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## MIXED FLOW SSR

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RECOMMENDED EQUIPMENT

MACHINERY & TOOLS

The minimum basic hand tools and equipment needed for Mixed Flow SSR assembly:

1. Small Flat-head Screwdriver – Qty: 1
2. Large Flat-head Screwdriver – Qty: 2
3. 8 mm Allen Wrench or Ratchet Wrench – Qty: 1
4. Small Pry Bar – Qty: 1
5. Torque Wrench, 20 Nm – Qty: 1
   • Set at 7.6 Nm
6. 3 mm Allen Socket – Qty: 1
7. Torque Wrench, 50 Nm – Qty: 1
   • Set at 25 - 35 - 45 Nm
8. 19 mm Socket – Qty: 2
9. Torque Wrench, 140 Nm – Qty: 1
   • Set at 50 Nm
10. Torque Wrench, 100 Nm – Qty: 1
    • Set at 50 Nm
11. 32 mm Crab Claw Wrench – Qty: 1
12. Small Dead Blow Hammer – Qty: 1
13. m10 x 110 mm SHCS – Qty: 1

STAGE KIT PARTS LIST

A. Impeller
B. Standard Diffuser Bowl
C. Wear Ring
D. Centering Ring

DIFFUSER BOWLS

NOTE: Use gloves when handling diffuser bowls and be aware of sharp edges at top of diffuser.
RECOMMENDED EQUIPMENT

COMMON PARTS LIST

A. Motor Bracket
B. Suction Screen
C. Motor Bracket Adapter
D. Discharge
E. Standard Diffuser Bowl
F. Top Diffuser Bearing Bowl
G. (2) Impellers
H. (2) Centering Rings
I. (2) Wear Rings
J. Upthrust Bearing w/ (2) Set Screws
K. Upthrust Impeller Lock Nut
L. Black Sleeve Bearing
M. Compression Washer & Bolt
N. (4) Strap Nuts
O. Nameplate w/ (2) Rivets
P. Motor Fastener Kit w/ Cable Guard Protector.
1. Jig fixture for the pump assembly.

2. Check the motor bracket to ensure the screen has been pre-installed.

3. Place the motor bracket on the fixture.

4. Align one of the mounting holes in the bracket to the orientation pin located on the fixture.

5. Place motor bracket adapter ring onto the motor bracket.

6. Place the shaft down through the motor bracket, making sure the coupling is fully seated on the assembly fixture splines.
   - Jig shaft gage line should not be visible when the shaft is fully seated.

7. Insert the 10 mm bolt into the jig shaft hole and thread it into the end of the pump shaft.

8. Tighten down the shaft bolt with an 8 mm Allen wrench.

9. Place the wear ring on top of the motor bracket adapter.

10. Place the centering ring onto the motor bracket adapter, ensuring the wear ring is fully seated.
11. Remove the small impeller lock nut.

12. Install the larger upthrust impeller lock nut (K) by threading it onto the collet.
   • Make sure the locking nut and collet are loose on the impeller. It will not fit the shaft if it is not loose.

13. Slide the first impeller onto the shaft with the impeller eye facing down. Make sure it is fully seated.
   • After hand-tightening the lock nut, use the flat-head screwdrivers by placing the tips under the hex corners of the nut and over the vanes of the impeller.
   • Make sure not to bend the top of the impeller.
   • Gently press down on the screwdrivers to create an upward force on the upthrust lock nut, allowing the impeller to fully seat.

14. Torque the lock nut to 50 Nm with the 32 mm crab claw wrench.

15. Install two set screws into the upthrust washer assembly (J).
   • Do not tighten.

16. Slide the upthrust washer onto the shaft with the carbon-side up.

17. Seat upthrust washer on impeller upthrust nut.
   • Ensure set screws are positioned on the flats of the upthrust nut.
18. Torque the two set screws uniformly to 7.6 Nm with the 3 mm Allen socket wrench, rotating from one set screw to the other. Ensure the upthrust washer stays flat against the top of the nut.

19. Install the first standard diffuser bowl.
   • Make sure the wear ring and centering ring stay seated and aligned.

20. Fully seat the diffuser bowl onto the centering ring.

21. Install the next wear ring and centering ring.

22. Ensure the wear ring and centering ring are fully seated and assembled.

23. Slide the next impeller onto the shaft until it is fully seated. After hand-tightening the lock nut, use the flat-head screwdrivers by placing the tips under the hex corners of the nut and over the vanes of the impeller.
   • Make sure not to bend the top of the impeller.
   • Gently press down on the screwdrivers to create an upward force on the lock nut, allowing the impeller to fully seat.
   • Tighten lock nut with torque wrench to 50 Nm with the 32 mm crab claw wrench.

