










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

Assembly Guide for 230/300 GPM Pumps w/6" Motor

PUMP ASSEMBLY TOOLS

KIT	PICTURE	ITEM #	DESCRIPTION
TORQUE WRENCH KIT		TRQWRN20-110NM	TORQUE WRENCH
		INSTTRQWRNCH	INSERT FOR TORQUE WRENCH
CLEARANCE KIT		FXSSTRAP6PE	FIXTURE FOR STRAP
		STRPCKT6PEX6MOT	SOCKET FOR STRAP
		SHFTDPTCAL6PE	DEPTH CALIPER
		SHFTDPHTOOL6PEX6MOT	DEPTH TOOL
FIXTURE SEAT KIT		FXS46810PE	FIXTURE SEAT
		LHEXALLENFIXST	HEXAGONAL ALLEN TOOL FIXST

KIT	PICTURE	ITEM #	DESCRIPTION
JIG SET KIT		JIG6PEX6MOT	JIG 6" MOTOR
		LHEXALLEN6PEX6MOT	6" HEXAGONAL ALLEN TOOL
ASSEMBLY KIT		LHEXALLENCOUP	HEAXAGONAL ALLEN TOOL COUP
		WRN6PE150-300	WRENCH FOR IMPELLER NUT
		TRQTSTNUT150-300	TORQUE TESTING NUT
		JIGNSR230	JIG FOR STOP RING
		JIGNSR300	JIG FOR STOP RING



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		COUPLING WITH KEY
		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 6" MOTOR
		MIDDLE STAGE DIFFUSER  <i>TOP VIEW</i>  <i>BOTTOM VIEW</i>
MIDDLE STAGE ASSEMBLY KIT		MIDDLE STAGE IMPELLER  <i>TOP VIEW</i>
		BOTTOM STAGE DIFFUSER  <i>TOP VIEW</i>  <i>BOTTOM VIEW</i>
BOTTOM STAGE ASSEMBLY KIT		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		BOLTS FOR 6" MOTORS



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1 Fit KEY on SHAFT



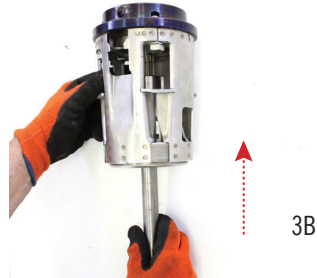
2 Fit COUPLING on SHAFT and tighten using HEXAGONAL ALLEN TOOL COUP (clockwise)



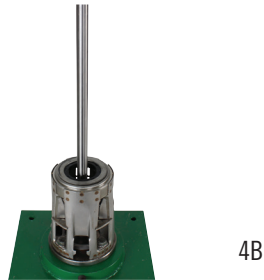
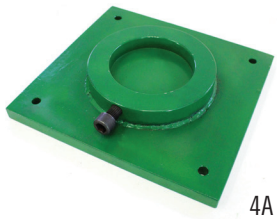
RECOMMENDED TO USE LOCTITE. NOT INCLUDED IN KIT*



3 Fit Interconnector and Coupling/Shaft on Jig 6" Motor using 19mm wrench and allen wrench (clockwise)



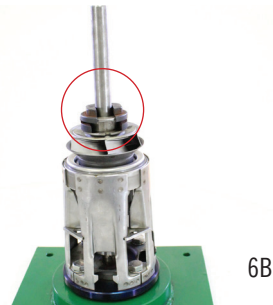
4 Set down on Fixture Seat and tighten Using Hexagonal Allen tool (clockwise)



5 Place BOTTOM STAGE IMPELLER on Shaft



6 Slide JIG FOR STOP RING on top and use WRENCH FOR IMPELLER NUT to tighten (clockwise)



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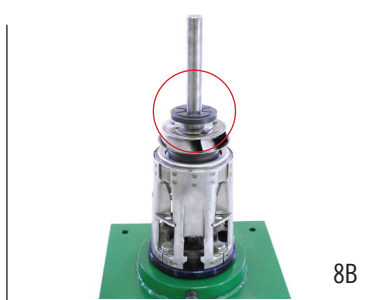


