








A.Y. McDonald Mfg. Co. Stainless Steel Submersible Pump Assembly Guide

Assembly Guide for 90 GPM Pumps w/4" Motor

PUMP ASSEMBLY TOOLS

KIT	PICTURE	ITEM #	DESCRIPTION
TORQUE WRENCH KIT		TRQWRN20-110NM	TORQUE WRENCH
		INSTTRQWRNCH	INSERT FOR TORQUE WRENCH
CLEARANCE KIT		FXSSTRAP6PEX4MOT	FIXTURE FOR STRAP
		STRPCKT6PEX4MOT	SOCKET FOR STRAP
		SHFTDPTCAL6PEX4MOT	DEPTH CALIPER
		SHFTDPHTOOL6PEX4MOT	DEPTH TOOL
FIXTURE SEAT KIT		FXS46810PE	FIXTURE SEAT
		LHEXALLENFIXST	HEXAGONAL ALLEN TOOL FIXST

KIT	PICTURE	ITEM #	DESCRIPTION
JIG SET KIT		JIG6PEX4MOT	JIG 4" MOTOR
		LHEXALLEN6PEX4MOT	4 " HEXAGONAL ALLEN TOOL
ASSEMBLY KIT		TOOL6PE90	IMPELLER NUT TOOL
		SKTTL90	SOCKET FOR TOOL
		TRQTSTNUT90	TORQUE TESTING NUT



WARNING: It is unlawful in CALIFORNIA & VERMONT (effective 1/1/2010); MARYLAND (effective 1/1/2012); LOUISIANA (effective 1/1/2013) and the UNITED STATES OF AMERICA (effective 1/4/2014) to use any product in the installation or repair of any public water system or any plumbing in a facility or system that provides water for human consumption if the wetted surface area of the product has a weighted average lead content greater than 0.25%. This prohibition does not extend to service saddles used in California, Louisiana or under USA Public Law 111-380. **WARNING:** This product can expose you to chemicals including lead, which is known to the State of CALIFORNIA to cause cancer and birth defects or other reproductive harm. For more information go to: www.P65Warnings.ca.gov.

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PUMP COMPONENTS

KIT	PICTURE	DESCRIPTION
STANDARD ASSEMBLY KIT		DISCHARGE <i>TOP VIEW</i>
		CHECK VALVE <i>TOP VIEW</i>
		TOP STAGE DIFFUSER <i>TOP VIEW</i> <i>BOTTOM VIEW</i>
		TOP STAGE IMPELLER <i>TOP VIEW</i>
		INTERCONNECTOR FOR 4" MOTOR
MIDDLE STAGE ASSEMBLY KIT		MIDDLE STAGE DIFFUSER <i>TOP VIEW</i> <i>BOTTOM VIEW</i>
		MIDDLE STAGE IMPELLER <i>TOP VIEW</i>
BOTTOM STAGE ASSEMBLY KIT		BOTTOM STAGE DIFFUSER <i>TOP VIEW</i> <i>BOTTOM VIEW</i>
		BOTTOM STAGE IMPELLER <i>TOP VIEW</i>
		STOP RING

KIT	PICTURE	DESCRIPTION
SPECIFIC COMPONENTS (MOD)		STRAPS
		CABLE GUARDS
		SHAFT
		NUTS
	PLATES KIT	
BOLTS AND NUTS KIT		NUTS FOR 4" MOTORS

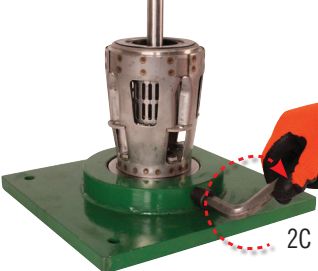
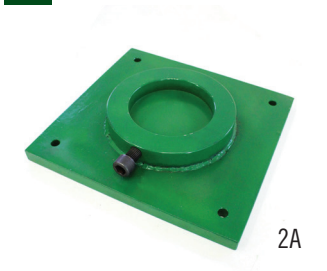


