SERVICE BULLETIN

DATE: 10 JANUARY 1983

MANDATORY MANDATORY MANDATORY

REPLACEMENT OF FLOAT INFLATION SYSTEM SOLENOID VALVES WITH SQUIB VALVES – PN 369H90121 SERIES EMERGENCY FLOAT ASSEMBLIES

1. PLANNING INFORMATION

A. Models Affected:

All PN 369H90121 Series Emergency Float Assemblies equipped with Tavco PN 23111357 or Air Cruisers PN D17753–107 or D17740–10 Solenoid Valve Assemblies in Float Inflation System

B. Preface:

Part I of this Notice lists a procedure for replacement of the existing solenoid valves in the float inflation system, when replacement becomes necessary, Tavco PN 23111380–3 and –4 squib–actuated expulsion control valve assemblies Instructions are also provided for rewiring the emergency float system to actuate the new squib valve assemblies. Replacement of valve assemblies be accomplished in sets only.

Part II of this Notice lists instructions for replacement of the PN 232626–1 squib valve after each actuation of the PN 23111380–3 and –4 expulsion valve assemblies.

The squibs in the valve assemblies have a provisional 5–year shelf–service life. The life limit is determined by (1) the date of manufacture imprinted on the squib, and (2) the successful completion of functional tests of squib selected and tested by HHI at 24–month, 36–month and 48–month intervals. No squib shall remain in spares or service five years after date of manufacturers.

A pressure test of the emergency float compartments shall be accomplished every six months of service and after each in service emergency inflation. (Do not actuate squib for pressure test. Use an independent air source.)

The squib–actuated valve is nonexplosive unless actuated electrically.

C. Time of Compliance:

Part I – Shall be accomplished at next replacement of above affected Solenoid Valve Assemblies

Part II – Shall be accomplished after each actuation of Squib Valve Assemblies

D. Reference:

500 Model 369H Series Basic HMI (CSP–H–2) Reissued 15 September 1981.

500 Model 369H Series Basic HMI Appendix A (CSP–H–3) Optional Equipment, Reissued 15 October 1982

E. Weight and Balance Data:

Weight and balance not affected.

F. FAA Approval:

FAA/DER Approved.

2. PART I – REPLACEMENT OF SOLENOID VALVES WITH SQUIB VALVES

When ordering, specify Kit PN M50458–13 (Commercial) or Kit PN M50458–15 (Military) consisting of the following:

A. Parts/Supplies:

REPLACEMENT PARTS/SUPPLIES			
Nomenclature	**Part No.**	**Qty.**	**Source**
Expulsion control valve assembly (squib–actuated) (RH)	23111380–3*	1	Tavco
Expulsion control valve assembly (squib–actuated) (LH)	23111380–4*	1	Tavco
Fitting	60056163	2	Tavco
Packing	MS 28778–12	2	Commercial
Packing	MS 28778– 6	4	Commercial
Electrical Instl Kit (Comm.) or Electrical Instl Kit (Mil)	369H92557–511 369H92557– 513	1 1	HHI HHI
*Incorporates Tavco PN 232626–1 squib valve			

B. Tools and Equipment:

TOOLS AND EQUIPMENT	
Nomenclature	**Source**
Volt–Ohmmeter (VOM), Simpson 260 or equivalent	

C. Materials:

MATERIAL	
Nomenclature	**Source**
Wire, MIL–W–5086, Type H, 22 GA, one conductor	
Cable, MIL–C–7078, CL A, Type 2, two conductor shielded (red and black)	
Wire, MIL–C–7078, CL A, Type 2, 20 GA, one conductor shielded	
Wire, MIL–W–5086, Type II, AWG 20, one conductor	
Sleeving, MIL–I–631, Type F, No. 20	

D. PROCEDURE

(1). Turn off electrical power.

(2). Unsnap float containment cover and loosen restraining lacing to gain access to float inflation system components. (Refer to HMI Appendix A.)

