



**BACKHOE SET-UP INSTRUCTION
FOR 648 and 646 SERIES "B"
FORM NO. 9-50694**

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SET UP OF STRUCTURAL PARTS

REFER TO FIGURE 1

1. Remove bumpers (1) and remove boom attaching pin (30).
2. Remove retaining pin (2) and boom cylinder pin (3).
3. Using a suitable hoist, attach boom assembly (4) and boom cylinder (5) to swing tower using pins removed in steps 1 and 2. Reinstall bumpers.
4. Remove pin (6) from outer end of boom (4) and pin (7) from dipper (22).
5. Using a suitable hoist, install dipper (22) to boom (4) and dipper cylinder (23) to dipper (22) with pins removed in step 4.

NOTE: The terms right, left, front and rear relate to the backhoe when the operator is seated facing the normal direction for backhoe operation.

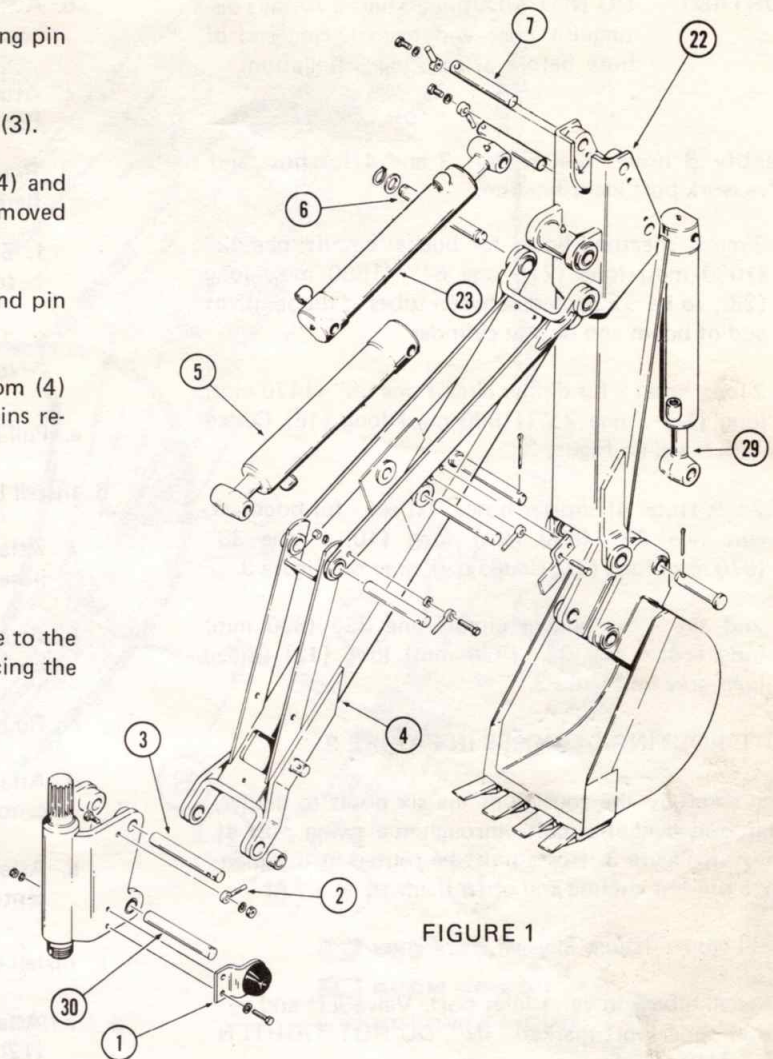


FIGURE 1

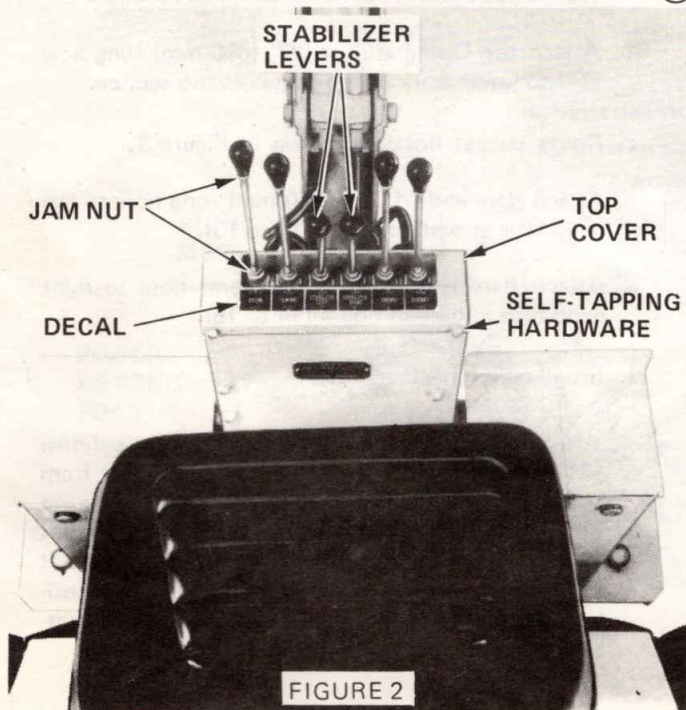


FIGURE 2

REFER TO FIGURE 2

6. Install top cover to control tower using 5/16" x 3/4" self-tapping hardware provided in kit.
7. Install a jam nut on each end of control lever.
8. Install the two stabilizer control levers (bent levers) in the center two bell cranks and then install the other four levers. Tighten the lower jam nuts against the bell cranks.
9. Install a knob on each control lever. Tighten upper jam nuts against knobs. Apply the lever identification decals to be read from operator's position.

SET UP OF HYDRAULIC PARTS

IMPORTANT: DO NOT MIX thread types. Always distinguish flare end from O-ring end of hose before attempting installation.

1. Identify 8 hoses. See Figures 3 and 4 for hose and valve work port identification.
 - a. 2-metal sheathed hoses for bucket circuit, one 42" (1060 mm) long (21), one 61" (1550 mm) long (28), to be connected between tubes at dipper pivot end of boom and bucket cylinder.
 - b. 2-long hoses - for dipper circuit one 58" (1470 mm) long (18) - one 75" (1900 mm) long (16) Coded dark black on Figure 3.
 - c. 2-sets (total 4) shorter hoses, 1st set - for boom circuit one 35" (890 mm) long (10) - one 38" (970 mm) long (21) Coded dark grey on Figure 3.

2nd set - for bucket circuit one 35" (890 mm) long (14) - one 38" (970 mm) long (12) Coded light grey on Figure 3.

