

# 12 Impeller Replacement

INTRODUCTION



Jabsco – The Original Impeller



Jabsco Flexible Impellers can be fitted to most makes and models of bronze flexible impeller engine cooling, bilge, transfer and general purpose pumps.

Jabsco Flexible Impellers are subjected to rigorous quality processes to ensure reliable, efficient and long-lasting performance.

## Impeller Replacement – The Basics

**USE NEOPRENE IMPELLERS FOR ENGINE COOLING**, and for fresh or salt water transfer duties. Neoprene is the most commonly used material and is suitable for use where only small amounts of oil or diesel fuel are present.

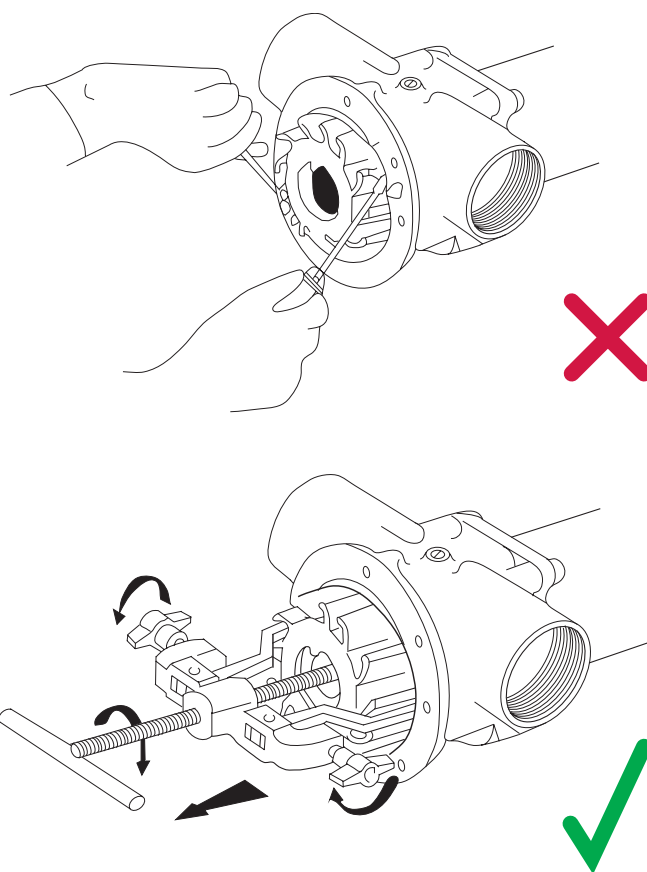
**USE NITRILE IMPELLERS FOR BILGE PUMPING**, and for transfer duties where the water is heavily contaminated, for example by oil or diesel. For diesel transfer duties, go to pages 68-69 and select a Jabsco Sliding Vane Pump.

**REPLACE ALL IMPELLERS AT LEAST ONCE EVERY YEAR**, or sooner, depending on the engine duty. When the installation is correct, an impeller may last for several years, but it is always advisable to stick to a schedule of preventive rather than corrective maintenance.

**REPLACING IMPELLERS IS EASY.** By removing the end cover screws, it is possible to remove the impeller by using either a Jabsco Impeller Removal Tool or channel lock pliers to grip the hub of the impeller. Don't use screwdrivers as they may damage the face of the pump body, causing leaks, and they can be dangerous in confined spaces.

**ALWAYS CARRY SPARE IMPELLERS ON BOARD IN CASE OF EMERGENCY.** The impeller is one of the most vital components of the engine cooling system and should always be treated as such.

**ALWAYS GREASE NEW IMPELLERS.** First, it makes it easier to install the impeller into the pump bore, and second, it gives added protection to the impeller during initial prime. After replacing the gasket and end cover the pump is ready to use.



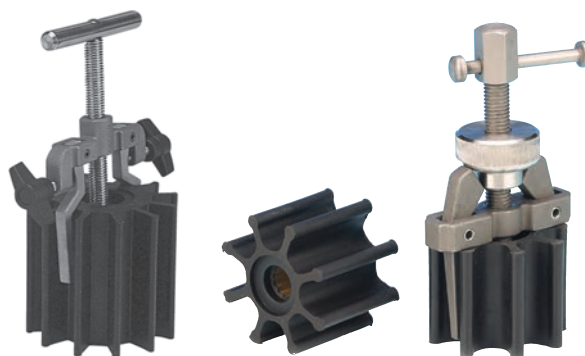
## Flexible Impeller Removal Tool

The Flexible Impeller Removal Tool is the easiest way to remove impellers, especially when the pump is mounted in tight and cramped conditions.