7 Place **TORQUE TESTING NUT** and use **TORQUE WRENCH WITH INSERT** to tight at correct torque (clockwise)



**REFER TO
 IMPELLER TORQUE
 (CHART 2 - PAGE 6)**

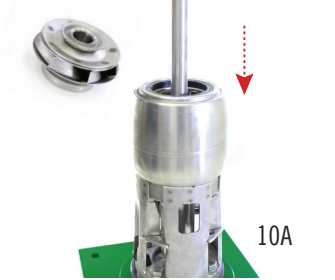
8 Place **STOP RING**



9 Place **BOTTOM STAGE DIFFUSER**



10 Place **MIDDLE STAGE IMPELLER**



Use **WRENCH FOR IMPELLER NUT TOOL** to tighten (clockwise)



Use **TORQUE TESTING NUT** and **WRENCH** to tight at correct torque (clockwise) (Step 7)



11 Place **MIDDLE STAGES DIFFUSER**



12 Add as many **MIDDLE STAGES** as required



Repeat steps 10 and 11 for every MIDDLE STAGE that you need to add to the wet end of the pump

Stages below a torqued IMPELLER should not rotate.

13 Place **TOP STAGE IMPELLER**



Use **WRENCH FOR IMPELLER NUT** to tighten (clockwise)



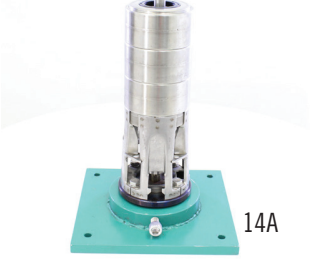
Use **TORQUE TESTING NUT** and **WRENCH** to tight at correct torque (clockwise) (Step 7)





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14 Loosen with Allen Tool, remove from Fixture Seat. Remove 6" Jig with Allen Tool from Assembly



14A



14B

15 Add TOP STAGE DIFFUSER and CHECK VALVE



15A



15B

16 Place DISCHARGE



16A



16B

17 Attach STRAPS to pump and fit at the bottom



17A



17B



17C

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

18 Place NUTS to tighten STRAPS using SOCKET FOR STRAP



18A



18B

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



REFER TO STRAP TORQUE (CHART 2 - PAGE 6)

19A



19B

20 Pull out SHAFT using DEPTH TOOL



20A



20B

21 Use DEPTH CALIPER to check shaft clearance



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

21A



21B

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22 Pull out SHAFT using DEPTH TOOL



22A

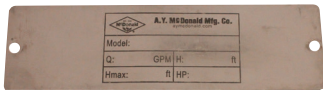
23 Use DEPTH CALIPER to check shaft clearance



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

23A

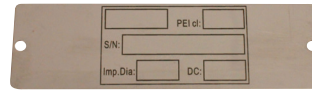
24 Add PLATE FOR MODEL INFORMATION



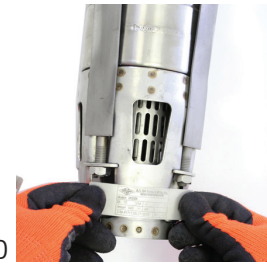
24A



24B



24C



24D

SHAFT TOLERANCES (CHART 1)

AXIAL CLEARANCE - H(MM)

MOTOR DIAMETER	MEASUREMENT REFERENCE	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	45	
150 GPM SERIES 6"	45	80	
150 GPM SERIES 6" x 4"	35	80	
230 GPM SERIES 6"	45	80	
230 GPM SERIES 6" x 4"	35	80	
300 GPM SERIES 6"	45	80	
300 GPM SERIES 6" x 4"	35	80	
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