2. NOTE ROUTING OF HOSES IN FIGURE 3.

Note carefully the routing of the six hoses to dipper, boom and bucket circuits through the swing post as shown in Figure 3. Hoses must be routed in this manner to prevent chafing and other damage.

3. Install elbow fittings in valve. See Figure 4.

- a. Install elbow in valve inlet port. Valve left end section upper port marked "IN". DO NOT TIGHTEN AT THIS TIME.
- b. Install elbow in valve power beyond port. Valve right end section lower port. DO NOT TIGHTEN AT THIS TIME.

4. Install elbow fitting in dipper (crowd) cylinder. See Figure 3.

- a. Install the 45 degree elbow in the dipper (crowd) cylinder piston end port. Figure 3, Reference 17.
- b. Position the elbow to eliminate interference of the hose (18) when the backhoe is swung fully to the left.

5. Install dipper circuit hoses. See Figures 3 and 4.

- a. Attach the O-ring end of hose 58" (1470 mm) long hose (18) to left hand (piston end) port (17) of dipper cylinder.

- b. Attach the O-ring end of hose 75" (1900 mm) long hose (16) to (rod end) port (19) of dipper cylinder.

- c. Attach O-ring to flare adapters to dipper valve section work ports.

- d. Route dipper hoses as shown in Figure 3 and attach flare ends to adapters at valve section.

1. 58" (1470 mm) long hose (18) from piston end to upper port.

2. 75" (1900 mm) long hose (16) from rod end to lower port.

- e. Pull hose slack to rear before attaching clamps.

6. Install boom circuit hoses. See Figures 3 and 4.

- a. Attach the O-ring end of hose 38" (970 mm) long hose (8) to upper work port of boom valve section.

- b. Attach the O-ring end of hose 35" (890 mm) long hose (10) to lower work port of boom valve section.

- c. Route boom hoses as shown in Figure 3.

- d. Attach flare end of 38" (970 mm) long hose to right center tube at base of boom (8 to 11).

- e. Attach flare end of 35" (890 mm) long hose to left center tube at base of boom (10 to 9).

7. Install bucket circuit hoses. See Figures 3 and 4.

- a. Attach the O-ring end of 38" (970 mm) long hose (12) to upper work port of bucket valve section.