(3). Remove valve protector and unlace cylinder sling lacing cords. (See Figure 1.)

(4). Disconnect solenoid valve electrical wiring knife splice (SP4, SPS, SP9 and SP10) at solenoid.

(5). Loosen nut at outlet port of solenoid valve. Disconnect valve assembly from union by unscrewing cylinder and valve assembly in counter-clockwise direction. Remove cylinder and valve assembly. (See Figure 1.)

(6). If cylinder is not empty, discharge as follows:

WARNING **Exercise care when discharging cylinder. Personnel can be injured by high pressure air or flying debris.**

(a). Secure cylinder in chain vise or equivalent. Be sure to point flier valve outlet in safe direction.

(b). Use two open end wrenches, one on filler valve body and one on nut. Turn nut slowly counter-clockwise 2-1/4 turns and allow all pressure to escape. Check gage to verify that no pressure remains in cylinder.

(7). Remove solenoid valve from cylinder. Discard solenoid valve and packing. (See Figure 1.)

CAUTION The squib-actuated valve is nonexplosive unless activated electrically. Ensure that rubber protector remains on electrical connector until electrical connection is made. Static electricity can cause actuation of squib if connector is unprotected.

(8). Install new Tavco expulsion control valve assemblies (PN 23111380-4 for LH float and PN 23111380-3 for RH float) with MS28778-12 packing on cylinder. Torque to 360-504 inch-pounds. (See Figure 2.)

(9). Install fitting PN 60056163 with M528778-6 packing on existing union, as shown.

(10). Recharge cylinder and test for air leaks. (Refer to HMI Appendix A.)

(11). Install charged cylinder and squib-actuated control valve assembly with MS28778-6 packing on fitting. (See Figure 2.)

(12). Revise emergency float electrical system as follows:

(a). Remove access panels and/or covers as necessary to expose emergency float wiring. (Refer to Section 2 of Basic HMI.)

(b). Remove all emergency float wiring except as noted in Figure 3.

(c). Remove and discard K105 relay installation, doubler and attaching hardware located on pilot's floor support, left bulkhead. (Refer to HMI Appendix A.)

(d). Remove emergency float switch light assembly from instrument panel, and install new switch light assembly.

(e). Install wiring as shown in Figure 3. Do not plug in electrical connectors (P101 and P102) until after electrical system check.

(f). Reinstall access panels and/or covers.

(13). Turn on electrical power.

(14). Perform inflation system electrical control equipment operational check as follows:

(a). Test light check.

1). Check ship voltage with VOM. Voltage should be 27.5 vdc.

2). Open emergency float circuit breaker (CB121).

3). Install one lead of 0.5 ohm 25 percent, 10W resistor in pin A of left-hand connector (P101). Connect one test lead of ammeter (VOM) to other lead of resistor. Connect other test lead of ammeter (VOM) to pin D of connector (P101).

4). Close emergency float circuit breaker (CB121).

5). Press "PRESS TO TEST" switch and observe current reading on meter and brilliance of lamps. Current should be 75 MA minimum and brilliancy of lamps should be fairly bright.

6). Open emergency float circuit breaker (CB121).

7). Remove meter and resistor from connector (P101).

8). Repeat steps 3). through 7). for right-hand connector (P102).

(b). System check.

1). Ensure that circuit breaker (CB121) is open and connectors (P101 and P102) are disconnected.

2). Install one lead of 40 ohm ±1 percent, 20W resistor in pin A of left-hand connector (P101) and install other lead of resistor in pin D of connector (P101).

3). Connect test leads. of voltmeter (VOM) across resistor.

4). Close emergency float circuit breaker (CB121).

5). Press firing switch on pilot's grip and observe voltage on meter. Voltage should be 25.5 vdc minimum.

6). Open circuit breaker (CB121).

7). Remove meter and resistor from connector CP101).

