



# Impeller Pumps & Impellers

Photo: Swedish Coast Guard



Flexible impeller pumps provide an efficient solution to most raw water pumping needs. The pumps are self-priming and can pass fairly large solids without clogging or damaging the pumps. Our engine cooling pumps are designed to the demands of engine manufacturers and are built to take rough treatment.

We supply engine cooling pumps to the world's leading marine motor manufacturers, not just because of our renowned pumps; but also because of the heart of an engine cooling pump: the impeller.

## With SPX FLOW Johnson Pump Marine Original Impellers you get:

- Ensures correct cooling flow
- Stable pressure delivery over time
- Significantly longer service life
- Excellent self-priming capability
- Ensures sufficient cooling directly at start up
- Our impellers are manufactured to strict tolerances for optimal functionality unique MC97 rubber compound in many of our impellers
- Correct impeller dimensions
- Optimized to provide maximum life, especially for applications where the end user doesn't run the engine on a regular basis:
  - Stable pressure delivery over time
  - Minimized failures due to fatigue
  - Minimized swelling

# Self-Priming Flexible Impeller Pumps

## Heavy Duty Impeller Pumps

A range of multipurpose bronze pumps. Compact design, raw water resistant pumps at an attractive price – with the renowned SPX FLOW Johnson Pump quality. These pumps are designed for a number of applications on board.

With excellent self-priming capability, these pumps are ideal as cooling water pumps for marine engines, bilge pumps, deckwash pumps, fresh water pumps, fuel transfer pumps and other applications. Also ideally suited on shore to empty septic tanks, to flush clean and to fill water tanks.

Available in sizes from 3/8" to 1 1/2" (4 l/min to 279 l/min).

Vacuum switch (see page 44) as extra accessory for F8B-8007 only.

**Pump Body** Bronze  
**Shaft** Stainless steel  
 The shaft is mounted with permanently lubricated double ball bearings

**Seal** Mechanical seal  
**Cam** Full or reduced  
**Connection** BSP or NPT



F35B-8007

### HEAVY DUTY IMPELLER PUMPS

Part No.	Description**	Impeller	Connection	Length	Width	Height	Weight	Drive Shaft Ø
10-24569-51	F35B-8007	09-808B-1	3/8" NPT	109 mm – 4.29"	80 mm – 3.14"	30 mm – 1.18"	0.5 kg – 1.2 lbs	3/8"
10-24570-51	F4B-8007	09-810B-1 09-810B-9***	3/8" NPT	111 mm – 4.37"	80 mm – 3.15"	50 mm – 1.97"	0.8 kg – 1.8 lbs	3/8"
10-24571-51	F5B-8007	09-1027B-1 09-1027B-9***	3/4" NPT	151 mm – 5.95"	106 mm – 4.17"	50 mm – 1.97"	1.6 kg – 3.5 lbs	5/8"
10-24572-51	F7B-8007	09-1028BT-1 09-1028B-9***	1" NPT	170 mm – 6.69"	120 mm – 4.72"	50 mm – 1.97"	1.9 kg – 4 lbs	5/8"
10-13021-95	F8B-8007*	09-819B-00 09-819B-9***	1 1/4" NPT	217 mm – 8.54"	160 mm – 6.3"	65 mm – 2.56"	5.9 kg – 13 lbs	1"
10-13021-96	F8B-8007*	09-819B-00 09-819B-9***	1 1/2" NPT	217 mm – 8.54"	160 mm – 6.3"	65 mm – 2.56"	5.9 kg – 13 lbs	1"

\*1" shaft keyed

\*\*See page 55 for pump type specification system

\*\*\*Pump with nitrile impeller available on request



10-24569-51  
F35B-8007



10-24572-51  
F7B-8007



10-13021-95  
F8B-8007



10-13021-96  
F8B-8007

### FLEXIBLE IMPELLERS - OPERATING PRINCIPLE

- A vacuum is created as the flexible impeller vanes straighten upon leaving the cam, drawing liquid into the pump.
- The rotating impeller carries liquid from the inlet to the outlet port. As a consequence of their design, flexible impeller pumps can pass fairly large solids.
- When the flexible impeller vanes regain contact with the cam, they bend and the liquid is discharged from the pump in a uniform flow. Liquids can be pumped in the opposite direction by reversing the rotation of the pump.





10-24210-5  
F5B-3007



10-24209-7  
F7B-3007



10-13024-1  
F8B-3000 VF



10-13026-7  
F9B-3007



10-13175-01  
F8B-3000 TSS



10-13225-01  
F9B-3000 VF



10-13177-01  
F9B-3000 TSS



10-13121-04  
F95B-3007



### EXTRA HEAVY DUTY IMPELLER PUMPS

Whenever you need greater strength or service from a pump, use an extra heavy duty flexible impeller pump with separate bearing housing and mechanical seal for less wear and longer life. These pumps cover the entire range of marine applications and may be used as cooling water pumps, bilge pumps, deckwash pumps, emergency and fire fighting pumps, etc.

Available in sizes from 3/4" to 2 1/2" (13 l/min to 625 l/min). Wearing parts are easily replaceable and service kits are available for all standard models. **Vacuum switch as extra accessory, see below.**

Part No.	Description*	Impeller	Connection	Length	Width	Height	Weight	Drive Shaft Ø
10-24210-5	F5B-3007	09-1027B-1 09-1027B-9-00**	3/4" NPT	195 mm – 7.68"	106 mm – 4.17"	88 mm – 3.46"	2,9 kg – 6.5 lbs	17 mm
10-24209-7	F7B-3007	09-1028BT-1 09-1028B-9**	1" NPT	213 mm – 8.38"	120 mm – 4.72"	93 mm – 3.66"	3,1 kg – 6.9 lbs	17 mm
10-13024-1	F8B-3000 VF	09-819B-00 09-819B-9**	Port Adaptor Kit	255 mm – 10.04"	152 mm – 5.98"	154 mm – 6.06"	7,6 kg – 16.5 lbs	1"
10-13026-7	F9B-3007	09-802B 09-814B***	2" NPT	282 mm – 11.1"	192 mm – 7.56"	157 mm – 6.18"	9,3 kg – 21 lbs	1"
10-13175-01	F8B-3000 TSS	09-819B-00 09-819B-9**	Port Adaptor Kit	255 mm – 10.04"	198 mm – 7.79"	151 mm – 5.94"	7,6 kg – 16.5 lbs	1"
10-13225-01	F9B-3000 VF	09-802B 09-814B***	Port Adaptor Kit	282 mm – 11.1"	152 mm – 5.98"	175 mm – 6.89"	9,3 kg – 21 lbs	1"
10-13177-01	F9B-3000 TSS	09-802B 09-814B***	Port Adaptor Kit	282 mm – 11.1"	200 mm – 7.87"	151 mm – 5.94"	9,3 kg – 21 lbs	1"

\*See page 55 for pump type specification system

\*\*Pump with nitrile impeller available on request

\*\*\*Pump with alternative impeller available on request

### EXTRA HEAVY DUTY, HIGH FLOW, IMPELLER PUMPS

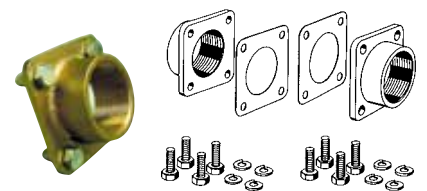
Part No.	Description**	Impeller	Connection	Length	Width	Height	Weight	Drive Shaft Ø
10-13121-04	F95B-3007	09-820B	2 1/2" NPT	354 mm – 13.93"	246/ 295 mm 9.68"/11.61"	226/ 201 mm 8.89"/7.91"	17,2 kg – 38 lbs	24 mm

\*\*See page 55 for pump type specification system

### PORT ADAPTOR KIT

Part No.	Description*
09-43112	1 1/2" BSP for F8B-3000/5000-VF, F8B-3000/5000-TSS
09-46557-01	2" BSP for F9B-3000/5600-VF and F9B-3000/5600-TSS
09-45562	1 1/2" NPT for F8B-3000/5000-VF, F8B-3000/5000-TSS
09-46557-02	2" NPT for F9B-3000/5600-VF and F9B-3000/5600-TSS

\*See page 55 for pump type specification system



### VACUUM SWITCH

For automatic shut off operation to prevent pump damage. The vacuum switch works with all self-priming impeller pumps and should be used for e.g. bilge pumping/emptying of tanks to prevent the pump from dry running. The vacuum switch automatically shuts the pump off when the bilge/tank is dry. With the switch fitted, you can start the pump by remote push button or manually by depressing lever on the switch.