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1 Fit INTERCONNECTOR and Shaft on Jig 4" motor using 13 mm Wrench and Allen Tool (clockwise)



2 Set down on FIXTURE SEAT and tighten using HEXAGONAL ALLEN TOOL (clockwise)



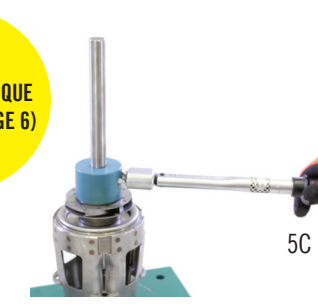
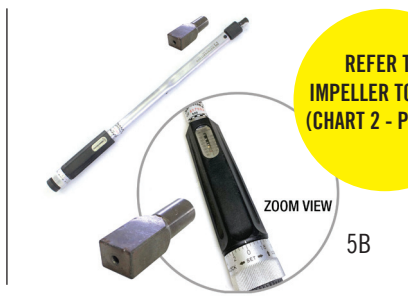
3 Place BOTTOM STAGE IMPELLER on Shaft



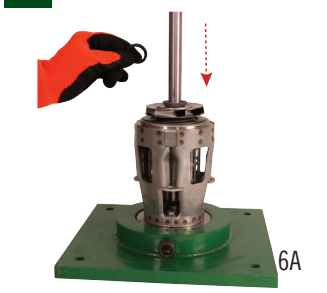
4 Place SOCKET FOR TOOL on top and use IMPELLER TOOL to tighten (clockwise)



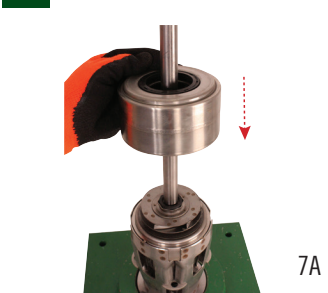
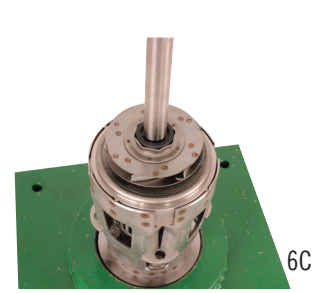
5 Place TORQUE TESTING NUT and use TORQUE WRENCH with INSERT to tight at correct torque (clockwise)



6 Place STOP RING



7 Place BOTTOM STAGE DIFFUSER



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8 Place MIDDLE STAGE IMPELLER



Place SOCKET FOR TOOL on top and use IMPELLER NUT TOOL to tighten (clockwise)



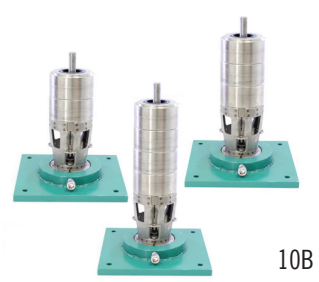
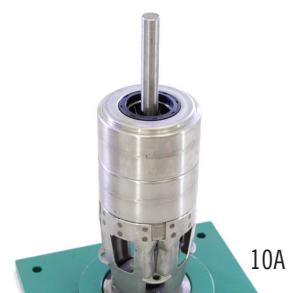
Use TORQUE TESTING NUT and WRENCH to tight at correct torque (clockwise) (STEP 5)



9 Place MIDDLE STAGE DIFFUSER



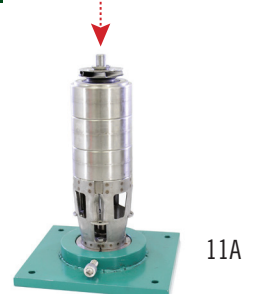
10 Add as many MIDDLE STAGES as required



Repeat steps 8 and 9 for every MIDDLE STAGE that you need to add to the wet end of the pump

Stages below a torqued IMPELLER should not rotate.

