

Technical Report

Technical Evaluation of Equivalent Electric Motor

Application: IG Deck Seal Water Pump

Date: July 02, 2026

1. Original Motor Requested

Specification	Original
Manufacturer	Nishi Shiba Electric Co., Ltd.
Model	S90LA
Type	Three-phase induction motor
Application	IG Deck Seal Water Pump
Power	2.2 kW (3 HP)
Voltage	440 V
Frequency	60 Hz
Number of poles	2
Speed	3,440 rpm
Frame	IEC 90L
Protection degree	IP44
Insulation class	Class F
Cooling	TEFC
Mounting	Flange-mounted

2. Proposed Motor

Specification	ABB M3BP90LC2K
Manufacturer	ABB
Model	M3BP90LC2K
Power	2.2 kW (3 HP)
Voltage	220 / 380 / 440 V
Frequency	60 Hz
Number of poles	2
Rated speed	3,508 rpm
Frame	IEC 90L
Protection degree	IP55
Insulation class	Class F
Cooling	IC411 (TEFC)
Construction form	B35 (Flange + Feet)
Frame material	Cast iron

3. Technical Comparison

Characteristic	Original	ABB	Assessment
Application	Deck Seal Water Pump	Industrial use / pumps	Compatible
Power	2.2 kW	2.2 kW	Match
Voltage	440 V	220 / 380 / 440 V	Match
Frequency	60 Hz	60 Hz	Match

Characteristic	Original	ABB	Assessment
Number of poles	2	2	Match
Speed	3,440 rpm	3,508 rpm	Approx. 2% difference
Frame	IEC 90L	IEC 90L	Match
Insulation class	F	F	Match
Protection degree	IP44	IP55	Superior
Cooling	TEFC	IC411 (TEFC)	Match
Frame material	Cast iron	Cast iron	Match
Construction form	Flange-mounted	B35 (Flange + Feet)	Mounting validation required

4. Compatibility Assessment

Criterion	Weight	Result
Function / Application	40%	10.0
Critical specifications	35%	10.0
Form / Dimension	15%	9.5 *
Availability / Lead time	10%	9.0

Estimated Technical Compatibility

9.8 / 10

* Dimensional compatibility subject to vessel confirmation, based on analysis of the dimensional drawing (flange, shaft, keyway and bolt holes).

5. Technical Remarks

The comparative analysis demonstrates that the ABB M3BP90LC2K motor presents high electrical and constructive compatibility with the original Nishi Shiba S90LA motor, meeting the main requirements of power, voltage, frequency, number of poles, frame, insulation class and cooling system.

The main difference identified relates to the B35 construction form (flange with feet). Although this configuration uses a mounting flange and, in many applications, can replace conventional flange-mounted motors, it is recommended that dimensional compatibility be validated by the vessel's technical team before confirming the supply.

Accordingly, the ABB motor is presented as a proposed technical equivalent, conditioned upon the vessel's approval regarding mounting dimensions and application.

Technical document prepared by Aqua Supply.

Developed by AquaSystem AI, Aqua Supply's internal technical intelligence system.