BETTIS

SERVICE INSTRUCTIONS

DISASSEMBLY AND REASSEMBLY

FOR MODEL

3R-022-SBC

BETTISWITCH

PART NUMBER: Service – 072 (SE-072)

RELEASE DATE: June 1984

INTRODUCTION

This service procedure is offered as a guide to enable general maintenance to be performed on Bettis 3R-022-SBC Bettiswitch.

BASIC TOOLS

Adjustable wrench, small screwdriver, Allen wrench set, o-ring removal tool and needle-nose pliers.

REFERENCE BETTIS MATERIALS

Assembly Drawing 062433 for 3R-022-SBC Bettiswitch.

Bettis Engineering Specification ESL-3.

GENERAL DISASSEMBLY

1. Make sure all power sources going to the switch are off before attempting any disassembly of the switch.

2. Remove oil fill plug (15) in top of switch housing cover (1) to vent switch. This will promote quick draining of oil.

3. Remove cover from housing after draining switch.

4. Remove o-ring seal (4-190) at shoulder of housing threads.

5. Disconnect all wiring to switch elements (5) noting their position for correct reassembly.

6. Remove hex cap screw (4-70), two hex nuts (4-110), and two lockwashers (14), from top of locating plate (4-30). Remove locating plate.

7. Remove two hex nuts on studs (4-40) atop switch elements (5).

8. Pulling upwards, slide both switch elements (5) and shielding (4-60) off studs and remove.

9. Loosen aluminum spacers (13) at bottom of studs (4-40). Remove studs from housing.

10 Pull both cams (4-50) up pinion wire (3-10) of switch shaft assembly 93) and remove.

11. Remove hex cap screws (4-70) that retains leaf spring assemblies (4-20) to the side of the post (4-10) and remove leaf springs.

12. Remove retaining ring (3-30) from switch shaft on bottom side of switch housing (2).

13. Switch shaft assembly can now be removed by pulling shaft upward.

14. Remove switch shaft o-ring seal (4-180) from bottom side of housing in switch shaft hole.

NOTE: Switch shaft bushing (4-90) is pressed into the housing and reamed to size. It should be removed.

LUBRICATION REQUIREMENTS

1. Standard lubricant requirement for electrical joint surfaces – TLNC-4. Reference Bettis Engineering specification ESL-3.

GENERAL RE-ASSEMBLY

1. Turn housing upside-down and insert o-ring seal (4-180) into housing groove at shaft hole location. Turn housing right-side-up.

2. Attach retaining ring (3-30) to switch shaft assembly (3) in groove nearest pinion wire (3-10).

3. Insert switch shaft into bushing (4-90), flats first, until retaining ring sets atop bushing. Turn housing over and clip retaining ring (3-10) in lower groove of switch shaft, protruding through the bottom of housing (2).

NOTE: Inspect end of switch shaft for pieces of o-ring seal. If any parts of seal are found, o-ring seal should be replaced. De-burr flats of lower switch shaft (3-40) if necessary.

4. Position housing so that 3/4 NPT conduit entries are parallel to work surface and switch shaft is above conduit centerline. Rotate shaft so that flats are perpendicular to conduit centerline. Now turn shaft clockwise (CW) 45° degrees and place housing in the upright position.

NOTE: When turning housing to upright position, be careful and **DO NOT** turn shaft.

5. Thread one aluminum spacer (13) onto each stud (4-40) approximately 3/8". Install spacer end of stud into switch housing until stud is 2-3/16" inches above tapped housing surface. Lock stud in position with spacer (13).

6. Attach leaf spring assemblies (4-20) to post (4-10) using one hex cap screw (4-70) each. Attach leaf spring to outer edge of post so that the leaf springs cross the center of the housing nearest the switch shaft.

7. Install cams (4-50) onto pinion wire (3-10). Set first one (lower cam) so that flat section of cam is parallel to lower leaf spring and points toward post. Position second one (upper cam) so that it is parallel to upper leaf spring and points away from post.

NOTE: If cams do not seem to line up properly on pinion wire splines, cam can be turned over to achieve correct placement.

8. Place two pieces of shielding (4-60) over studs with long side away from shaft. Place element (5) over studs so that contact button will align with adjustment screw in end of leaf spring. Now fold remaining half of shielding over element to form a U-shaped shield and lower the element into place. Repeat with upper switch element.

9. Screw one hex nut (4-110) onto each stud to hold elements in position.

CAUTION: **Lightly tighten nuts only. Elements can be damaged if too much torque is applied.**

10. Mount locating plate (4-30) over studs and pinion wire. Install hex cap screw (4-70) thru locating plate and into post. Use two internal tooth lockwashers (14) and two hex nuts (4-110) on studs to secure locating plate to switch.

11. Install o-ring seal (4-190) over housing threads so that it seats on shoulder. Lubricate inner edge of housing cover (1) and threads with ESL-3 (17).

12. Install housing Cover onto housing until tight.

13. Fill with required oil.

14. Install 1/8 NPT oil fill plug (15) into top of housing cover.