



Instruction Manual

Johnson Ultra Ballast Pump



WHERE IDEAS MEET INDUSTRY

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Ultra Ballast — Self-priming, flexible impeller pump flange mounted to DC motorn 12/24 V

Typical applications

The Ultra Ballast Pump has been designed to pump water into ballast tanks. When reversed it will also pump water out of them.

Design features

Body: Bronze

Impeller: MC 97 rubber.

Seal: Lip seal, NBR rubber

O-ring: NBR rubber

Connection: 1/2" Internal BSP/NPT
or 1" hose (ø 25 mm)

Liquid

temperature: Max +55°C

Motor: 0,25 kW, 12/24 V DC
with built in thermal

protection

Total enclosed

Reversible

Shaft: Stainless steel

Bearings: Permanent lubricated,
sealed, ball bearings

The motor is ignition protected according to ISO 8846 (Small craft

- Electrical devices - Protection against ignition of surrounding flammable gases).

Type designation

Type	Part No
F4B-11(BSP)	12 V 10-24690-01
F4B-11 (BSP)	24 V 10-24690-02
F4B-1107 (NPTF)	12V 10-24690-03
F4B-1107 (NPTF)	24V 10-24690-04

Pressure and capacity data

(based on water at 20°C and at nominal voltage of the motor)

				Ampere		
Bar	kPa	psi	l/min	USGM	12 V	24 V
Cont. duty						
0	0	0	52	13,7	12,5 A	6,5 A
0,1	10	1,4	51	13,5	13 A	7,0 A
0,3	30	4,2	47	12,4	14,7 A	7,5 A
0,6	60	8,5	42	11,1	16,5 A	8,0 A
Intermittent duty						
0,9	90	12,8	36	9,5	17,5 A	9,1 A
1,2	120	17,1	28	7,4	19,7 A	9,5 A
1,5	150	21,3	18	4,7	21 A	10,0 A
Fuse required					25 A	15 A

Installation and maintenance

Installation

Pump should be mounted in a dry, cool ventilated location.

Pump may be mounted in any position without loss of efficiency; however, it is suggested that the pump head be down if vertical mounting is desired. Mount motor as close as possible to power source to obtain full voltage.

The pump should be installed so that the motor is protected from rain, wash down or bilge water.

Please note that pump body can be turned 180° in relation to motor. This changes flow direction.

When using a vac-on-switch, mount it on the connection on the inlet side of the pump. When using a pressure switch, mount it on the connection on the outlet side of the pump.

Don't handle diesel fuel or other mineral oils with this pump. (For these liquids use pump type F4B-19)

This pump cannot run against a closed outlet. Risk for overheating.

Plumbing

Use hose that does not kink when bent, and also with sufficient wall thickness preventing collapse when used on suction side, eg. reinforced hoses.

Hoses should be routed so that some water will remain in pump body to wet impeller for easy start up.

Use a strainer at intake hose to prevent from trash and solids entering the pump. In order to ensure good priming always keep connections airtight.

Electrical installation

The pump must be installed according to ISO 10133 (Small craft - Electrical system - Extra low voltage DC installation for continuous current). Note: The fuse must be ignition protected.

The motor is equipped with built in thermal protection to prevent the motor from overheating. The protection is automatically restored when the motor is cooled.

If the pump is connected with separate earth lead, this should be yellow/green and connected to the motor base.

See the wiring table for correct installation.

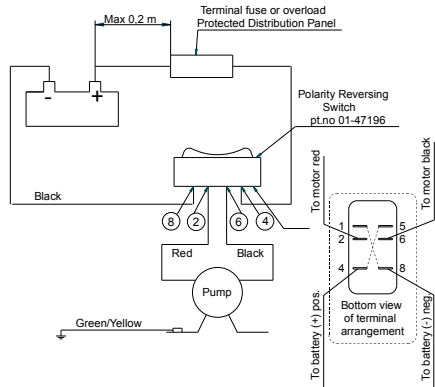
Choose wire size in accordance with total wire length (see table beside).

The pump should be operated by a Polarity Reversing switch, through an over current protected distribution panel fitted with a 25 Amp/12V or 15 Amp/24V breaker or fuse.