Part No.	Description
09-45053	Vacuum Switch

### HEAVY DUTY ELECTRO-MAGNETIC CLUTCH PUMPS

With an electro-magnetic clutch you will have pumping power whenever needed, at a push of a button, without being at the pump. Combined with a vacuum switch (recommended for bilge pump application), the clutch will automatically disengage whenever the pump starts priming air, thereby preventing dry running and pump damage. Automatically controlled pumps are available in sizes from 1" to 2½" (20 l/min to 625 l/min), with clutches in 12 or 24 volts. Wearing parts are easily replaceable and service kits are available for all standard models. Vacuum Switch as extra accessory, see page 44. **Clutch to be ordered separately.**



10-24577-98



10-13022-95



10-13022-96

Part No.	Description**	Impeller	Connection	Length	Width	Height	Weight
10-24577-98	F7B-50017	09-1028B	1" NPT	156 mm – .14"	120 mm – 4.72"	93 mm – 3.66"	5.8 kg – 12.7 lbs
10-13022-98	F8B-50017*	09-819B-00	1½" NPT	225 mm – 8.85"	160 mm – 6.29"	124 mm – 4.88"	9.9 kg – 22 lbs
10-13022-95	F8B-50017	09-819B-00	1¼" NPT	225 mm – 8.85"	160 mm – 6.29"	124 mm – 4.88"	9.9 kg – 22 lbs
10-13022-96	F8B-50017*	09-819B-00	1½" NPT	225 mm – 8.85"	160 mm – 6.29"	124 mm – 4.88"	9.9 kg – 22 lbs

\* Same thread on -96 and -98. Footprint for -96 US version.

\*\* See page 55 for pump type specification system

#### CHOICE OF CLUTCH

Part No.	Description
0.3454.001	Electro-Magnetic Clutch, 12V 2xA 7" Pulley
0.3454.002	Electro-Magnetic Clutch, 24V 2xA 7" Pulley
0.3454.003	Electro-Magnetic Clutch, 12V 1xB 7" Pulley
0.3454.004	Electro-Magnetic Clutch, 24V 1xB 7" Pulley
0.3454.050	Coil 12V
0.3454.051	Coil 24V



10-24116-98



10-13027-98



10-13176-99



10-13025-99



10-13226-99



10-13178-99

**Note! Clutch to be ordered separately.**

### EXTRA HEAVY DUTY ELECTRO-MAGNETIC CLUTCH PUMPS

Part No.	Description*	Impeller	Connection	Length	Width	Height	Weight
10-24116-98	F7B-5007	09-1028B	1" NPT	226 mm – 8.9"	120 mm – 4.72"	93 mm – 3.66"	6.9 kg – 15 lbs
10-13025-99	F8B-5000 VF	09-819B-00	Port Adaptor Kit	265 mm – 10.43"	152 mm – 5.98"	154 mm – 6"	11.9 kg – 26 lbs
10-13176-99	F8B-5000 TSS	09-819B-00	Port Adaptor Kit	265 mm – 10.43"	198 mm – 7.79"	151 mm – 5.94"	11.9 kg – 26 lbs
10-13027-98	F9B-5607	09-802B 09-814B**	2" NPT	290 mm – 11.42"	192 mm – 7.56"	157 mm – 6.18"	13.2 kg – 29 lbs
10-13226-99	F9B-5600 VF	09-802B 09-814B**	Port Adaptor Kit	290 mm – 11.4"	152 mm – 5.98"	175 mm – 6.88"	13.2 kg – 27 lbs
10-13178-99	F9B-5600 TSS	09-802B 09-814B**	Port Adaptor Kit	290 mm – 11.4"	200 mm – 7.87"	151 mm – 5.94"	13.2 kg – 27 lbs

\*See page 55 for pump type specification system

\*\*Pump with alternative impeller available on request

**EXTRA HEAVY DUTY, HIGH FLOW ELECTRO-MAGNETIC CLUTCH PUMP**

Part No.	Description**	Impeller	Connection	Length	Width	Height	Weight
10-13143-98	F95B-5007	09-820B	2½" NPT	358 mm 14.09"	246/295 mm 9.68"/11.61"	226/201 mm 8.89"/7.91"	21 kg – 46 lbs

The Port Adaptors can be fitted either vertically or horizontally.

\*\*See page 55 for pump type specification system



10-13143-98  
F95B-5007

**Pump Body**

Bronze  
Connection for vacuum switch

**Shaft**

Stainless steel  
The shaft is mounted with permanently lubricated double ball bearings

**Seal**

Mechanical seal

**Cam**

Full or reduced

**Connection**

BSP or NPT

**Clutch**

Electro-Magnetic 12/24V DC

**Pulley**

2xA or 1xB-groove

**Pulley Ø**

Ø 178 mm / 7"

**F7B-9 FLANGE MOUNT**

John Deere flange mount PTO drive style cooling pump. Fits RE47016, 4039D and 4045T flange mount engines.

Part No.	Description**	Impeller
10-24398-01	F7B-9	09-1028BT-1
10-24398-02	F7B-9	09-1028BT-1

\*\*See page 55 for pump type specification system



10-24398-01  
F7B-9

**F7B-9 FLANGE MOUNT**

John Deere, Kohler Flange mount PTO drive style cooling pump. Fits John Deere powertech GBL6068TFM75/TFM Engines. Fits Kohler 40E02/33EF02, 65E02/55EF02, 30E02/20EF02, 99E02/80LF02.

Part No.	Description**	Impeller
10-24907-01	F7B-9	09-1028BT-1

\*\*See page 55 for pump type specification system



10-24907-01  
F7B-9

**F35B PEDESTAL STYLE**

Gen set Engine cooling pump - pedestal style. Fits Onan engine and MAJB style engines. Fits universal 1.400000001, engine. Fits Arona, Nanni, Farymann, Fischer Panda and many more.

Part No.	Description**	Impeller
10-35038-5	F35B-8027	09-808B-1
10-35038-5E	F35B-8027	09-808B-1

\*\*See page 55 for pump type specification system



10-35038-5  
F35B-8027

**F5B-9 CRANKSHAFT**

Crankshaft style cooling pump featured on older style small block GM marine engines. Easy to access impeller design.

Part No.	Description**	Impeller
10-24228-1	F5B-9	09-1027B-10

\*\*See page 55 for pump type specification system



10-13143-98  
F95B-5007

**F6B-9 CRANKSHAFT**

Crankshaft style cooling pump featured on Indmar, Marine Power, Volvo, PCM engines. 15% more flow. Industry standard.

Part No.	Description**	Impeller
*10-24930-01	F6B-9	09-812B-1

\* Replaces 10-24805-01 + 10-24915-01

\*\*See page 55 for pump type specification system



10-24930-01  
F6B-9

**F7B-9 CRANKSHAFT**

John Deere Crankshaft style pump. Featured on John Deere 4039D, 4045T and RE49556 Engines. Mounts to crankshaft pulley.