- Simple, three stage operation easily removes the impeller.
- Removes the risk of expensive damage to the pump.
- Manufactured from corrosion-resistant cast aluminum and stainless steel.
- Two models fit all impellers.

<b>SIZE</b>	6" wide x 8" high (max) x 1" deep (15cm x 20cm x 2cm)
<b>WEIGHT</b>	1.1lb (0.5kg)

MODEL	DESCRIPTION
50070-0040	Suitable for impellers up to 2-1/2" (65mm) diameter
50070-0200	Suitable for impellers from 2-1/2" (65mm) to 4-1/2" (118mm) diameter
50070-0080	Compact version suitable for impellers up to 2-1/4" (57mm) diameter



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## IMPELLER SELECTION



### Selecting Your Jabsco Replacement Impeller

There are several ways of identifying the part number of the correct Jabsco impeller if you do not already know it.

- 1.** If you have a Jabsco pump, the Jabsco impeller part number can be found on the data sheet that is delivered with each pump.
- 2.** If you have a Jabsco pump, but no data sheet, and you know the full pump model number, go to pages 162-217, Flexible Impeller Pump Spares by Pump Model, and read off the correct Jabsco impeller part number.
- 3.** If you have another brand of pump, and you know their impeller part number, go to Upgrade to a Jabsco Impeller at right, and check for a Jabsco replacement impeller part number.
- 4.** If you have the impeller in front of you, identify the impeller profile code letter by placing the impeller on the profiles on pages 268-271.
  - Go to pages 148-149, Selection Table by Profile.
  - Measure the depth (see Chart A).
  - Identify the drive (see Chart B).
  - Measure the shaft diameter (see Chart A).
  - Select the material.
  - Read off the part number.
- 5.** If you do not have the impeller in front of you, but you can ask someone who does:
  - Go to pages 150-151, Selection Table by Dimensions.
  - How many blades are there?
  - What is the outside diameter? (see Chart A).
  - What type of drive is it? (see Chart B).
  - What is the depth? (see Chart A).
  - What is the shaft diameter? (see Chart A).
  - Which material is needed?
  - Read off the part number.

CHART A – Measuring Your Impeller

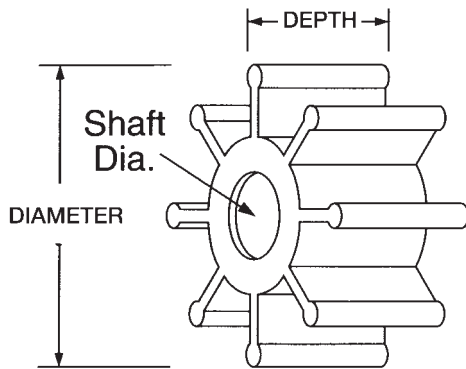
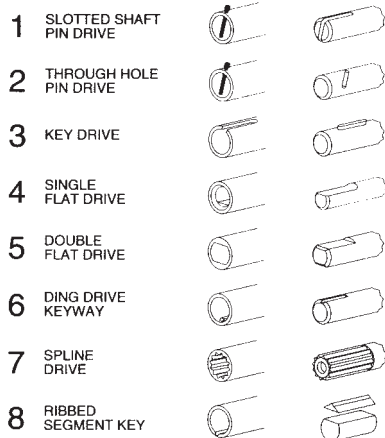


CHART B – Identifying the Impeller Drive



JABSCO	VOLVO	YANMAR	YAMAHA
653-0001			
673-0001	804696, 897055, 875808-8		
673-0003			
836-0001			
836-0003			
920-0001	801277, 825941, 877061-2		
920-0003			
1133-0001			
1210-0001	860203, 3856039-7, 875811-2	129470-42530	
1210-0003			
3085-0001			
4528-0001	803729, 875807-0, 876554-7	104211-42070	
4528-0003			
4568-0001	831182, 875575-3	124310-46090	
4568-0003			
4598-0001			
4598-0003			
6303-0001			
6303-0003			
6760-0001			
6760-0003			
13554-0001			
17935-0001	875660, 875736-1, 825942, 807904		
17935-0003			
17936-0001	875814-6, 875697, 845796, 844683, 842857		
17937-0001	801277, 825941, 877061-2	127610-42200	
17937-0003			
17954-0001*			
18327-0001			
18673-0001			
18838-0001	835512-5		YSC-101-03-01-0C
18948-0001	835874-9		6TA-12457-00
18958-0001			
21414-0001		128170-42070	
22120-0001	834794, 876120-7		
22405-0001	875583-7, 833995		
22799-0001		124223-42091	
31130-0061			

\*Has single flat drive, not spline.