11 Place TOP STAGE IMPELLER



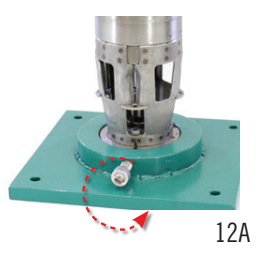
Use WRENCH FOR IMPELLER NUT to tighten (clockwise)



Use TORQUE TESTING NUT and WRENCH to tight at correct torque (clockwise) (Step 5)



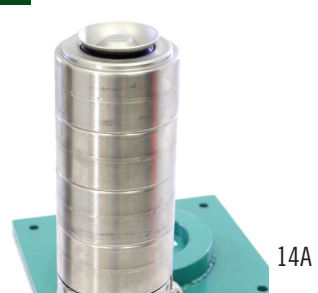
12 Loosen with Allen Tool, remove from Fixture Seat. Remove 4" Jig with Allen Tool from Assembly



13 Add TOP STAGE DIFFUSER and CHECK VALVE



14 Place DISCHARGE





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15 Attach STRAPS to pump and fit at the bottom



Use "food grade never seize" on threads of straps to prevent galling

16 Place NUTS to tighten STRAPS using SOCKET FOR STRAP



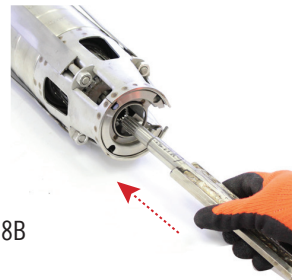
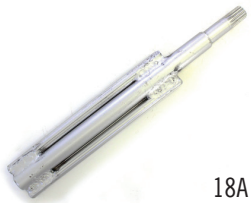
17 Use TORQUE WRENCH and FIXTURE FOR STRAP to tight at correct torque (clockwise)



REFER TO STRAP TORQUE (CHART 2 - PAGE 6)



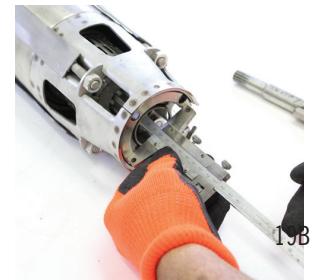
18 Push in SHAFT using DEPTH TOOL



19 Use DEPTH CALIPER to check shaft clearance



REFER TO AXIAL CLEARANCE UP (CHART 1 - PAGE 6)



20 Pull out SHAFT using DEPTH TOOL

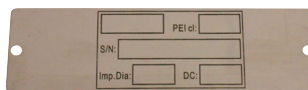
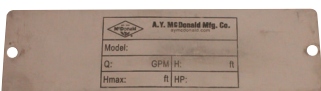


21 Use DEPTH CALIPER to check shaft clearance



REFER TO AXIAL CLEARANCE UP (CHART 1 - PAGE 6)

22 Add PLATE FOR MODEL INFORMATION





SHAFT TOLERANCES (CHART 1)

MOTOR DIAMETER	MEASUREMENT REFERENCE	AXIAL CLEARANCE - H(MM)	
		DOWN	UP
4"	SHAFT/COUPLING	36.5	39.5-40
6"		71-71.5	75-77
8"		100	MIN 103
10" Franklin		100	MIN 103
10" HITACHI		125.5	MIN 129



TORQUE FOR IMPELLER ASSEMBLY (CHART 2)

TORQUE				
MODEL		STRAP (N.M)	IMPELLER (N.M)	
90 GPM SERIES	6"	45	45	
90 GPM SERIES	6" x 4"	35		
150 GPM SERIES	6"	45	80	
150 GPM SERIES	6" x 4"	35		
230 GPM SERIES	6"	45	80	
230 GPM SERIES	6" x 4"	35		
300 GPM SERIES	6"	45	80	
300 GPM SERIES	6" x 4"	35		
400 GPM SERIES		100	100	100
500 GPM SERIES		100	100	100
650 GPM SERIES		100	160	160
800 GPM SERIES		100	160	160
1100 GPM SERIES		100	250	250

DOE CHART

MODEL	90S	150S	230S	300S
PEI	0.87	0.90	0.88	0.90
IMP. DIA. (IN)	3.5	3.7	4.14	4.14