Part No.	Description**	Impeller
10-24428-01	F7B-9	09-1028BT-1

\*\*See page 55 for pump type specification system



10-24428-01  
F7B-9

# Bronze Impeller Pump Performance Tables

*Note!* Reduced cam - 30-40% lower capacity  
 Impeller of nitrile - adjust total head approx. 30% down

F35B			700 rpm			900 rpm			1400 rpm			1750 rpm			2000 rpm			2500 rpm		
Bar	kPa	ft	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM
0.3	30	10.1	0.06	5.2	1.4	0.09	6.8	1.8	0.13	11.2	3.0	0.16	14.0	3.7	0.18	16.0	4.2	0.18	20.5	5.4
0.6	60	20.1	0.09	4.6	1.2	0.09	6.2	1.6	0.13	10.6	2.8	0.16	13.7	3.6	0.18	15.8	4.1	0.18	19.6	5.2
1.0	100	33.5	0.09	4.0	1.1	0.09	5.6	1.5	0.18	9.2	2.4	0.18	11.8	3.1	0.18	13.6	3.6	0.18	17.0	4.5

F4B			700 rpm			900 rpm			1400 rpm			1750 rpm			2000 rpm			2500 rpm		
Bar	kPa	ft	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM
0.3	30	10.1	0.06	12.0	3.2	0.09	15.0	4.0	0.13	23.0	6.0	0.17	27.0	7.1	0.18	30.5	8.1	0.18	34.5	9.1
0.6	60	20.1	0.09	11.0	2.9	0.09	14.0	3.7	0.13	21.0	5.4	0.17	25.0	6.6	0.18	28.0	7.4	0.18	33.0	8.7
1.0	100	33.5	0.09	9.0	2.4	0.09	11.0	2.9	0.18	18.0	4.8	0.18	22.0	5.8	0.18	25.0	6.6	0.18	29.5	7.8
1.5	150	50.3	0.09	4.5	1.2	0.09	7.0	1.8	0.18	13.5	3.6	0.18	17.0	4.5	0.18	20.0	5.3	0.24	25.0	6.6

F5B			700 rpm			900 rpm			1400 rpm			1750 rpm			2000 rpm		
Bar	kPa	ft	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM
0.3	30	10.1	0.13	16.0	4.2	0.18	21.0	5.5	0.37	33.0	8.7	0.37	41.0	10.8	0.37	46.0	12.2
0.6	60	20.1	0.13	15.0	4.0	0.18	20.0	5.3	0.37	32.0	8.5	0.37	39.5	10.4	0.37	45.0	11.9
1.0	100	33.5	0.13	14.0	3.7	0.18	19.0	5.0	0.37	30.0	7.9	0.37	37.0	9.8	0.37	42.0	11.1
1.5	150	50.3	0.13	13.0	3.4	0.18	17.0	4.5	0.37	27.0	7.1	0.37	33.5	8.9	0.37	38.0	10.0
2.0	200	67.1	-	-	-	-	-	-	0.37	22.0	5.8	0.37	28.5	7.5	0.37	33.0	8.07

F7B			700 rpm			900 rpm			1400 rpm			1750 rpm			2000 rpm		
Bar	kPa	ft	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM
0.3	30	10.1	0.37	36.0	9.5	0.37	46.0	12.2	0.75	74.0	19.6	0.75	98.0	25.9	0.75	107.0	28.3
0.6	60	20.1	0.37	34.0	9.0	0.37	44.0	11.6	0.75	72.0	19.0	0.75	96.0	25.4	0.75	104.0	27.5
1.0	100	33.5	0.37	29.0	7.7	0.37	40.0	10.6	0.75	67.0	17.7	0.75	87.0	23.0	0.75	98.0	25.9
1.8	180	60.4	0.37	21.0	5.5	0.37	30.0	7.9	0.75	57.0	15.1	0.75	73.0	19.3	0.75	84.0	22.2
2.5	250	83.8	-	-	-	-	-	-	0.75	37.0	9.8	1.1	52.0	13.7	1.1	63.0	16.6

F8B			700 rpm			900 rpm			1400 rpm			1750 rpm			2000 rpm		
Bar	kPa	ft	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM
0.3	30	10.1	0.37	87.0	9.5	0.75	114.0	30.1	1.1	188.0	50.0	1.5	241.0	63.7	1.5	279.0	73.7
0.6	60	20.1	0.37	80.0	9.0	0.75	107.0	28.3	1.1	180.0	47.6	1.5	233.0	61.6	1.5	270.0	71.3
1.0	100	33.5	0.37	73.0	7.7	0.75	101.0	26.7	1.1	177.0	46.8	1.5	228.0	60.2	1.5	264.0	69.7
1.8	180	60.4	-	-	-	1.1	70.0	18.5	1.1	148.0	39.1	2.2	203.0	53.6	2.2	242.0	63.4
2.5	250	83.8	-	-	-	-	-	-	1.1	108.0	28.5	2.2	166.0	43.9	2.2	208.0	55.0

F9B-5000			700 rpm			900 rpm			1400 rpm			1750 rpm			2000 rpm		
Bar	kPa	ft	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM
0.3	30	10.1	0.75	129.0	34.1	0.75	170.0	44.9	1.5	268.0	70.8	1.5	331.0	87.5	2.2	388.8	102.7
0.6	60	20.1	0.75	124.0	32.8	0.75	161.0	42.5	1.5	260.0	68.9	2.2	323.0	85.3	2.2	383.1	101.2
1.0	100	33.5	0.75	118.8	31.4	1.1	156.0	41.2	1.5	255.6	67.5	2.2	315.2	83.3	3.0	379.2	100.2
1.8	180	60.4	1.1	105.0	27.7	1.1	140.0	37.0	1.5	235.0	62.1	2.2	286.1	75.6	3.0	351.3	92.8
2.5	250	83.8	1.1	83.7	22.1	1.5	102.0	26.9	2.2	208.0	55.2	3.0	266.0	70.3	3.0	304.1	80.3

F9B-5600			700 rpm			900 rpm			1400 rpm			1750 rpm			2000 rpm		
Bar	kPa	ft	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM
0.3	30	10.1	0.75	129.0	34.1	1.1	170.0	44.9	1.5	270.0	71.3	1.5	331.0	87.5	2.2	376.0	99.3
0.6	60	20.1	0.75	126.0	32.8	1.1	165.0	43.6	1.5	266.0	70.3	2.2	323.0	85.3	2.2	368.0	97.2
1.0	100	33.5	0.75	123.0	32.5	1.1	161.1	42.6	2.2	260.0	68.7	2.2	314.0	83.3	3.0	361.0	95.4
1.8	180	60.4	0.75	110.0	29.1	1.5	153.0	40.4	2.2	242.0	63.9	2.2	291.0	76.9	3.0	340.0	89.8
2.5	250	83.8	1.1	90.0	23.8	1.5	130.0	34.3	2.2	218.0	57.6	3.0	269.0	71.1	3.0	312.0	82.4
3.0	300	100.6	1.5	61.0	16.1	2.2	102.0	26.9	3.0	190.0	50.2	3.0	242.0	63.9	3.5	284.0	75.0
3.5	350	117.4	-	-	-	-	-	-	3.0	160.0	42.3	3.5	205.0	54.2	3.5	235.0	62.1

F95B			700 rpm			900 rpm			1400 rpm			1750 rpm			2500 rpm		
Bar	kPa	ft	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM	kW	l/min	GPM
0.5	50	16.8	0.75	182.6	48.2	1.1	236.5	62.5	1.5	384.2	101.5	2.2	483.6	127.8	4.0	626.7	165.5
1.0	100	33.5	1.1	172.7	45.6	1.1	231.3	61.1	1.5	372.0	98.3	3.0	472.9	124.9	5.5	617.9	163.2
1.5	150	50.3	1.1	160.1	42.3	1.5	214.5	56.7	2.2	350.4	92.6	3.0	444.1	117.3	5.5	583.8	154.2
2.0	200	67.1	1.1	132.3	35.0	1.5	181.0	47.8	3.0	315.4	83.3	3.5	406.2	107.3	5.5	553.1	146.1
2.5	250	83.8	1.5	79.5	21.0	2.2	137.8	36.4	3.0	267.6	70.7	4.0	361.3	95.5	7.5	506.4	133.8

## Engine Cooling – Raw Water Handling

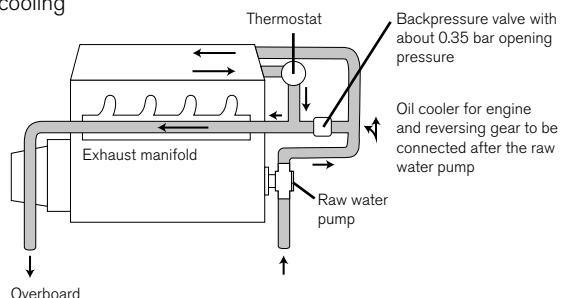
Flexible impeller pumps, F-series, provide an efficient solution to most raw water pumping needs. The primary advantage of a flexible impeller pump is its self-priming ability. As the vanes of the impeller are depressed and rebound, they create their own vacuum drawing fluid into the pump. A dry pump can lift water up to as much as 3 meters. Thus a flexible impeller pump being used for engine cooling needs not be located below the water line or manually primed. An added feature of flexible impeller pumps is that they can pass fairly large solids without clogging or damaging the pump. This reduces the need for filtering the incoming fluid.