Upgrade to a Jabsco Impeller

	JOHNSON	SHERWOOD	VETUS	MERCUISER	CRUSADER	ANCOR	CEF	OBERDORFER	ONAN	PERKINS USA
	09-810B		IMP00801				500101			
	09-1026B						500116			
	09-1026B-9						500216			
	09-1029B		IMP00901			J050005	500105			
	09-1029B-9					J050405	500205			
	09-1028B						500106			
							500206			
	09-1028B-9					J050001				
	09-1027B		IMP00201			J050007	500107		132-0162	0460038
	09-1027B-9					J050407	500207			
										24880190
	09-806B	9979	IMP00501			J050010	500100		132-0859	24990272
							500201			
	09-801B						500108			
							500208			
							500102	6603		
							500202			
							500110	6617		
	09-824P					J050011	500210			
	09-802B					JP50015	500145			
							500245			
	09-812B									
	09-819B					J050035	500135	7054		
	09-819B-9					J050435				
	09-814B		IMP00801			J050045	500145			0460027
	09-1028B	18200	IMP00301			J050009	500114	7441		0460024, 24880031
							500214			
		15000								24880194
		9959			1003026	J050003	500103		132-0317	NA900010, 24880178
		10615			20300	J050020	500120	8922		NA900012
						J050013	500113			
						J050022	500104			
	09-808B		IMP00601			J050021	500121			
			IMP00101			J050016	500129			
				47-831311350						