The wire connections must be sealed.

Note: Before installation with electrical control systems, check that equipment to be used is of sufficient rated capacity to accept ampere draw of motor.

Wiring Table



Wiring dimensions

(based on 3% voltage drop)

Wire size	Max wire length* in m	12V	24V
2,5 mm ²	# 14 AWG	2,7	11
4 mm ²	# 12 AWG	4,4	17,6
6 mm ²	# 10 AWG	6,6	26,3
10 mm ²	# 6 AWG	11	
16 mm ²	# 4 AWG	17,6	
25 mm ²	# 2 AWG	27,4	

*The wire length is the total distance from the battery to the pump and back to the battery. It is recommended to use a relay to shorten the main leaders.

Operation

The Ultra Ballast pump is reversible so it can both add liquid ballast and then pump it overboard when needed. As an alternative you may pump liquid ballast from one tank to another and reversed.

At need for adding ballast you flip the switch to fill position and watch for indicators that tank is full, then switch pump off.

To reduce ballast, flip switch to drain position. The pump will reverse to pump ballast back over board. Watch indicator for an empty tank and switch pump off.

The same operation is used for ballast transfer between two tanks.

Self-priming

Pump is self-priming up to 4 m. Intake lines must be air-tight to ensure self-priming. Note: Pump will prime when impeller is dry but suction lift up to 4 m is only obtainable when impeller is lubricated with liquid being pumped or Johnson Impeller Lubricant.

For permanent installations where suction lift exceeds 4 m, a foot valve should be used to assure priming on start up.

ALWAYS USE JOHNSON IMPELLER LUBRICANT (glycerin) for impeller lubrication. Never use grease or mineral oils.

Continuous duty

For continuous duty 0,6 bar (60 kPa, 8,5 psi) maximum head is permissible. Max ambient temp is +60°C.



Dry running

Do not run dry for more than 30 seconds. Lack of liquid will burn the impeller and damage the seals.



Caution. Explosion Hazard.

Do not pump gasoline, solvents, thinners or other flammable liquids.
Do not handle highly concentrated or organic acids



Caution. Explosion Hazard.

Never operate a motor which in any way has been manipulated and lost its full enclosure.

Temperature

Max ambient temperature: +60°C.
The life of the impeller depends on the temperature of liquid being pumped. Temperatures between +5°C and +55°C give normal life. Higher or lower temperature will reduce the life.



Caution.

The normal working temperature of the motor may reach approx. +80°C (surface temperature) which may burn your skin.

Freezing weather

Drain unit by loosening the end cover. Glycol based anti-freezes can be used but do not use petroleum based anti-freeze compounds.

Waste handling / material recycling

At the product's end of life please dispose of the product according to applicable law. Where applicable please disassemble the product and recycle the parts material.

Service instructions

(see page27-28)

Disassembly

1. Back off the endcover screws (7), remove the endcover (5) and O-ring (6).
2. Pull out the impeller (3) using a slip joint plier.
3. Back off and remove the nuts (8) and washers (9) holding the body. Separate the body from the motor.
4. Remove the lip seal (4).
5. Do not disassemble the motor.

Assembly

1. Moisten the new lip seal with soapy water (5% soft soap), mount the seal with the lip facing towards the impeller.
2. Lubricate the motor shaft with glycerin of the like. Fit the body to the motor.
3. Lubricate inside the pump body where the impeller should be placed with Johnson Impeller Lubricant, provided with the spare Impeller. Also lubricate the surface of the end cover. Never use grease or mineral oils for lubrication.

4. Fit the impeller with a rotating movement in the intended direction of the pump rotation.
5. Lubricate the O-ring with glycerin and fit it in its position and fasten the end cover.

Waste handling/ material recycling

At the products end of life, please dispose of the product according to applicable law. Where applicable, please disassemble the product and recycle the parts material.

Impeller

The impeller, pt.no. 09-824P-1, is a very important security device and should be replaced every year with a Johnson original impeller. Always lubricate Impeller at replacement with Johnson Impeller Lubricant, provided with the spare kit.

Accessories

Polarity Reversing Switch Kit
Part No. 09-47196



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