For general raw or fresh water applications, the standard long lasting neoprene rubber impeller is used.

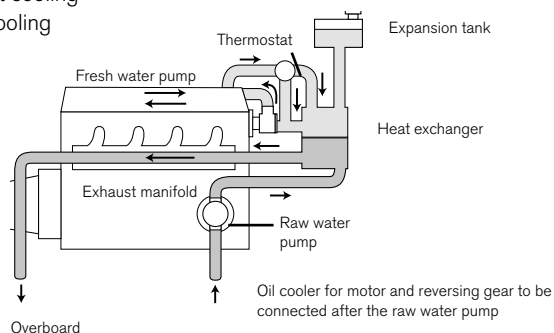
A general feature of all flexible impeller pumps is that they cannot be permitted to run dry for more than 30 seconds. Both the impeller and the seals depend upon the water for lubrication and will soon burn out if run dry. Wearing parts are easily replaceable, and service kits are available for all standard models.

## DIFFERENT TYPES OF COOLING SYSTEMS

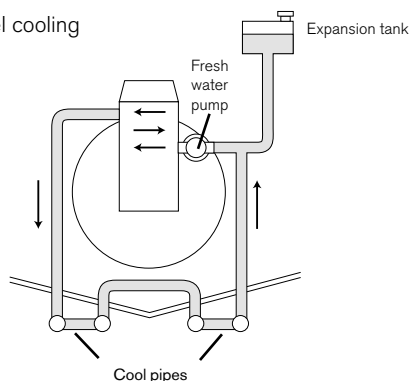
Direct cooling



Indirect cooling  
Inter cooling

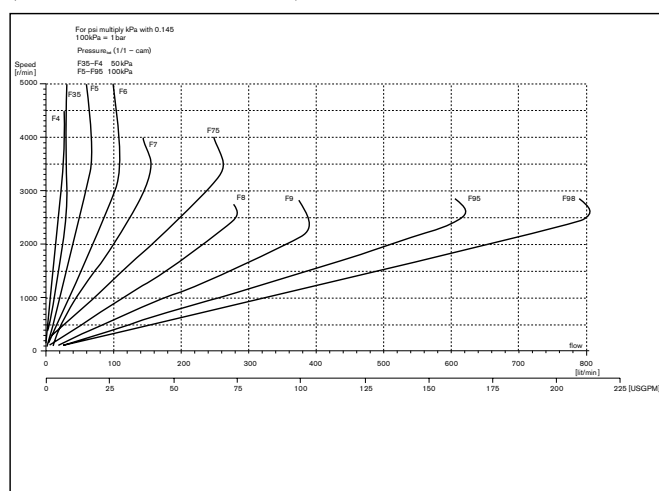


Keel cooling



### CAPACITY RANGE

(based on water at 20°C/68°F)



### FRESH WATER HANDLING

For circulation of the internal, closed, fresh water circuit of the cooling system Johnson Pump can offer a number of alternatives in its DC driven CM- and CO-series (see page 28 for further information). It is also common to use a flexible impeller pump for this purpose if it is located on the cold side of the system (max. 55°C). Other types of belt-driven centrifugal pumps may also be useful. The closed circuit normally transfers heat from the engine to the heat exchanger. The liquid is water and anti-freeze.

### COOLING CAPACITY

The required output of the cooling pump – raw water as well as fresh water handling – is related to

- engine size and type (gasoline or diesel)
- type of cooling system (size of heat exchanger)
- water cooled engine oil, reverse gear, exhaust system

Contact your local dealer for more information, or for indirect cooling systems your supplier of heat exchangers.

**PUMP MOUNTING**

Engine cooling pumps, the F-series, are available in several different styles and sizes to satisfy different cooling system needs. Flanged pumps which mount directly to the engine and crank shaft pulley mounted pumps are available for a wide variety of engines. SPX FLOW Johnson Pump Marine is one of the original equipment pump supplier to the largest manufacturers world-wide of inboard engines. Both flange mounted and pulley driven pedestal pumps can be used to provide cooling with a maximum of ease and flexibility. Pump ports are available in sizes from 3/8" to 2 1/2".

**FLANGE MOUNTED PUMPS**

Flanged pumps are normal pumps produced in high volumes, customer designed for flange-mounting at a power take off of the engine. Different types of drives can be used but mainly gears or any type of driving members are used.

**CRANK SHAFT PULLEY MOUNTED**

These pumps are designed for direct installation on the engine crank shaft pulley. Max. revs. 5.000 per minute.

To prevent the pump from rotating, a torque bracket from the fastening point on the pump body to a suitable point on the engine has to be used.

**PEDESTAL MOUNTED PUMPS**

Pulley driven pedestal mounted pumps are used when a free driving pulley is available on the engine.

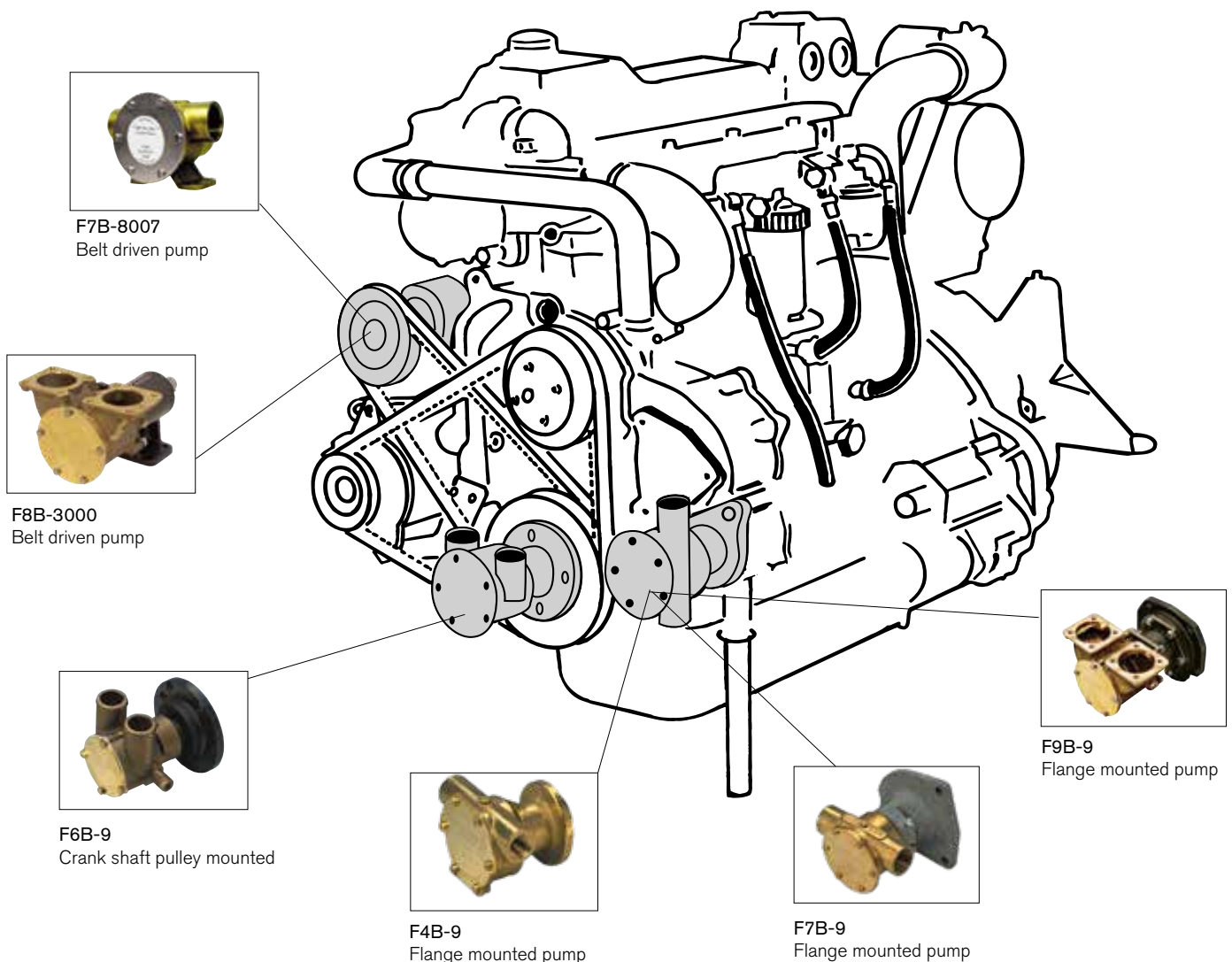
Two different types of pedestal mounted pumps are supplied:

▪ **FB-8 BSP / FB-8007 NPT**

A range of bronze pumps in compact design. Ideal as cooling water pumps in marine engines. Available in sizes from 3/8" to 1 1/2", all with permanently lubricated double ball bearings and mechanical seal.