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SELECTION TABLE BY PROFILE



IMPELLER TYPE	MODEL NUMBER	MATERIAL	DRIVE TYPE	NUMBER OF BLADES	DIMENSIONS				SHAFT DIAMETER		INSERT MATERIAL	
					DIAMETER		WIDTH		INCHES	mm		
					INCHES	mm	INCHES	mm				
<b>A</b>	1414-0001-P	Neoprene	4	6	1-1/4	32	15/32	12	5/16	8	Brass*	
	1414-0003-P	Nitrile	4	6	1-1/4	32	15/32	12	5/16	8	Brass*	
	12104-0001B	Neoprene	2	6	1-1/4	32	15/32	12	5/16	8	Brass	
	21414-0001-P	Neoprene	4	6	1-1/4	32	15/32	12	5/16	8	Brass	
(for use with Yanmar 1GM10 Marine Engines)												
<b>B</b>	14750-0001B	Neoprene	4	8	1-1/4	32	15/32	12	5/16	8	Brass*	
	14750-0003-P	Nitrile	4	8	1-1/4	32	15/32	12	5/16	8	Brass*	
<b>C</b>	14609-0001B	Neoprene	4	6	1-1/4	32	15/32	12	5/16	8	Brass*	
	14609-0003	Neoprene	4	6	1-1/4	32	15/32	12	5/16	8	Brass*	
	14787-0001B	Neoprene	4	6	1-1/4	32	15/32	12	5/16	8	Plastic*	
<b>CC</b>	31130-0061-P	Neoprene	7	10	2-19/32	66	2-11/16	68	5/8	16	Brass††	
<b>D</b>	4528-0001-P	Neoprene	1 or 2	6	1-9/16	40	3/4	19	3/8	10	Brass	
	4528-0003-P	Nitrile	1 or 2	6	1-9/16	40	3/4	19	3/8	10	Brass	
	17255-0003-P	Nitrile	–	6	1-9/16	40	3/4	19	1/4	6	None†	
	22405-0001-P	Neoprene	1	6	1-9/16	40	3/4	19	15/32	12	Brass	
<b>F</b>	9200-0011B	Neoprene	4	10	1-19/32	41	3/4	19	5/16	8	Plastic*	
	9200-0003B	Nitrile	4	10	1-19/32	41	3/4	19	5/16	8	Plastic*	
	9200-0021B	Neoprene	4	10	1-19/32	41	3/4	19	5/16	8	Brass	
	9200-0023-P	Nitrile	4	10	1-19/32	41	3/4	19	5/16	8	Brass	
<b>G</b>	653-0001-P	Neoprene	1	6	2	51	7/8	22	15/32	12	Brass	
	673-0001-P	Neoprene	1 or 2	6	2	51	7/8	22	1/2	13	Brass	
	(673 Series impellers may be replaced with the newer 18673 Series – see Impeller Type I)											
	4527-0003B	Nitrile	2	6	2	51	7/8	22	5/16	8	None	
	5616-0001-P	Neoprene	6	6	2	51	7/8	22	1/2	13	Brass	
	7273-0001-P	Neoprene	4	6	2	51	7/8	22	5/16	8	Plastic	
	7273-0003-P	Nitrile	4	6	2	51	7/8	22	5/16	8	Plastic	
22799-0001-P	Neoprene	3	6	2	51	7/8	22	1/2	13	Brass		
<b>GG</b>	18958-0001-P	Neoprene	3	12	3-1/4	83	2-57/64	73	25/32	21	Brass	
<b>H</b>	6303-0001-P	Neoprene	4	6	2	51	7/8	22	5/16	8	Plastic	
	6303-0003-P	Nitrile	4	6	2	51	7/8	22	5/16	8	Plastic	
	6303-0007-P	Urethane	4	6	2	51	7/8	22	5/16	8	Plastic	
	17486-0001	Neoprene	6	6	2	51	7/8	22	1/2	13	Brass**	
<b>HH</b>	18777-0001-P	Neoprene	7	10	2-1/4	57	2	51	5/8	16	Brass	
<b>I</b>	18653-0001-P	Neoprene	1	10	2	51	7/8	22	5/32	12	Brass	
	18673-0001-P	Neoprene	1 or 2	10	2	51	7/8	22	1/2	13	Brass	
	18673-0003-P	Nitrile	1 or 2	10	2	51	7/8	22	1/2	13	Brass	
<b>K</b>	1210-0001-P	Neoprene	7	12	2-1/4	57	1-1/4	32	5/8	16	Brass	
	1210-0003-P	Nitrile	7	12	2-1/4	57	1-1/4	32	5/8	16	Brass	
	4568-0001-P	Neoprene	3	12	2-1/4	57	1-1/4	32	5/8	16	Brass	
	4568-0003-P	Nitrile	3	12	2-1/4	57	1-1/4	32	5/8	16	Brass	
	5929-0001-P	Neoprene	6	12	2-1/4	57	1-1/4	32	1/2	13	Brass	
	5929-0003-P	Nitrile	6	12	2-1/4	57	1-1/4	32	1/2	13	Brass	
	13554-0001-P	Neoprene	7	12	2-1/4	57	1-29/32	48	5/8	16	Brass	
	14281-0001-P	Neoprene	5	12	2-1/4	57	1-1/4	32	5/8	16	Plastic	
	22120 Series	Neoprene	7	12	2-1/4	57	2	51	5/8	16	Brass	
(22120 Series impellers may be replaced with the newer 18777 Series – see Impeller Type HH)												

