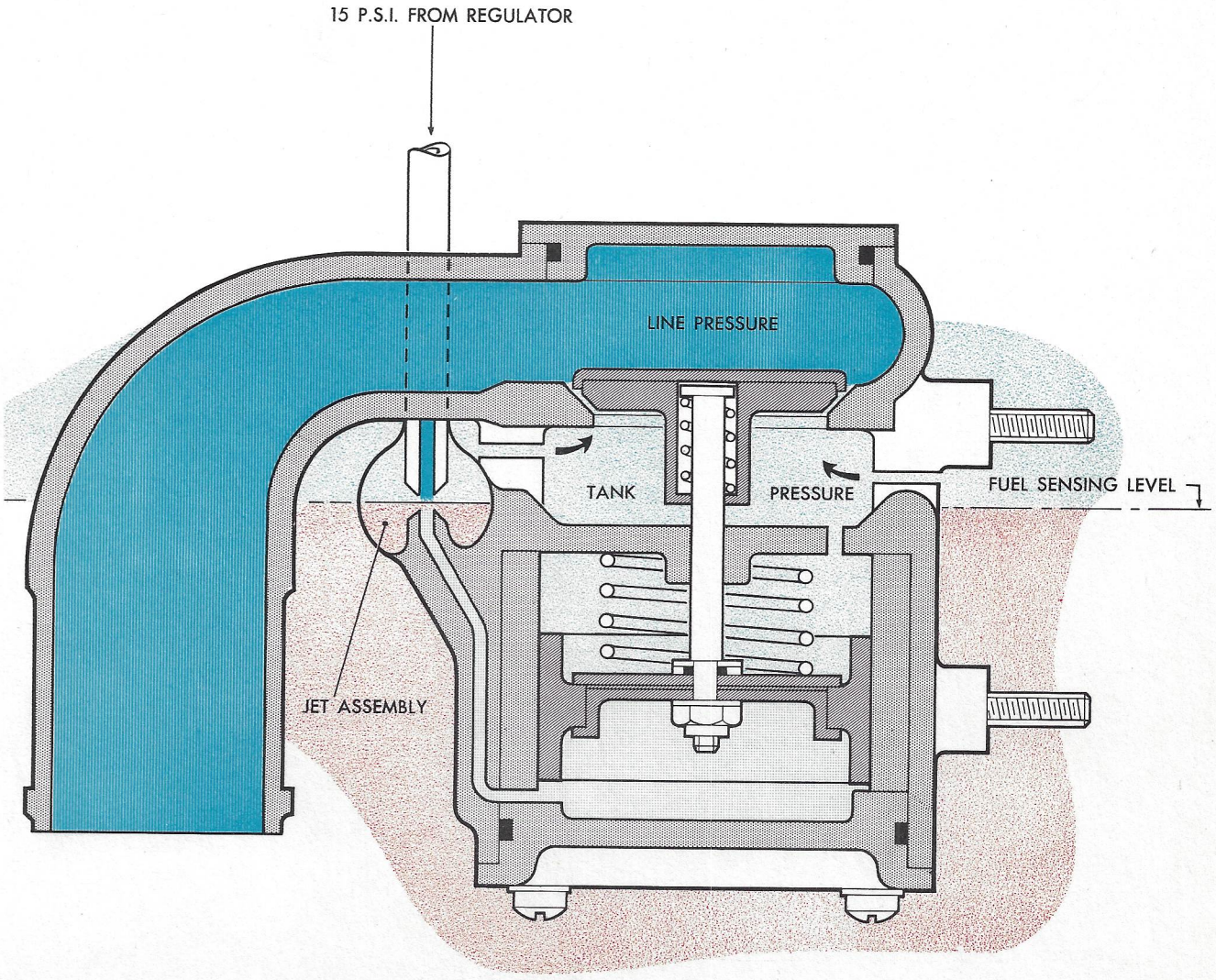
AIR AT 10 P.S.I.G. AIR AT 18 P.S.I.G. FUEL

7M1-3421-2

TYPE 2 AIR/NO-FUEL VALVE SCHEMATIC



TYPE 2 LEVEL SENSING VALVE SCHEMATIC



C105-LD-94-1

VENT-INTAKE-CONTROL VALVE TYPE 1

CF105 — FUEL SYSTEM

SECRET