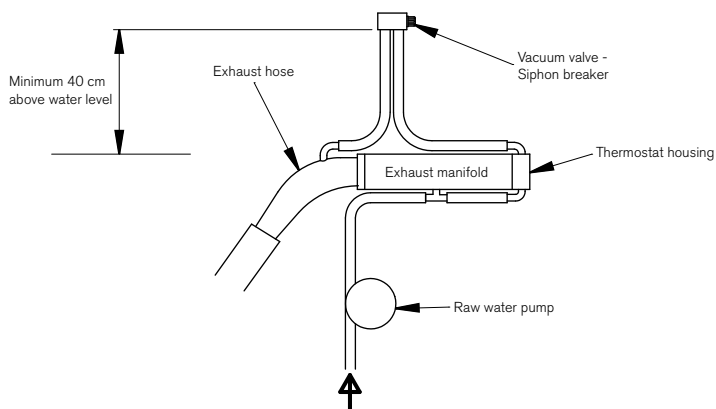
▪ **FB-3000 BSP OR FLANGE / FB-3007 NPT**

A range of extra heavy duty pedestal mounted pumps excellent for cooling purpose in commercial vessels. The design means separate bearing housings with permanently lubricated double ball bearings, mechanical shaft seal for extended service life. Wetted parts as wear plate, cam and endcover are easily replaceable.

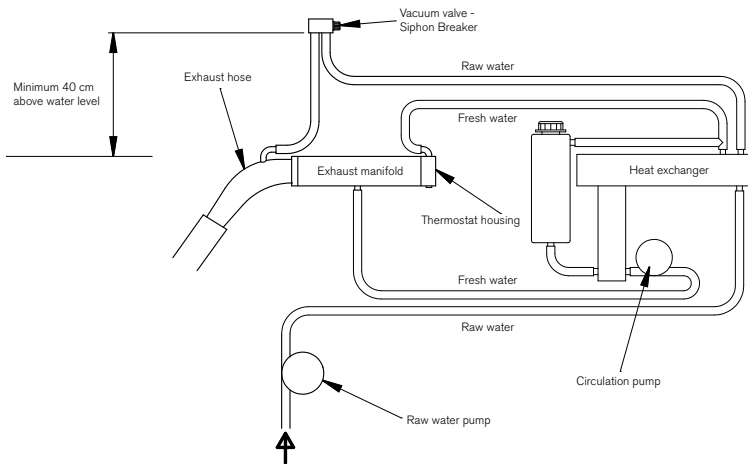




## Raw Water Cooled Engine



## Fresh Water Cooled Engine



- Non corrosive
- Easy to install
- Does not leak
- High quality plastic
- 5 spud sizes

### VACUUM VALVE - SIPHON BREAKER

A vacuum valve is a cheap insurance against water intrusion in a engine with expensive repairs as a consequence. The maximum ambient temperature should not exceed 60 °C.

The valve opens at a pressure which is equivalent to 3-5 cm Water Column. The materials which are used are resistant to sea water and fresh water, and to glycol compounds in appropriate concentrations. Avoid exposing the valve to oil and grease. If it has been in contact with such substances, please clean or replace it.

Part No.	Description
09-47316-01	Vacuum Valve 12 mm
09-47316-02	Vacuum Valve 16 mm
09-47316-03	Vacuum Valve 19 mm

Part No.	Description
09-47316-04	Vacuum Valve 22 mm
09-47316-05	Vacuum Valve 25 mm
09-47316-06	Service Kit Vacuum Valve



09-47165-01



09-47163-01



09-36166-01



09-950-9300



09-47086

Part No.	Description
09-47165-01	Puller for 09-1028BT
09-47163-01	Puller for 09-821BT
09-36166-01	Puller for 09-820B

Part No.	Description
09-950-9300	JP Impeller

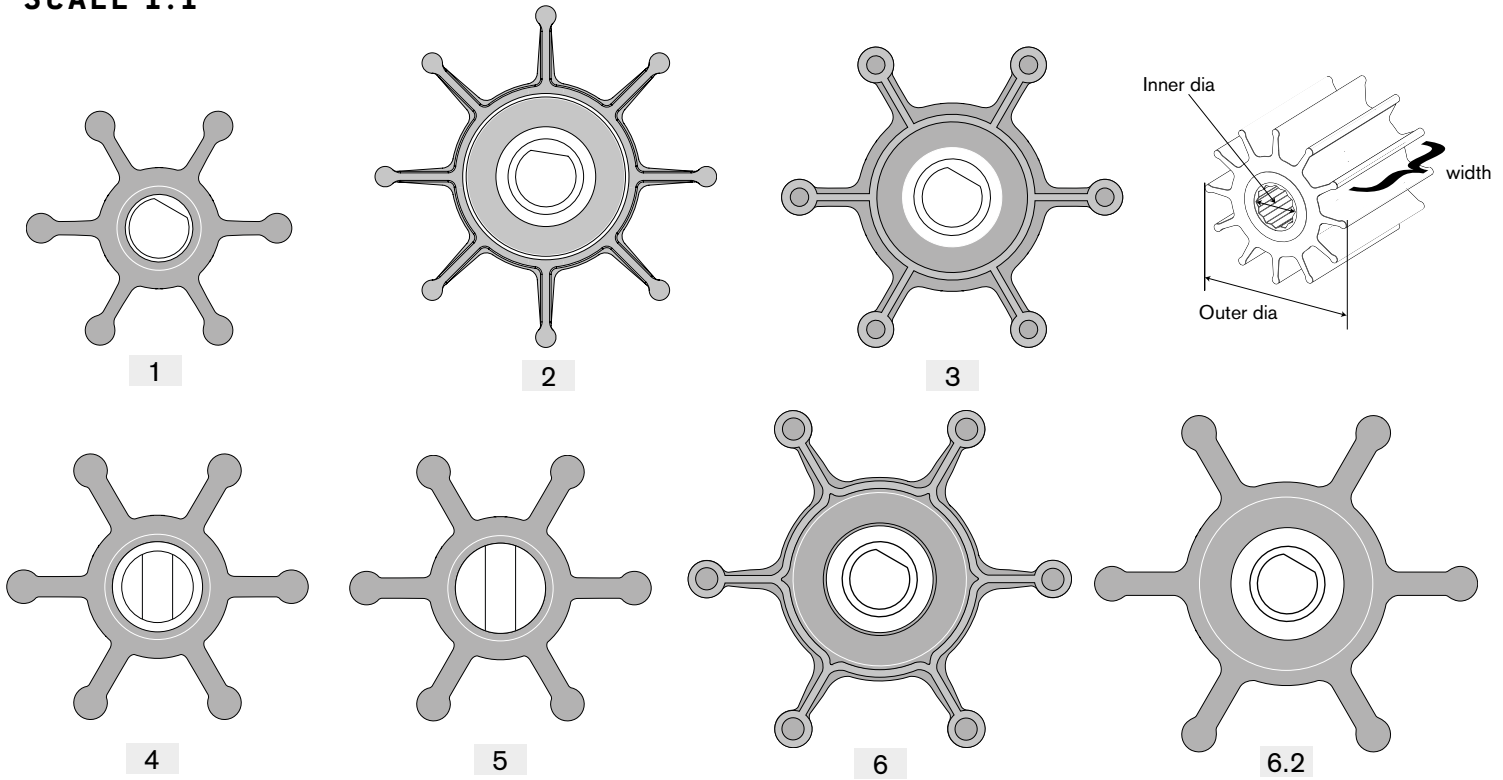
Part No.	Description
09-47086	Impeller Lubricant Display

Take good care of the cooling system - change to a new impeller every year!