8). Repeat steps 2). through 7). for right-hand connector (P102).

(c). Connect connectors (P101 and P102) to squib valves.

(d). Close emergency float circuit breaker (CB121).

(e). Press "PRESS TO TEST" switch and observe that lamps light.

(f). Open circuit breaker (CB121).

(15). Ensure that cylinder is positioned so that pressure gage is visible through inspection window when floats are stowed. (Pressure gage axis inclined outboard approximately 40 degrees.)

(16). Tighten and retie lacing and snap containment cover in place.

(17). Record compliance with Part I of this Service Information Notice in Compliance Record of helicopter Log Book.

3. PART II – REPLACEMENT OF TAVCO PN 232626–1 SQUIB VALVES

REPLACEMENT PARTS/SUPPLIES			
Nomenclature	**Part No.**	**Qty.**	**Source**
Kit – squib valve replacement (for valves with sealed cover)	50014114*	2	Tavco
Kit – squib valve replacement (for valves with button cover)	50014115’	2	Tavco
*Includes Tavco PN 232626–1 squib valve			

A. Tools and Equipment:

TOOLS AND EQUIPMENT	
Nomenclature	**Source**
X–Acto knife	
Torque wrench	
Allen wrench 3/16–inch	
Blow dryer or equivalent	

B. Materials:

MATERIAL	
Nomenclature	**Source**
Grease – MIL–G–4343 or equivalent Alcohol	

C. VALVE REPLACEMENT PROCEDURE

NOTE: The Tavco PN 232626–1 squib valve i~ a component ’of Tavco PN 23111380–3/–4 expulsion control valve assemblies.

(1). Following actuation of squib valves, replace valves with sealed covers as follows: (See Figure 4.)

SERVICE BULLETIN

(a). Removal of actuated squib valve:

1). MANDATORY: Open manifold charge valve to verify that there is no pressure in the pressure vessel.

2). Note orientation of squib with respect to pressure gage.

3). Using X-Acto knife, cut through black plastic cover all around valve body to manifold joint and to uncover four screw heads near outlet port. (See Figure 4.)

4). Using Allen wrench, remove four screws near outlet port. Retain screws to use with new squib valve.

5). Pull PN 232626-1 squib valve straight off manifold until separated.

6). Discard actuated squib valve.

(b). Installation of replacement squib valve.

CAUTION Ensure that rubber protector remains on electrical connector until electrical connection is made. Static electricity can cause squib to actuate.

1). Lightly lubricate O-ring on new squib valve with MIL-G-4343 or equivalent pneumatic grease.

2). Maintaining squib orientation noted in step (b).1). above, install new PN 232626-1 squib valve onto manifold. Valve must bottom metal-to-metal on the face of the manifold. Minor trimming of the plastic cover may be required. Remove minimum material.

3). Install the four screws hand-tight (Note: helicoil insert in manifold has locking thread).

4). Using Allen wrench, tighten the four screws evenly until bottomed. Using torque wrench, apply 38 to 43 lb-in. torque to the screws.

5). To reseal the black plastic cover, clean the surface with alcohol and apply a thin coat of the black fluid supplied with the PN 50014114 kit to the valve body and manifold joint. Cure with hot air until it turns shiny, then remove the heat source. To reseal the screw holes, preheat the screw heads with hot air. Fill the cavities with the black fluid and cure with hot air until it turns shiny, then remove heat source.

NOTE: Multiple coats may be required to seal the joints completely. Re-sealing is recommended for maximum protection from corrosion in a humid environment; it is not mandatory for valve operation.

(2). Following actuation of squib valves, replace valves with button type covers

(a). Removal of actuated. squib valve:

1). MANDATORY: Open manifold charge valve to verify that there is no pressure in the pressure vessel.

2). Note orientation of squib with respect to pressure gage.

3). Spread plastic cover at its parting line until the small round end of the white plastic buttons pull through the black plastic and over the squib connector, allowing access to the four screws that retain the valve body.