- b. Attach the O-ring end of 35" (890 mm) long hose (14) to lower work port of bucket valve section.

- c. Route bucket hoses as shown in Figure 3.

- d. Attach flare end of 38" (970 mm) long hose to left hand tube at base of boom (12 to 13).

- e. Attach flare end of 35" (890 mm) hose to right hand tube at base of boom (14 to 15).

- f. Install metal sheathed hoses:

Attach hose (21) from left port of bucket cylinder (24) to left tube on boom. Attach hose (28) from rod end port of bucket cylinder to right tube on boom. Make sure hoses clear dipper hinge point when dipper is retracted. The correct clearance will be obtained by rotating the hoses to the proper position before tightening the hose fittings or if necessary the tubes may be re-formed.

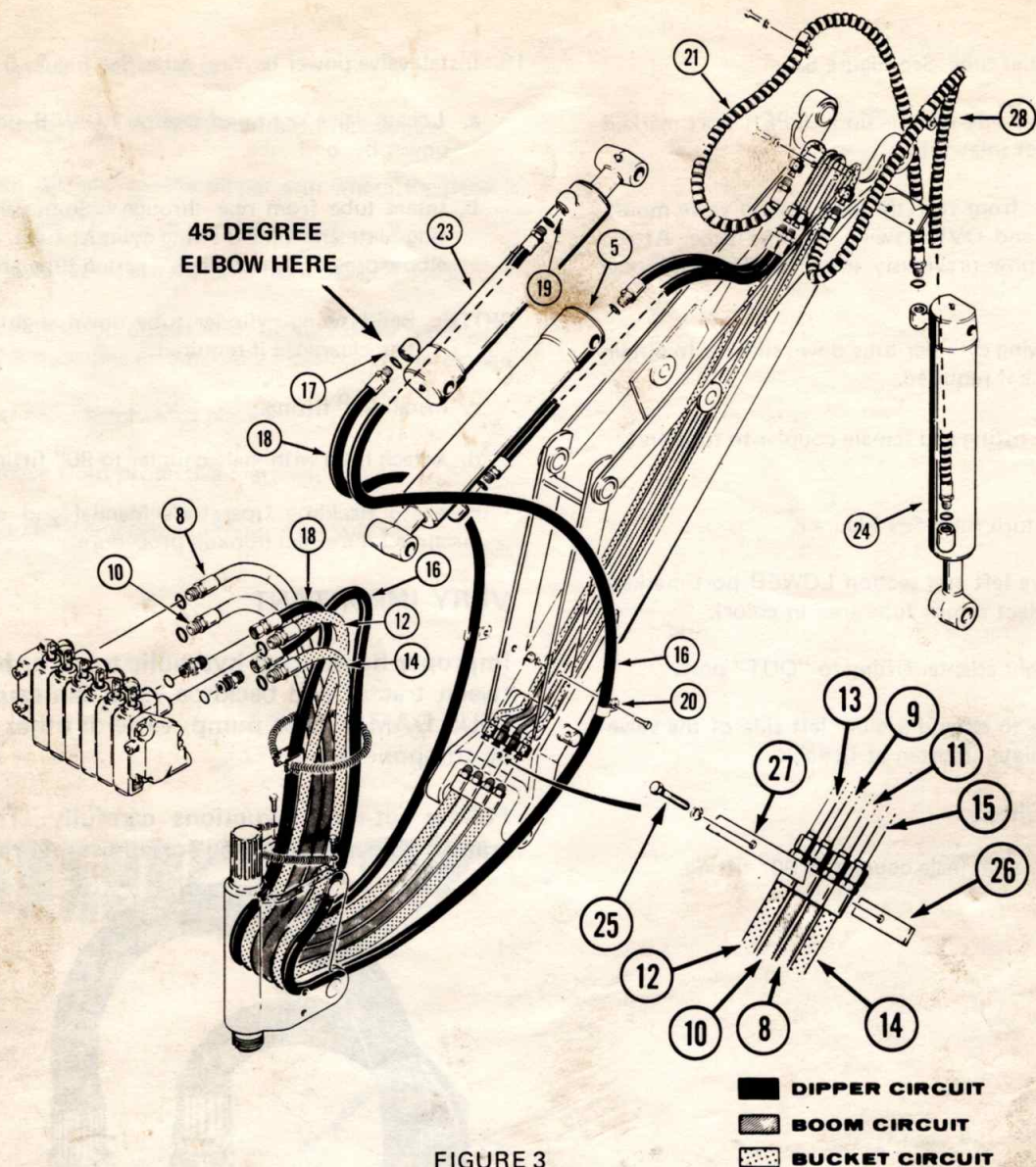


FIGURE 3

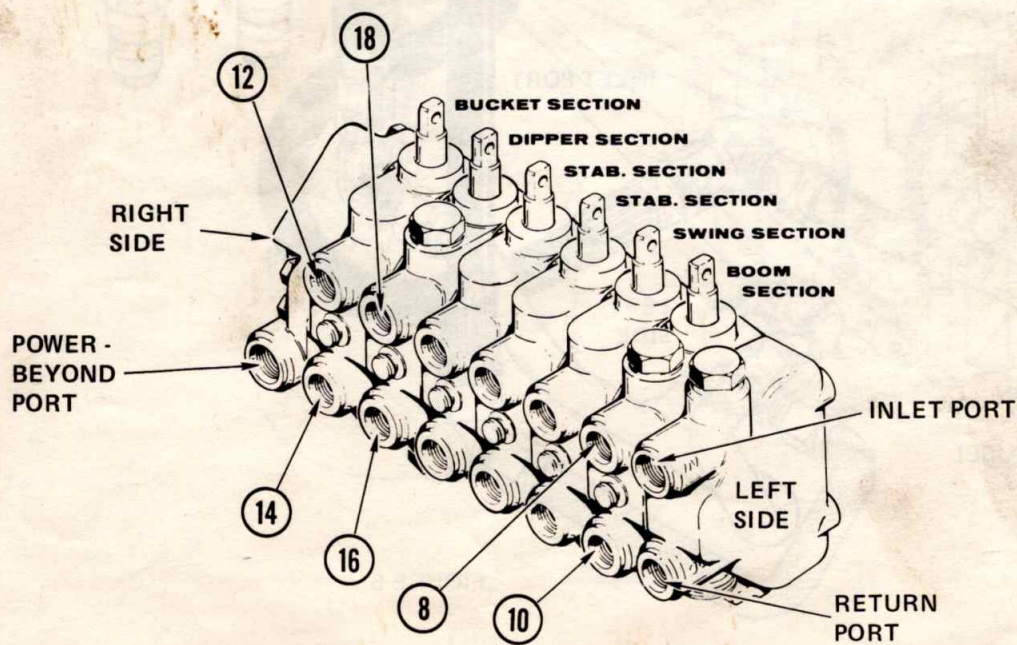


FIGURE 4

8. Install valve inlet tube. See Figure 5.

- a. Locate valve left end section UPPER port marked "IN". Select inlet tube.
- b. Insert tube from rear through hole in valve mounting plate and OVER swing cylinder tube. Attach to inlet elbow previously installed. Tighten elbow and tube.

NOTE: Bend swing cylinder tube down slightly to obtain clearance if required.

- c. Install 90° fitting and female coupler to tube end.

9. Install valve return tube. See Figure 5.

- a. Locate valve left end section LOWER port marked "OUT". Select return tube (red in color).
- b. Install straight adapter fitting to "OUT" port.
- c. Route tube to extend around left side of the valve mounting plate. Tighten at fitting.
- d. Install 90° fitting.
- e. Attach hose with male coupler to 90° fitting.

10. Install valve power beyond tube. See Figure 5.

- a. Locate valve right end section LOWER port. Select power beyond tube.
- b. Insert tube from rear through hole in valve mounting plate and OVER swing cylinder tube. Attach to elbow previously installed. Tighten tube and elbow.

NOTE: Bend swing cylinder tube down slightly to obtain clearance if required.

- c. Install 90° fitting.
- d. Attach hose with male coupler to 90° fitting.

11. Refer to Backhoe Operator's Manual and decals on machine for correct hookup procedure.

VERY IMPORTANT

Improper hook-up of hydraulic tubes or hoses between tractor and backhoe valve can cause **SERIOUS DAMAGE** to pump, valve or other hydraulic components.

Follow set-up instructions carefully. The illustration below is provided for additional reference.