IMPELLER		MATERIAL	DRIVE TYPE	NUMBER OF BLADES	DIMENSIONS				SHAFT DIAMETER		INSERT MATERIAL
TYPE	MODEL NUMBER				DIAMETER		WIDTH		INCHES	mm	
					INCHES	mm	INCHES	mm			
<b>L</b>	3085-0001-P	Neoprene	7	10	2-1/4	57	1-1/4	32	1/2	13	Brass
<b>M</b>	920-0001-P	Neoprene	7	8	2-9/16	65	2	51	5/8	16	Brass
	920-0003-P	Nitrile	7	8	2-9/16	65	2	51	5/8	16	Brass
	920-0008B	Natural Rubber	7	8	2-9/16	65	2	51	5/8	16	Brass‡
	4598-0001-P	Neoprene	3	8	2-9/16	65	2	51	5/8	16	Brass
	4598-0003-P	Nitrile	3	8	2-9/16	65	2	51	5/8	16	Brass**
	6056-0003-P	Nitrile	6	8	2-9/16	65	2	51	5/8	16	Brass**
	11979-0001-P	Neoprene	7	8	2-9/16	65	1-7/16	37	5/8	16	Brass
	17018-0001-P	Neoprene	7	8	2-9/16	65	3	76	5/8	16	Brass
<b>O</b>	836-0001-P	Neoprene	7	9	3-3/4	95	2-1/2	63	1	25	Brass
	836-0003-P	Nitrile	7	9	3-3/4	95	2-1/2	63	1	25	Brass
	836-0008-P	Natural Rubber	7	9	3-3/4	95	2-1/2	63	1	25	Brass‡
	6760-0001B	Neoprene	7	9	3-3/4	95	3-1/2	89	1	25	Brass
	6760-0003-P	Nitrile	7	9	3-3/4	95	3-1/2	89	1	25	Brass
<b>Q</b>	17370-0001-P	Neoprene	5	12	3-3/4	95	3-1/2	89	1	25	Plastic
	17935-0001-P	Neoprene	7	12	3-3/4	95	2-1/2	63	1	25	Brass
	17936-0001-P	Neoprene	7	12	3-3/4	95	3-1/2	89	1	25	Brass
	17938-0001-P	Neoprene	7	12	3-3/4	95	3-3/4	95	1	25	Brass
<b>R</b>	17240-0001B	Neoprene	7	9	4-5/8	118	3-1/2	89	1	25	Brass
	18786-0001B	Neoprene	5	9	4-5/8	118	3-1/2	89	1	25	Plastic
	18789-0001	Neoprene	7	9	4-5/8	118	3-1/2	89	1	25	Brass
<b>U</b>	2999-0001B	Neoprene	7	13	5	127	4	102	1-1/2	38	Brass
<b>W</b>	18838-0001-P	Neoprene	3	12	2-7/16	62	1-1/4	32	5/8	16	Brass††
<b>X</b>	18948-0001-P	Neoprene	3	12	2-9/16	65	1-5/8	41	5/8	16	Brass††
<b>Y</b>	17937-0001-P	Neoprene	7	10	2-9/16	65	2	51	5/8	16	Brass
	17937-0003-P	Nitrile	7	10	2-9/16	65	2	51	5/8	16	Brass
	17954-0001-P	Neoprene	4	10	2-9/16	65	2	51	3/4	19	Brass‡‡
	17956-0001-P	Neoprene	6	10	2-9/16	65	2	51	5/8	16	Brass
	18327-0001-P	Neoprene	3	10	2-9/16	65	2	51	5/8	16	Brass††
<b>Z</b>	30919-0001	Neoprene	5	12	3-1/16	77	3	76	13/16	20	Brass

\* Insert material was different.

† Impeller molded on shaft.

‡ For low temperature to 27°F (-3°C) – 120°F (49°C) max.

\*\* Extended drive sleeves.

†† Sherwood replacement impeller.

‡‡ MerCruiser replacement.

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SELECTION TABLE BY DIMENSIONS