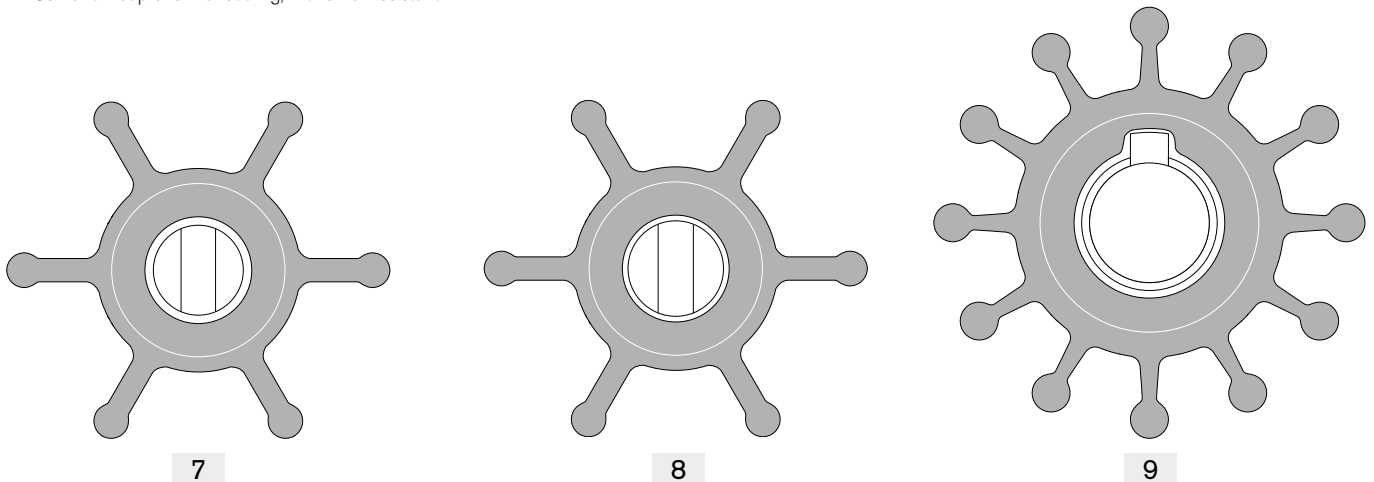
# SPX FLOW's Johnson Pump Marine Brand Original Impellers

SCALE 1:1



Ref.	Pump	Impeller	Material *	Outer dia		Inner dia		Width		Replaces Jabsco No	
				mm	inch	mm	inch	mm	inch	Europe	USA
1	F2	09-1077B-9	Nitrile	35.2	1.29	8.0 / Flat	0.31 / Flat	12.7	0.50		
2	F3	09-843S-9	Nitrile	45.2	1.78	8.0 / Flat	0.31 / Flat	12.8	0.50		
3	TA3P10	09-1052S-9	Nitrile	45.2	1.78	8.0 / Flat	0.31 / Flat	12.8	0.50		
4	F35	09-806B-1	MC97	40.0	1.58	9.5	0.37	19.0	0.75		4528-0001
5	F35	09-808B-1	MC97	40.0	1.58	12.0	0.47	19.0	0.75		22405-0001
6.2	F4	09-824P-1EZ	Polyurethane	50.8	2.00	8.0 / Flat	0.31 / Flat	22.0	0.87		6303-007-P "Green Impeller"
6	F4	09-824P-9	Nitrile	50.8	2.00	8.0 / Flat	0.31 / Flat	22.0	0.87		6303-0003

\* MC97 and Neoprene - for cooling, Nitrile - oil resistant

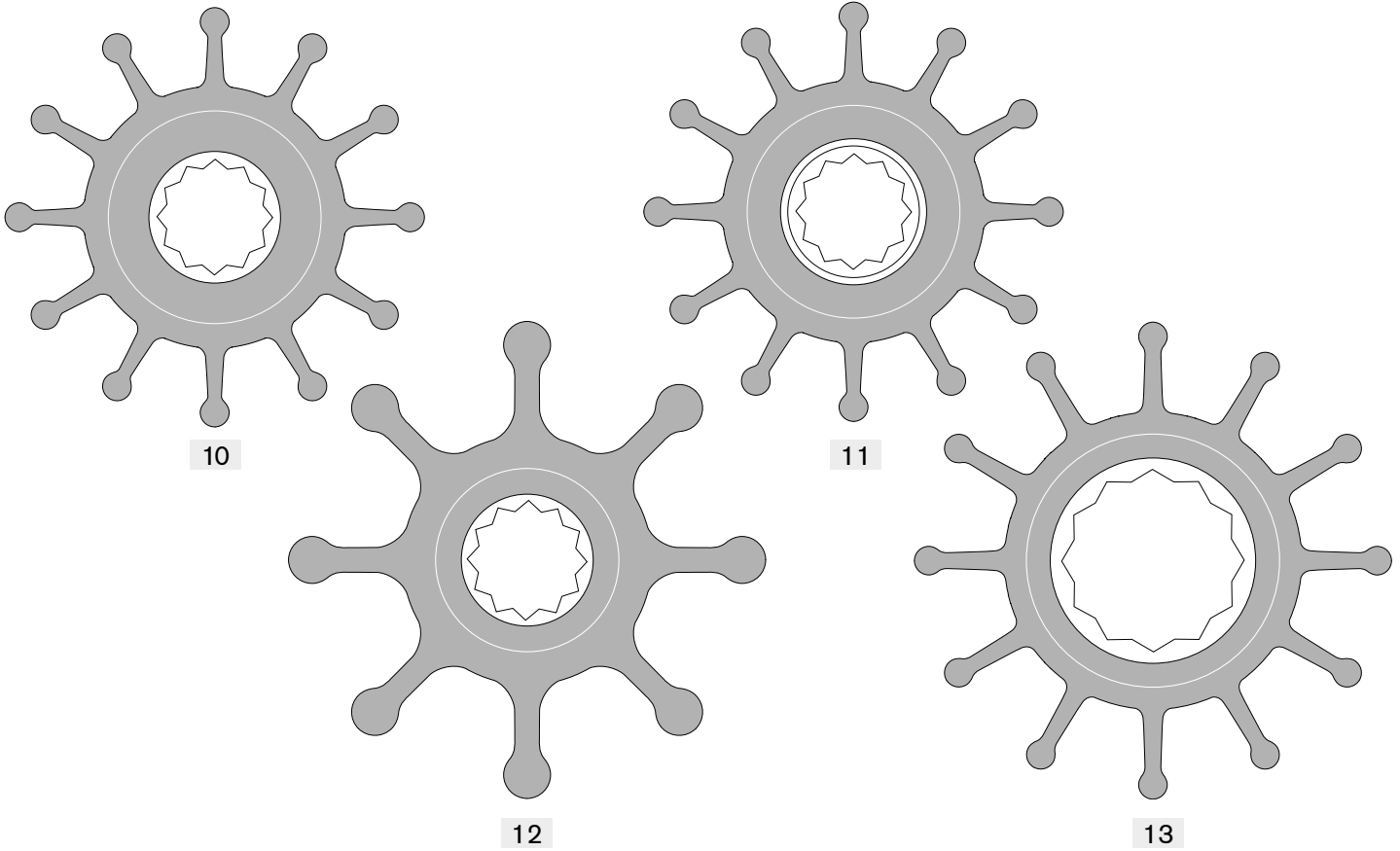


Ref.	Pump	Impeller	Material *	Outer dia		Inner dia		Width		Replaces Jabsco No	
				mm	inch	mm	inch	mm	inch	Europe	USA
7	F4	09-810B-1	MC97	50.8	2.00	12.0	0.47	22.0	0.87		18653-001
7	F4	09-810B-9	Nitrile	50.8	2.00	12.0	0.47	22.0	0.87		
8	F4	09-1026B-1	MC97	50.8	2.00	12.7	0.50	22.0	0.87		673-0001
8	F4	09-1026B-9	Nitrile	50.8	2.00	12.7	0.50	22.0	0.87		673-0003
9	F5	09-801B	Neoprene	57.1	2.25	15.9 Key	0.63 / Key	31.5	1.24		4568-0001