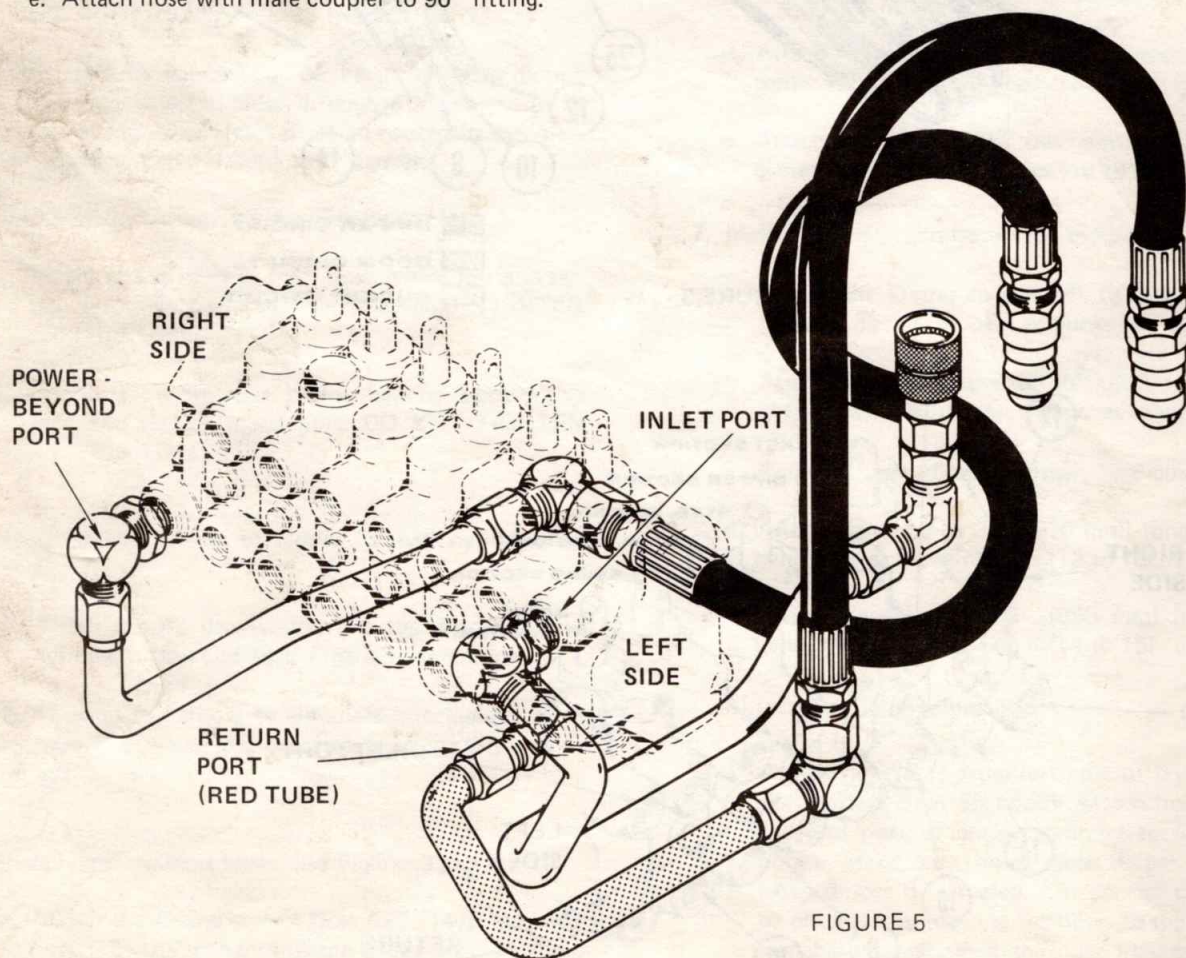


FIGURE 5

12. Backhoe Decal Installation:

Apply dipper arm decal in the following manner:

- a. Clean the area on the dipper arm where the decal is to be applied.
- b. Remove protective material from back of decal.
- c. Place decal on dipper arm. Be sure decal is centered and is right side up when the dipper arm is extended.
- d. Press decal firmly into place.
- e. Remove front protective material.
- f. Wipe decal smooth and remove all bubbles.