NUMBER OF BLADES	DIMENSIONS		DRIVE TYPE	SHAFT DIMENSIONS				MATERIAL	INSERT MATERIAL	IMPELLER	
	DIAMETER			DIAMETER		WIDTH				MODEL NUMBER	TYPE
	INCHES	mm		INCHES	mm	INCHES	mm				
6	1-1/4	32	4	15/32	12	5/16	8	Neoprene	Brass*	1414-0001-P	A
	1-1/4	32	4	15/32	12	5/16	8	Nitrile	Brass*	1414-0003-P	A
	1-1/4	32	2	15/32	12	5/16	8	Neoprene	Brass	12104-0001B	A
	1-1/4	32	4	15/32	12	5/16	8	Neoprene	Brass	21414-0001-P	A
	1-1/4	32	4	15/32	12	5/16	8	Neoprene	Brass*	14609-0001B	C
	1-1/4	32	4	15/32	12	5/16	8	Neoprene	Brass*	14609-0003	C
	1-1/4	32	4	15/32	12	5/16	8	Neoprene	Plastic*	14787-0001B	C
	1-9/16	40	1 or 2	3/4	19	3/8	10	Neoprene	Brass	4528-0001-P	D
	1-9/16	40	1 or 2	3/4	19	3/8	10	Nitrile	Brass	4528-0003-P	D
	1-9/16	40	–	3/4	19	1/4	6	Nitrile	None†	17255-0003-P	D
	1-9/16	40	1	3/4	19	15/32	12	Neoprene	Brass	22405-0001-P	D
	2	51	1	7/8	22	15/32	12	Neoprene	Brass	653-0001-P	G
	2	51	1 or 2	7/8	22	1/2	13	Neoprene	Brass	673-0001-P	G
	2	51	2	7/8	22	5/16	8	Nitrile	None	4527-0003B	G
	2	51	6	7/8	22	1/2	13	Neoprene	Brass	5616-0001-P	G
	2	51	4	7/8	22	5/16	8	Neoprene	Plastic	7273-0001-P	G
	2	51	4	7/8	22	5/16	8	Nitrile	Plastic	7273-0003-P	G
	2	51	3	7/8	22	1/2	13	Neoprene	Brass	22799-0001-P	G
	2	51	4	7/8	22	5/16	8	Neoprene	Plastic	6303-0001-P	H
	2	51	4	7/8	22	5/16	8	Nitrile	Plastic	6303-0003-P	H
2	51	6	7/8	22	1/2	13	Neoprene	Brass**	17486-0001	H	
8	1-1/4	32	4	15/32	12	5/16	8	Neoprene	Brass*	14750-0001-B	B
	1-1/4	32	4	15/32	12	5/16	8	Nitrile	Brass*	14750-0003-P	B
	2-9/16	65	7	2	51	5/8	16	Neoprene	Brass	920-0001-P	M
	2-9/16	65	7	2	51	5/8	16	Nitrile	Brass	920-0003-P	M
	2-9/16	65	7	2	51	5/8	16	Natural Rubber	Brass‡	920-0008B	M
	2-9/16	65	3	2	51	5/8	16	Neoprene	Brass	4598-0001-P	M
	2-9/16	65	3	2	51	5/8	16	Nitrile	Brass**	4598-0003-P	M
	2-9/16	65	6	2	51	5/8	16	Nitrile	Brass**	6056-0003-P	M
	2-9/16	65	7	1-7/16	37	5/8	16	Neoprene	Brass	11979-0001-P	M
	2-9/16	65	7	3	77	5/8	16	Neoprene	Brass	17018-0001-P	M
9	3-3/4	95	7	2-1/2	63	1	25	Neoprene	Brass	836-0001-P	O
	3-3/4	95	7	2-1/2	63	1	25	Nitrile	Brass	836-0003-P	O
	3-3/4	95	7	2-1/2	63	1	25	Natural Rubber	Brass‡	836-0008-P	O
	3-3/4	95	7	3-1/2	89	1	25	Neoprene	Brass	6760-0001B	O
	3-3/4	95	7	3-1/2	89	1	25	Nitrile	Brass	6760-0003-P	O
	4-5/8	118	7	3-1/2	89	1	25	Neoprene	Brass	17240-0001B	R
	4-5/8	118	5	3-1/2	89	1	25	Neoprene	Plastic	18786-0001B	R
	4-5/8	118	7	3-1/2	89	1	25	Neoprene	Brass	18789-0001	R