24. If the unit is a two-stage pump, skip to step 28.

   If the unit has more than two stages, slide the next standard diffuser bowl onto the centering ring and fully seat.
25. Install the next wear ring and centering ring.

26. Ensure the wear ring and centering ring are fully seated and assembled.

27. Repeat steps 23–26 until the last impeller is installed.

28. View of the shaft with last impeller installed.

29. Slide the black sleeve bearing (L) onto the top of the shaft.
   - There will be a gap between the top of the shaft and the top of the bearing.

30. View of the upper bearing support fully seated on shaft.

31. Install the compression bolt (M) into the compression washer (M).
   - The bolt has a thread locking compound pre-applied.

32. View of the top impeller, black sleeve bearing (L), compression washer and bolt (M) installed.

33. Torque compression bolt (M) to 50 Nm with the 19 mm socket wrench.
34. Install the top bearing bowl assembly.

35. Ensure the top bearing bowl assembly is seated over the center bearing.

36. Place the discharge onto the top bearing bowl assembly.

37. The discharge flat should line up with the cable guard location.

38. Apply anti-seize thread compound to all four threaded studs at the bottom of the straps.
   • Use Jet-Lube® White Knight™ food grade anti-seize or similar. If the pump is intended for drinking water application, ensure that the anti-seize compound used is safe for drinking water.

39. Hook the first four straps into the discharge.

40. Ensure the strap hook is completely seated in the slot on the top of the discharge.
41. The strap may have to be bowed to insert the stud through the mounting hole.

42. Slide the threaded stud into the motor bracket mounting location.

43. Ensure the stud extends through the bracket mounting hole.

44. Repeat steps 39–42 for the next three straps.

45. Thread all four nuts (N) onto the four straps.

46. Hand-tighten all of the nuts.

47. Insert the small pry bar behind the edge of the strap to ensure it does not rotate during the torque procedures. Torque in a crisscross pattern the following requirements in three stages:
   • Torque strap nuts to 25 Nm
   • Torque strap nuts to 35 Nm
   • Torque strap nuts to 45 Nm
48. Remove the assembly shaft bolt from the bottom of the jig and check shaft endplay.

- To check shaft endplay, perform the following procedure:
  1. The groove in the jig shaft should not be seen with the pump shaft fully seated.
  2. Pry up the bottom end of the shaft using the pry bar.
  3. With the pump shaft raised up, the top of the gage groove line in the jig shaft should be seen.

49. Use the small dead blow hammer to flatten any straps that rotated during the torque procedure.

50. Remove the assembly from the jig and lay the pump on its side to install the cable guard.

51. Orientate the cable guard so the angled tab is on the motor bracket end and the top two tabs extend past the pump’s discharge.

52. Install the cable guard tabs closest to the motor bracket.

53. Gently tap the side of the cable guard to drive one of the tabs under the strap.

- Do not tap the tabs.
54. Use the small flat-head screwdriver to gently raise the strap on the opposite side of the cable guard.

55. Gently tap the other tab under the strap. Remove the screwdriver after the cable guard tab has started under the strap.

56. The cable guard should be centered between the two straps.

57. Repeat steps 52–56 for all the tabs except the top two.

58. After all but the top two tabs have been installed, gently tap the top end of the cable guard down toward the motor bracket.
   • Be careful not to damage or bend the cable guard.

59. Apply pressure to the end of the cable guard while tapping on the top side of the tabs close to the motor bracket. This will allow for the end of the cable guard to slide under the motor bracket ears.

60. Gently tap the cable guard to drive one of the top two cable guard tabs under the strap.
61. Use the small flat-head screwdriver to gently guide the tab under the strap on the opposite side of the cable guard.

62. Once the tab is started under the strap, remove the screwdriver.

63. The cable guard should be centered between the two straps.

64. Fill out the nameplate data.

65. Install the nameplate (O) by inserting drive rivets (O) into the two pre-drilled holes located on the motor bracket.
BUILD FIXTURE ASSEMBLY

Order # 154038100

SSR Build Fixture Base

Ø12.7 x 25.4 Long Dowell Pin, pressed in place

6" Motor Shaft Post

Weld motor shaft post to base at chamfer. Grind weld flat after welding.
CONE UNLOCKING TOOL
Order # 154039100

DIAMOND KNURE THE OUTSIDE SURFACE WITHIN 10 MM OF END FLANGES

NOTES:
1. Material to be cold rolled steel.
2. Harden & black oxide finish part after machining.
TOLL FREE HELP FROM A FRIEND

1-800-348-2420

FAX: 1-260-827-5102

Phone Franklin’s toll free SERVICE HOTLINE for answers to your pump and motor installation questions. When you call, a Franklin expert will offer assistance in troubleshooting and provide immediate answers to your system application questions. Technical support is also available online.

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