\* MC97 and Neoprene - for cooling, Nitrile - oil resistant

# SPX FLOW's Johnson Pump Marine Brand Original Impellers

## SCALE 1:1



Ref.	Pump	Impeller	Material *	Outer dia		Inner dia		Width		Replaces Jabsco No	
				mm	inch	mm	inch	mm	inch	Europe	USA
10	F5	09-1027B-1	MC97	57.1	2.25	Splines		31.5	1.24	1210-0001	
10	F5	09-1027B-10	MC97	57.1	2.25	Splines		31.85	1.24		
10	F5	09-1027B-9-00	Nitrile	57.1	2.25	Splines		31.5	1.24	1210-0003	
11	F6	09-812B-1	MC97	57.1	2.25	Splines		48.2	1.90	13554-0001	
11	F6	09-812BT-1	MC97	57.1	2.25	Splines		48.2	1.90	13554-0001	
12	F7	09-1028BT-1**	MC97	65	2.56	Splines		50.2	1.98	17937-0001	
12	F7	09-1028B-9	Nitrile	65	2.56	Splines		50.2	1.98	17937-0003	
13	F75	09-821BT-1**	MC97	65	2.56	Splines		80	3.15		

\* MC97 and Neoprene - for cooling, Nitrile- oil resistant

\*\* BT-1 replaces B

## Benefits with flexible impellers from Johnson Pump®

- Stable pressure delivery over time
- Significantly longer service life
- Excellent self-priming capability
- Minimized swelling
- Minimized failures due to fatigue
- Correct impeller dimensions
- Correct cooling flow & sufficient cooling directly at start up

Original Impellers

MORE FLOW - BETTER PERFORMANCE

Johnson Pump®

www.spxflow.com

SPXFLOW

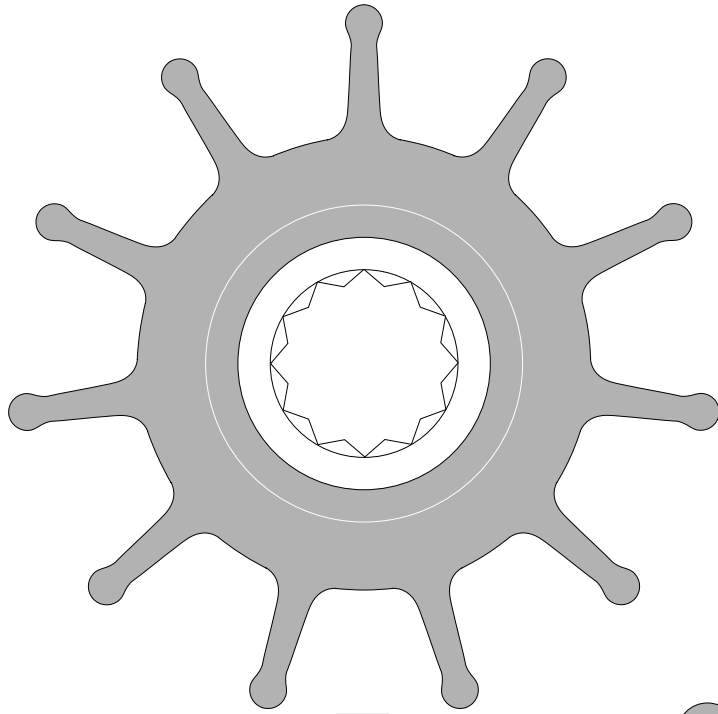
Johnson Pump®

RELIABILITY ON BOARD

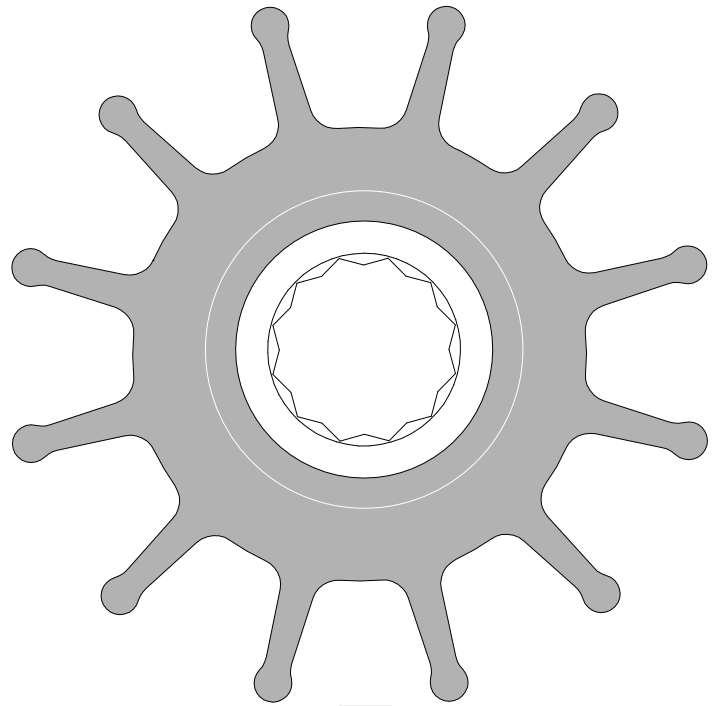
- SINCE 1968-

# SPX FLOW's Johnson Pump Marine Brand Original Impellers

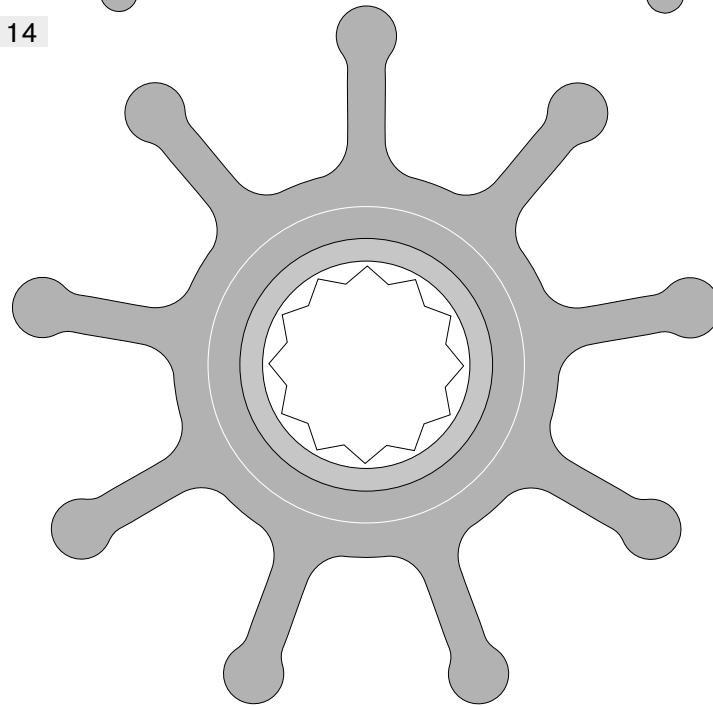
## SCALE 1:1



14



15



16

Ref.	Pump	Impeller Kit	Material*	Outer dia		Inner dia		Width		Replaces Jabsco No	
				mm	inch	mm	inch	mm	inch	Europe	USA
14	F8	09-819B-00	Neoprene	95	3.74	Splines		63	2.48	836-0001	17935-0001
14	F8	09-819B-9	Nitrile	95	3.74	Splines		63	2.48	836-0003	17935-0003
16	F8	09-1029B <sup>1)</sup>	Neoprene	95	3.74	Splines		63	2.48	836-0001	17935-0001
15	F9	09-814B	Neoprene	95	3.74	Splines		88.5	3.48	21676-0001	17936-0001
15	F95	09-820B	Neoprene	95	3.74	Splines		130	5.12		
15	F98	09-842B	Neoprene	95	3.74	Splines		180	7.09		
16	F9	09-802B	Neoprene	95	3.74	Splines		88.5	3.48	6760-0001	