NUMBER OF BLADES	DIMENSIONS		DRIVE TYPE	SHAFT DIMENSIONS				MATERIAL	INSERT MATERIAL	IMPELLER	
	DIAMETER			DIAMETER		WIDTH				MODEL NUMBER	TYPE
	INCHES	mm		INCHES	mm	INCHES	mm				
10	2-19/32	66	7	2-11/16	68	5/8	16	Neoprene	Brass‡‡	31130-0061-P	CC
	1-19/32	41	4	3/4	19	5/16	8	Neoprene	Plastic*	9200-0011B	F
	1-19/32	41	4	3/4	19	5/16	8	Nitrile	Plastic*	9200-0003B	F
	1-19/32	41	4	3/4	19	5/16	8	Neoprene	Brass	9200-0021B	F
	1-19/32	41	4	3/4	19	5/16	8	Nitrile	Brass	9200-0023-P	F
	2-1/4	57	7	2	51	5/8	16	Neoprene	Brass	18777-0001-P	HH
	2	51	1	7/8	22	5/32	12	Neoprene	Brass	18653-0001-P	I
	2	51	1 or 2	7/8	22	1/2	13	Neoprene	Brass	18673-0001-P	I
	2	51	1 or 2	7/8	22	1/2	13	Nitrile	Brass	18673-0003-P	I
	2-1/4	57	7	1-1/4	32	1/2	13	Neoprene	Brass	3085-0001-P	L
	2-9/16	65	7	2	51	5/8	16	Neoprene	Brass	17937-0001-P	Y
	2-9/16	65	7	2	51	5/8	16	Nitrile	Brass	17937-0003-P	Y
	2-9/16	65	4	2	51	3/4	19	Neoprene	Brass‡‡	17954-0001-P	Y
	2-9/16	65	6	2	51	5/8	16	Neoprene	Brass	17956-0001-P	Y
2-9/16	65	3	2	51	5/8	16	Neoprene	Brass††	18327-0001-P	Y	
12	3-1/4	83	3	2-57/64	73	25/32	21	Neoprene	Brass	18958-0001-P	GG
	2-1/4	57	7	1-1/4	32	5/8	16	Neoprene	Brass	1210-0001-P	K
	2-1/4	57	7	1-1/4	32	5/8	16	Nitrile	Brass	1210-0003-P	K
	2-1/4	57	3	1-1/4	32	5/8	16	Neoprene	Brass	4568-0001-P	K
	2-1/4	57	3	1-1/4	32	5/8	16	Nitrile	Brass	4568-0003-P	K
	2-1/4	57	6	1-1/4	32	1/2	13	Neoprene	Brass	5929-0001-P	K
	2-1/4	57	6	1-1/4	32	1/2	13	Nitrile	Brass	5929-0003-P	K
	2-1/4	57	7	1-29/32	48	5/8	16	Neoprene	Brass	13554-0001-P	K
	2-1/4	57	5	1-1/4	32	5/8	16	Neoprene	Plastic	14281-0001-P	K
	2-1/4	57	7	2	51	5/8	16	Neoprene	Brass	22120 Series	K
	3-3/4	95	5	3-9/16	89	1	25	Neoprene	Plastic	17370-0001-P	Q
	3-3/4	95	7	2-9/16	63	1	25	Neoprene	Brass	17935-0001-P	Q
	3-3/4	95	7	3-9/16	89	1	25	Neoprene	Brass	17936-0001-P	Q
	3-3/4	95	7	3-3/4	95	1	25	Neoprene	Brass	17938-0001-P	Q
	2-7/16	62	3	1-1/4	32	5/8	16	Neoprene	Brass††	18838-0001-P	W
	2-9/16	65	3	1-5/8	41	5/8	16	Neoprene	Brass††	18948-0001-P	X
3-1/16	77	5	3	76	13/16	20	Neoprene	Brass	30919-0001	Z	
13	5	127	7	4	102	1-1/2	38	Neoprene	Brass	2999-0001B	U

\* Insert material was different.

† Impeller molded on shaft.

‡ For low temperature to 27°F (-3°C) – 120°F (49°C) max.

\*\* Extended drive sleeves.

†† Sherwood replacement impeller.

‡‡ MerCruiser replacement.



# 12 Impeller Replacement

## TROUBLESHOOTING GUIDE



### Troubleshooting 1

#### SYMPTOMS

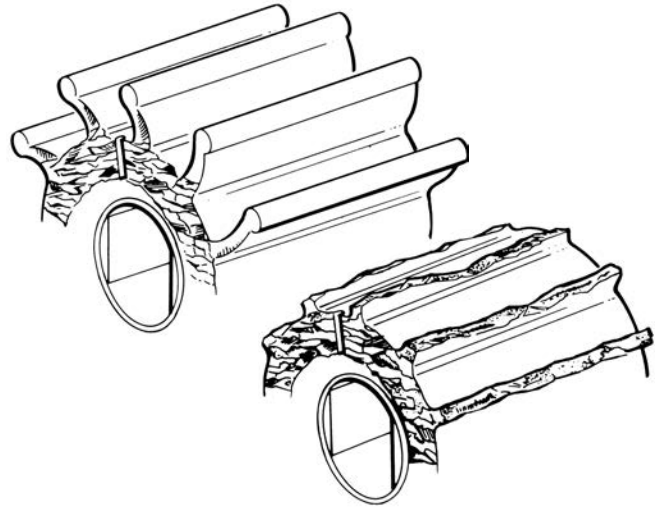
- End faces hard and either polished or cracked, like carbon.
- Some or all blades completely missing.

#### CAUSE

- Dry running, lack of water in pump.
- Temporary suction blockage.
- Leaking suction plumbing.