4). Using Allen wrench, remove the four screws near the outlet port. Retain screws to use with new squib valve.

5). Pull PN 232626-1 squib valve straight off manifold until separated.

6). Discard actuated squib valve.

(b). Installation of replacement squib valve.

CAUTION Ensure that rubber protector remains on electrical connector until electrical connection is made. Static electricity can cause squib to actuate.

1). Lightly lubricate O-ring on new squib valve with MIL-G-4343 or equivalent pneumatic grease.

2). Maintaining squib orientation noted in step (b).1). above, install new PN 232626-1 squib valve onto manifold. Valve must bottom metal-to-metal on the face of the manifold.

3). Install the four screws hand-tight (Note: helicoil insert in manifold has locking thread).

4). Using Allen wrench, tighten the four screws evenly until bottomed. Using a torque wrench, apply 38 to 43 lb-in. torque to the screws.

5). Remove plug from squib connector; notice that plug only fits one way. Realign the black plastic cover and pull it back over the squib connector. Replace the squib connector plug. Snap the white plastic buttons back, through the holes in the black plastic cover as they were before. Check the plug in squib connector to insure that it is bottomed.

(3). Record compliance with Part II of this Service Information Notice in Compliance Record of the helicopter Log Book.

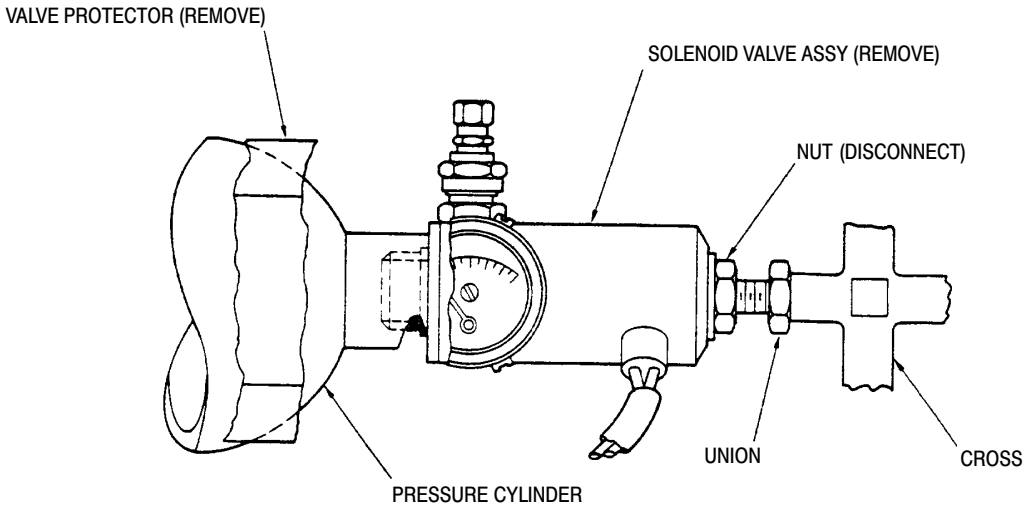


Figure 1. Removal of Solenoid Valve Assembly

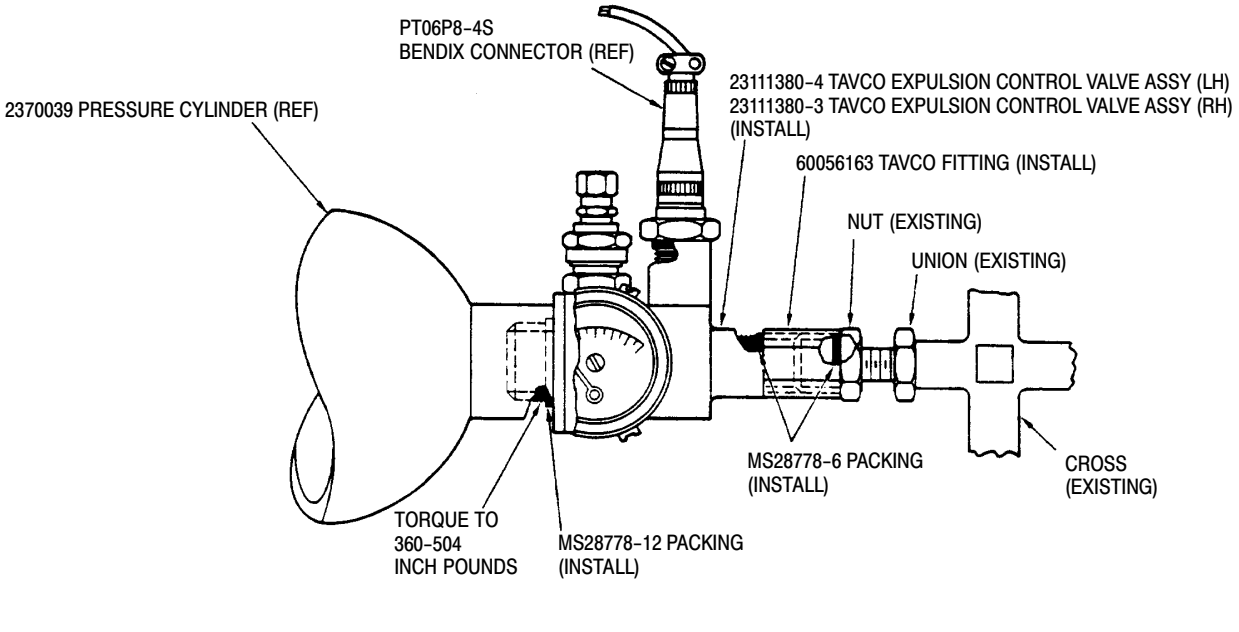


Figure 2. Installation of Squib-Actuated Control Valve Assembly

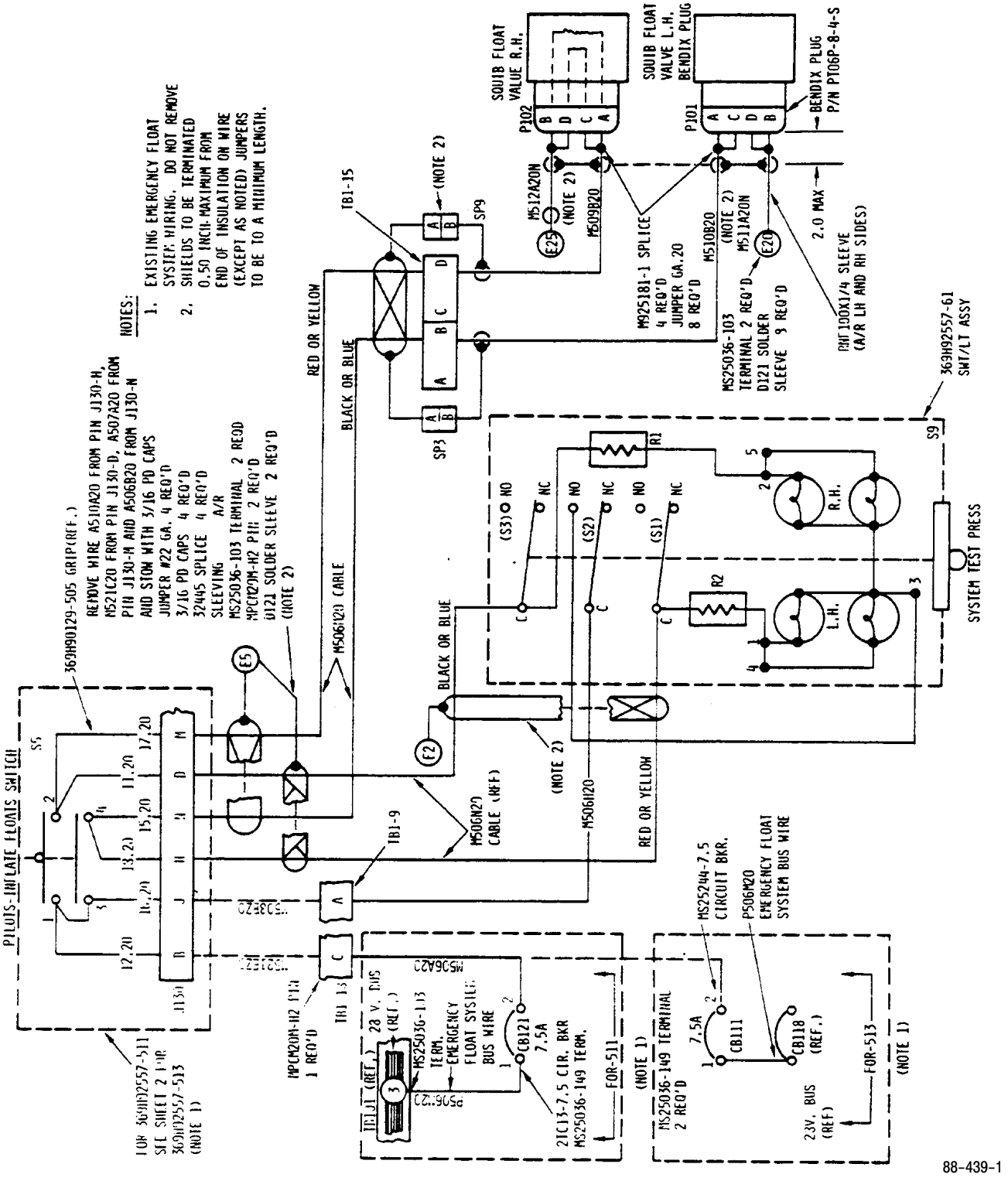


Figure 3. Emergency Float System Wiring Diagram (Sheet 1 of 2)