<sup>1)</sup> Alternative impeller 09-819B-00

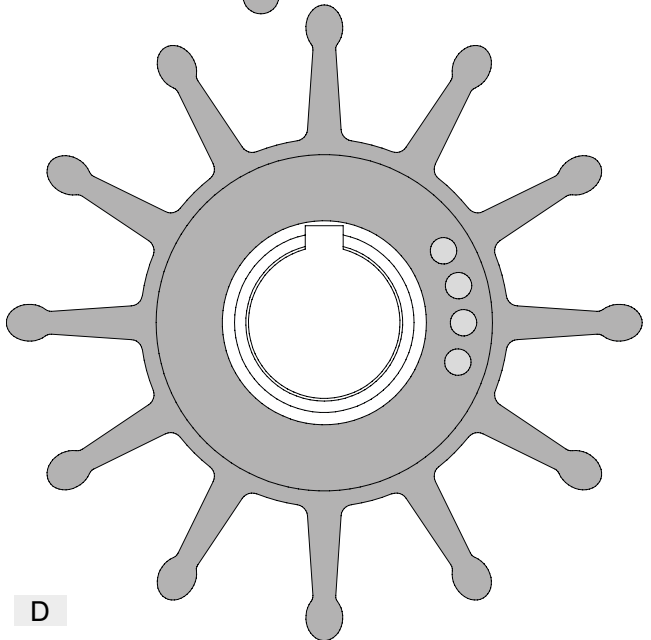
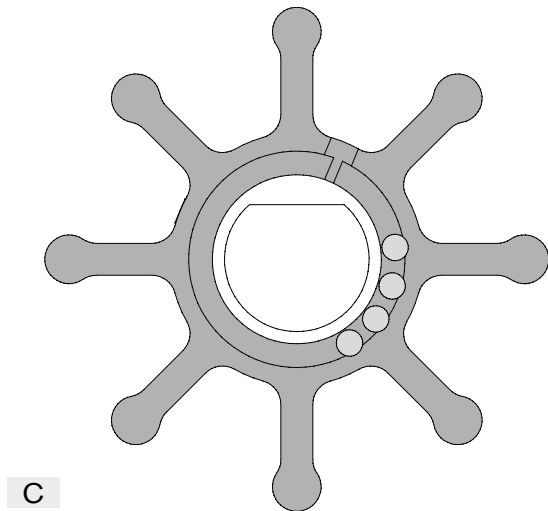
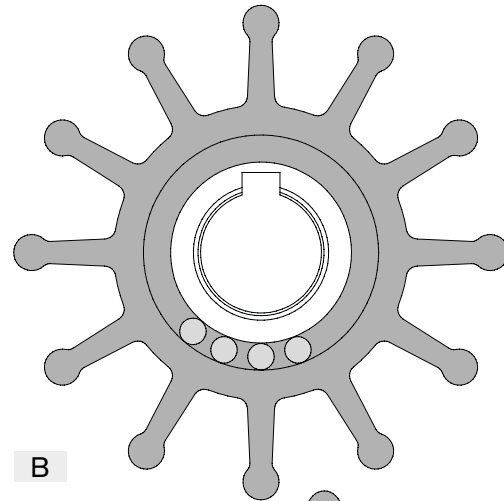
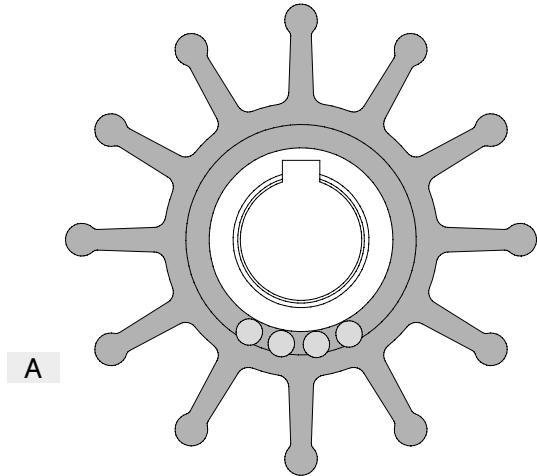
\* MC97 and Neoprene - for cooling, Nitrile - oil resistant

# Sherwood / Mercruiser Impeller Replacement Program

## SCALE 1:1

Sherwood / Mercruiser owners can now take advantage of premium replacement impellers from SPX FLOW Johnson Pump Marine; documented superior to the competition. We do not venture into this market lightly. We have prepared ourselves well.

- Engineering time in excess of 2000 hours
- More than 80,000 hours of continuous testing
- Manufactured from our MC 97 rubber compound



Ref.	Pump	Impeller	Material*	Outer dia		Inner dia		Width		Replaces Jabsco No	
				mm	inch	mm	inch	mm	inch	Europe	USA
A		09-701B-1	MC97	62.3	2.45			31.8	1.25	18838-0001	
B		09-702B-1	MC97	65.4	2.57			41.4	1.63	18948-0001	
C		09-703P-1	MC97	66.7	2.63			51	2.01	17954-0001	
D		09-704BT-1	MC97	84.1	3.31			73.4	2.89	18958-0001	

\* MC97 and Neoprene - for cooling, Nitrile - oil resistant

## IMPELLER REPLACEMENT KITS

Ref.	SPX FLOW Johnson Pump part no.	Sherwood part no.	Mercruiser part no.	Jabsco part no.	Engines / Pumps
A	09-701B-1	9959K	-	18838-0001	Chris Craft; Chrysler Marine; Commander; Crusader; Glastron Boat Co.; Gray Marine; Interceptor; Onan; OMC; Pathfinder VolksWagon Eng.; Perkins Eng. U.S.; Plesurecraft Marine; Universal Medalist; Volvo Penta; Yamaha; Westerbeke 24102; Sherwood 11353; Pleasure Craft 302&351; Chris Craft 350; Onan MDL3,4
B	09-702B-1	10615K	-	18948-0001	Chris Craft; Chrysler Marine; Commander; Crusader; Escort (Skiltec); Gray Marine; Isuzu; Lenco; Marine Power; North American Engine; Onan; Osco Motors; OMC; Perkins Engine U.S.; Plesurecraft Marine; Volvo Penta; J.H. Westerbeke Corp; Crusader 97179; Chrysler 3675763; Chrysler 4142878; Cummins 4B; Onan MDL6; Chris Craft 454; Pleasure Craft 454
C	09-703P-1	-	47-59362T	17954-0001	Pump Quicksilver Model 46-72774 A32
D	09-704BT-1	17000K	-	18958-0001	Cummins 6B 300Hp B Series; Cummins C Series; CAT 3208; CAT 3116; CAT 3126; Deere 6076; Sherwood Pump P17 series

# Key to SPX FLOW Johnson Pump type specification system

Pump types F2–F95 (excluding F70, F80 and F100)

Example:

**F 7 B - 3 0 0 0**

**Pump type**

F = Flexible Impeller

**Pump size**

- 2
- 3/35
- 4
- 5
- 6
- 7
- 75
- 8
- 9
- 95
- 98

Generally increasing size

**Body material**

B = Bronze                      P1  
   = Epoxy

**Port connection**

- 0 = BSP thread
- 7 = NPT thread (on request)

**Cam size**

- 0 = 1/1 - Standard
- 2 = 1/2
- 3 = 2/3

**Impeller material**

- 0 = Neoprene
- 2 = Polyurethane
- 5 = Neoprene - Intermediate pressure
- 6 = Neoprene - High pressure
- 9 = Nitrile

**Mounting**

- 1 = Flange mounted to the motor
- 3 = Pedestal mounted with double ball bearings and mech. seal.
- 5 = Pedestal mounted with double ball bearings and mech. seal, magnetic clutch operated.
- 5001 = Compact unit with lip seal \*)
- 8 = General purpose with double ball bearings and lip seal \*)
- 9 = Custom, follows customer's specification

\*) F8B-5001, F8B-8 also available with mechanical seal

**TSS**    The Space Saver

**VF**     Vertical Flange