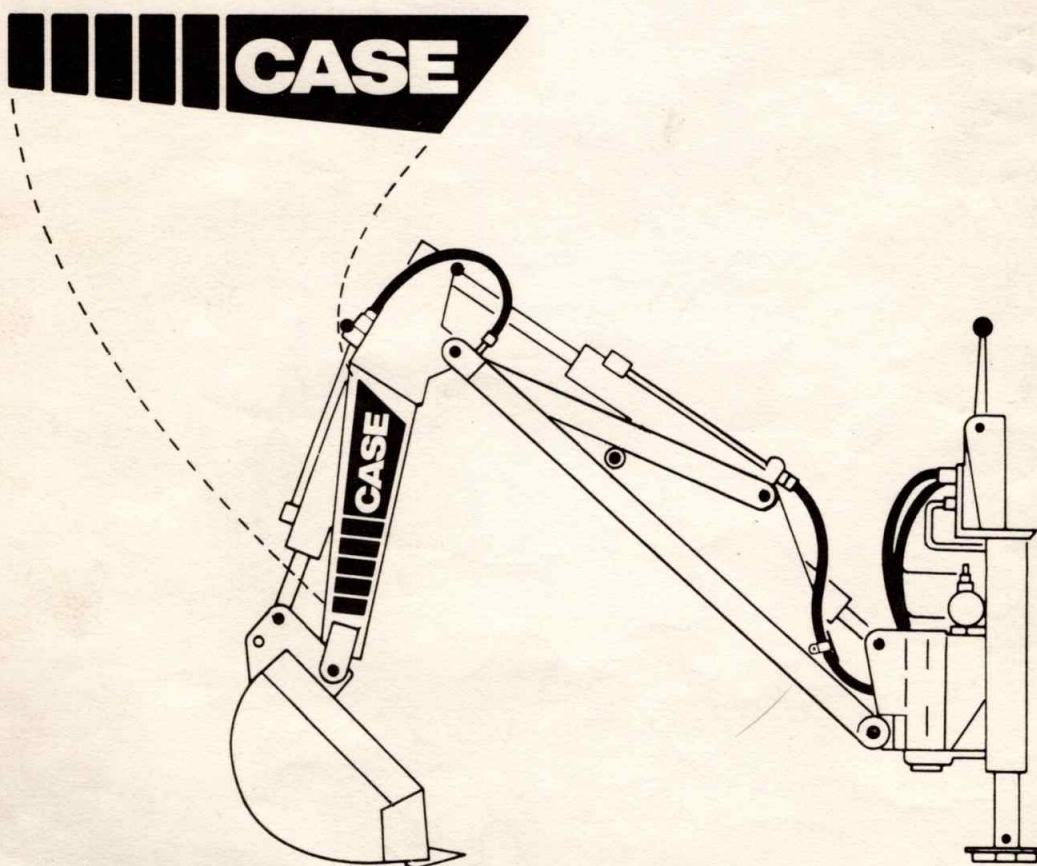


FIGURE 6

1. The first step in the process is to identify the problem. This involves a thorough review of the data and a clear understanding of the objectives of the study. Once the problem is identified, the next step is to develop a hypothesis or a set of hypotheses that can be tested. This is followed by the design of the study, which includes the selection of the sample, the choice of the statistical tests, and the determination of the level of significance. The final step is the analysis of the data and the drawing of conclusions based on the results of the tests.

2. The second step in the process is to collect the data. This involves the selection of the sample and the collection of the data for each member of the sample. The data should be collected in a systematic and unbiased manner, and the sample should be representative of the population of interest.

3. The third step in the process is to analyze the data. This involves the application of the statistical tests to the data and the interpretation of the results. The results should be compared to the hypotheses, and the level of significance should be determined. If the results are significant, then the hypotheses are rejected, and the null hypothesis is accepted. If the results are not significant, then the hypotheses are not rejected, and the null hypothesis is not rejected.

4. The fourth step in the process is to draw conclusions. This involves the interpretation of the results of the analysis and the drawing of conclusions based on the results. The conclusions should be based on the results of the tests, and they should be stated in a clear and concise manner.

5. The fifth step in the process is to report the results. This involves the preparation of a report that describes the problem, the hypotheses, the data, the analysis, and the conclusions. The report should be written in a clear and concise manner, and it should include all of the information that is necessary for the reader to understand the study.

6. The sixth step in the process is to evaluate the study. This involves the assessment of the quality of the study and the determination of the extent to which the objectives of the study have been achieved. The evaluation should be based on the results of the study, and it should be used to improve the quality of future studies.

7. The seventh step in the process is to disseminate the results. This involves the distribution of the report to the relevant parties, and the presentation of the results at conferences and seminars. The results should be disseminated in a clear and concise manner, and they should be used to inform the decision-making process.

8. The eighth step in the process is to follow up on the results. This involves the monitoring of the results over time, and the determination of the extent to which the objectives of the study have been achieved. The follow-up should be based on the results of the study, and it should be used to improve the quality of future studies.