#### REMEDY

- Do not run pump for more than 20 seconds without liquid.
- Install a liquid sensor/temperature alarm.
- Check suction plumbing, strainers, and through hull fittings for blockages and leakage.
- Arrange discharge plumbing to trap liquid in the pump.



### Troubleshooting 2

#### SYMPTOMS

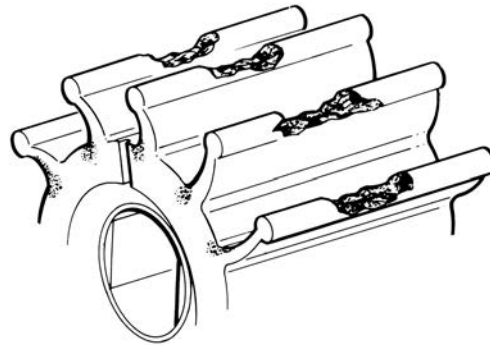
- Pieces missing from the middle of blade tips.
- Blade edges are hollowed out.
- Pitting is evident on cam and the inside of pump ports, and on ends of impeller.

#### CAUSE

- Cavitation, i.e., too much vacuum on inlet is causing water to boil inside pump.

#### REMEDY

- Reduce pump speed.
- Increase inlet plumbing diameter.
- Reduce inlet plumbing length and remove unnecessary restrictions.
- Reduce cam thickness.



### Troubleshooting 3

#### SYMPTOMS

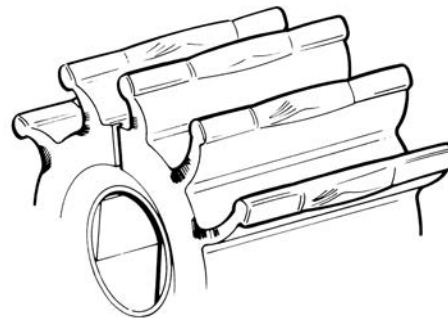
- Worn blade tips, cam imprint on edges.
- Worn end faces.
- Worn impeller drive and shaft wear.

#### CAUSE

- Abrasive wear from fluid in pump.
- Heat exchanger/cooler blockage.
- High discharge pressure.

#### REMEDY

- Check discharge plumbing for partial blockages.
- Increase discharge pipe diameter.



## Troubleshooting 4

### SYMPTOMS

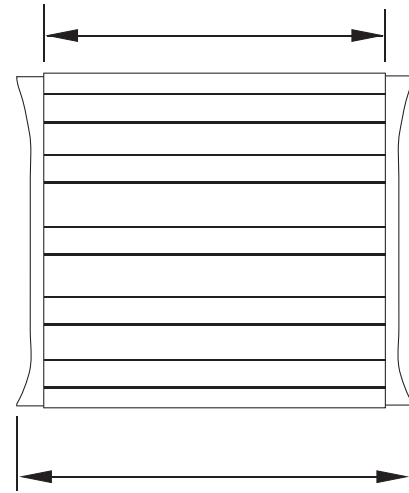
- Impeller appears to have swollen.
- Blades appear wider than impeller hub.
- Rubber may feel sticky.

### CAUSE

- Chemical attack, more common with oily bilge water or diesel transfer.

### REMEDY

- Ensure impeller is rinsed after use.
- Remove impeller when not in use.
- Remove impeller for long-term storage.



## Troubleshooting 5

### SYMPTOMS

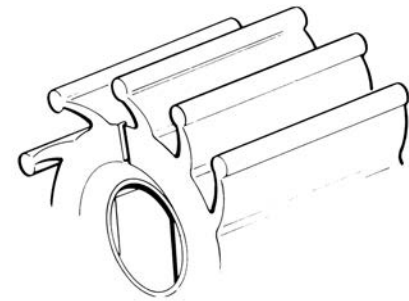
- Blades have some or severe permanent set.

### CAUSE

- Normal use of impeller.
- Long-term storage in pump.
- Normal end of impeller life.

### REMEDY

- Refit impeller to rotate in opposite direction.
- Remove impeller for long-term storage.
- Replace impeller.



## Troubleshooting 6

### SYMPTOMS

- Blades cracked about halfway up the length.
- Some blades missing.
- Reduced flow.

### CAUSE

- Normal end of impeller life.
- High discharge pressure.

### REMEDY

- Replace impeller; check for impeller pieces in discharge plumbing.
- Reduce outlet restrictions or increase outlet plumbing diameter.