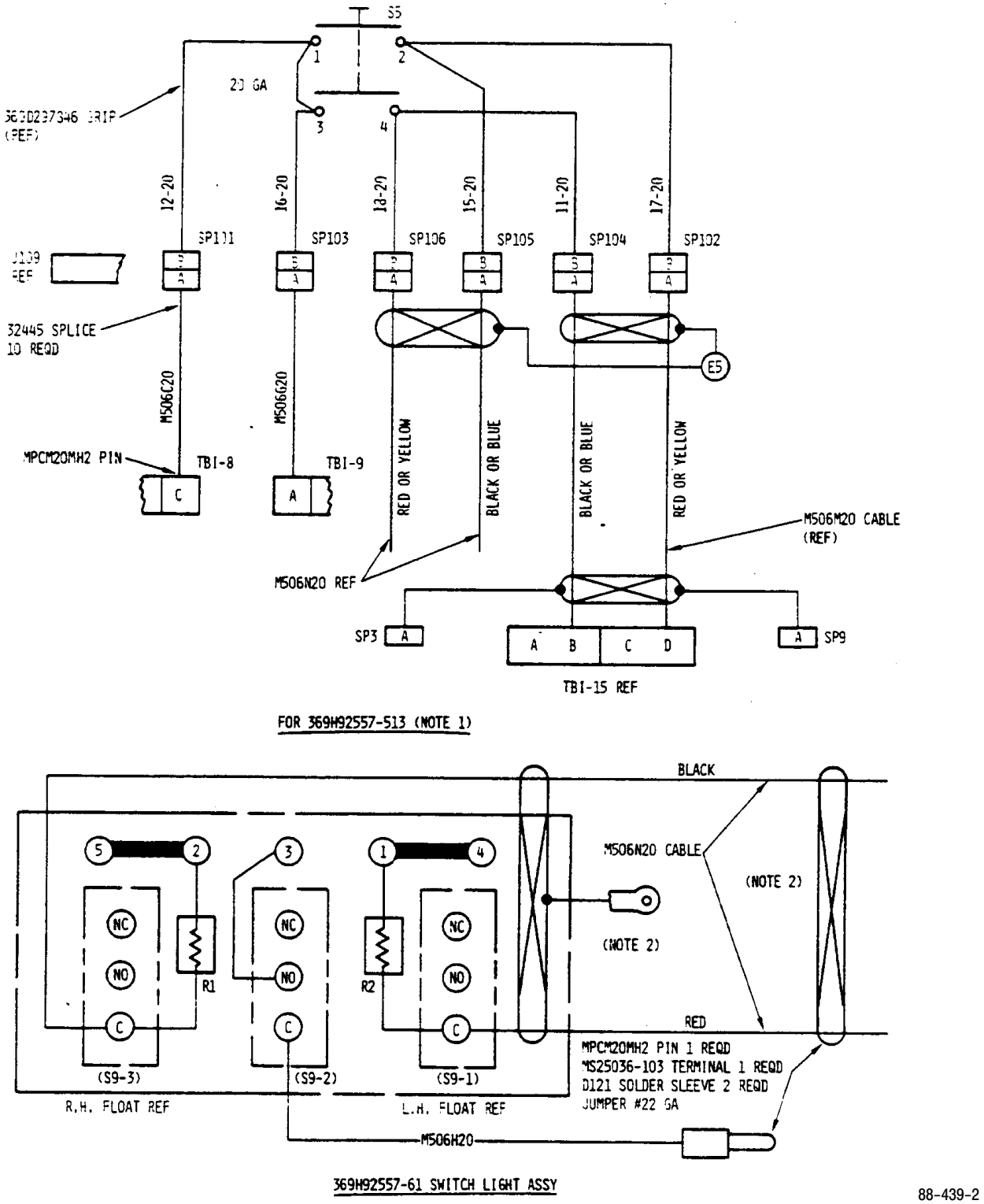
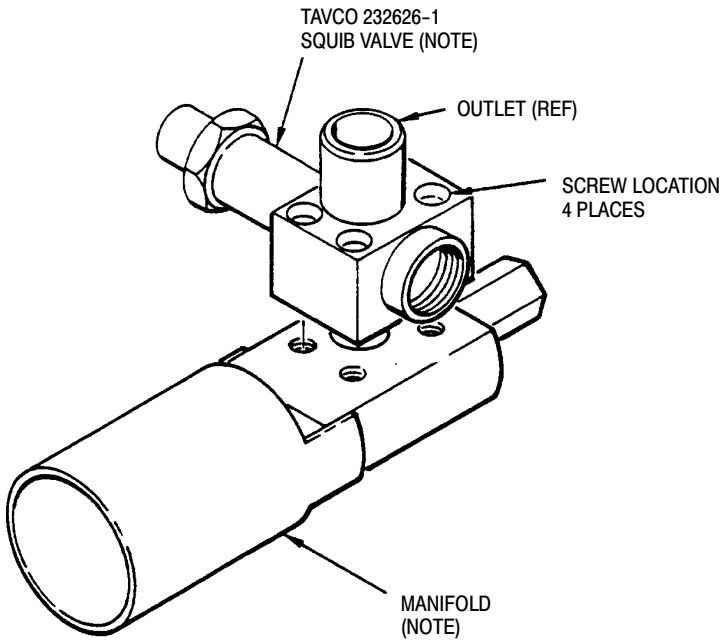


Figure 3. Emergency Float System Wiring Diagram (Sheet 2 of 2)



NOTE:
COMPONENT OFTAVCO 23111380-3/4
EXPULSION CONTROL VALVE ASSEMBLIES.

88-475A

Figure 4. Replacement of Squib Valve with Sealed Cover