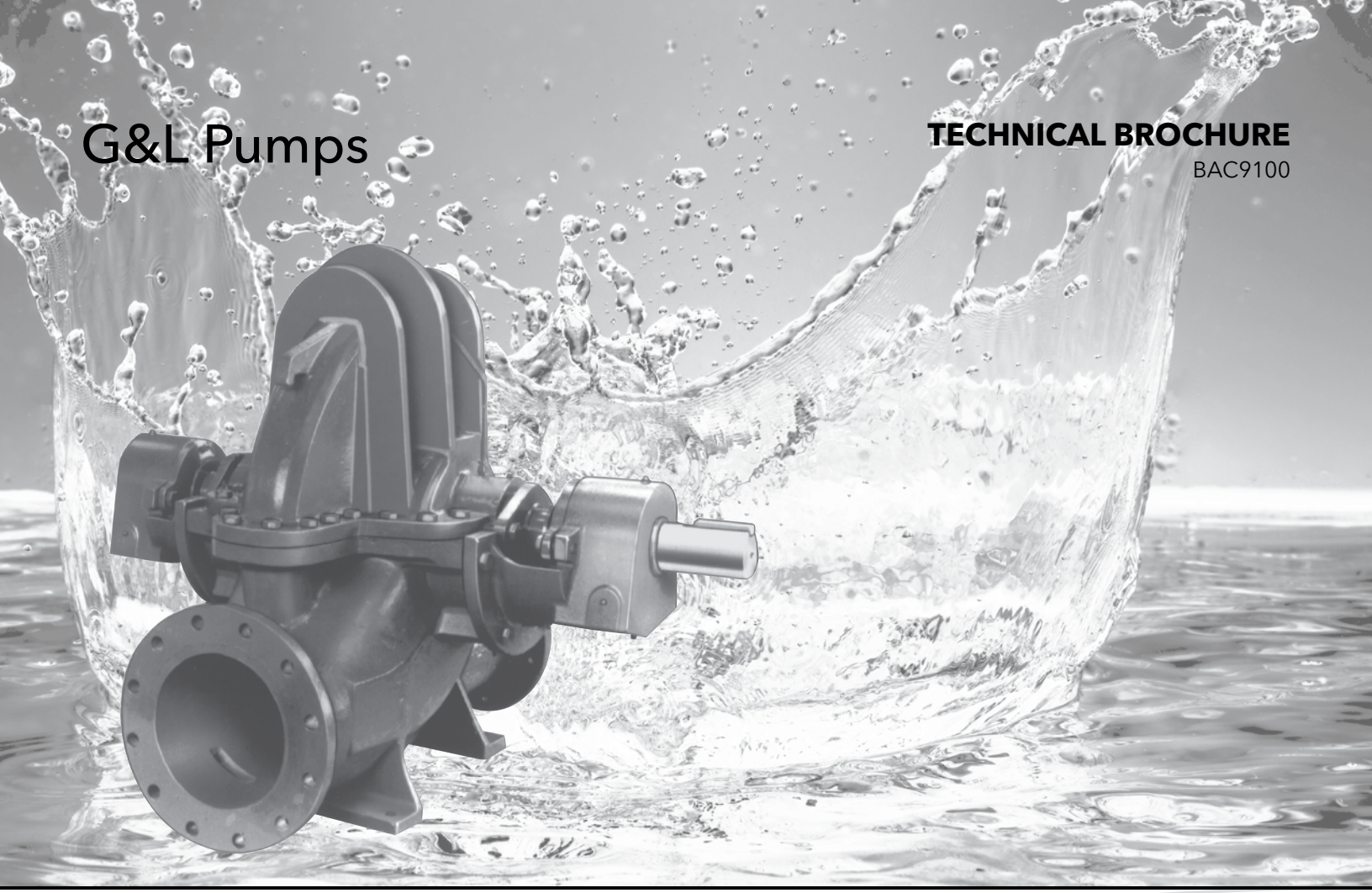
G&L Pumps

TECHNICAL BROCHURE
BAC9100



Series A-C 9100

SINGLE STAGE DOUBLE SUCTION LARGE SPLIT CASE

xylem
Let's Solve Water

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USEFUL PUMP FORMULAS

Pressure (PSI) = $\frac{\text{Head (feet)} \times \text{Specific Gravity}}{2.31}$

Head (feet) = $\frac{\text{Pressure (PSI)} \times 2.31}{\text{Specific Gravity}}$

Vacuum (in. of mercury) = Dynamic Suction Lift (feet) x .883 x Specific Gravity

Horsepower (brake) = $\frac{\text{GPM} \times \text{Head (feet)} \times \text{Specific Gravity}}{3960 \times \text{Pump Efficiency}}$

Horsepower (water) = $\frac{\text{GPM} \times \text{Head (feet)} \times \text{Specific Gravity}}{3960}$

Efficiency (pump) = $\frac{\text{Horsepower (water)}}{\text{Horsepower (brake)}} \times 100 \text{ per cent}$

NPSH (available) = Positive Factors – Negative Factors

AFFINITY LAWS: Effect of change of speed or impeller diameter on centrifugal pumps

	GPM Capacity	Feet Head	BHP
Impeller Diameter Change	$Q_2 = \frac{D_2}{D_1} Q_1$	$H_2 = \left(\frac{D_2}{D_1}\right)^2 H_1$	$P_2 = \left(\frac{D_2}{D_1}\right)^3 P_1$
Speed Change	$Q_2 = \frac{RPM_2}{RPM_1} Q_1$	$H_2 = \left(\frac{RPM_2}{RPM_1}\right)^2 H_1$	$P_2 = \left(\frac{RPM_2}{RPM_1}\right)^3 P_1$

Where Q = GPM, H = Head, P = BHP, D = Impeller Diameter, RPM = Pump Speed

Engineering Data – Series A-C 9100 Large Split Case Pumps

SINGLE STAGE – DOUBLE SUCTION

	Pump Size		④ 12x8x22M	④ 12x8x22L	14x10x20S	14x10x20L	16x12x23	16x14x17	18x14x23
									All dimensions in inches (mm)
①	125# FF Std. ASA Flanges (Standard)	Max. Suction Pressure PSIG (bar)	75 (5)	75 (5)	75 (5)	75 (5)	75 (5)	75 (5)	75 (5)
		Max. Working Pressure PSIG (bar)	300 (21)	300 (21)	175 (12)	175 (12)	175 (12)	175 (12)	175 (12)
		Max. Hydrostatic Test Pressure PSIG (bar) ③	450 (31)	450 (31)	262 (18)	262 (18)	262 (18)	262 (18)	262 (18)
		Casing Material	Cast Iron	Cast Iron	Cast Iron	Cast Iron	Cast Iron	Cast Iron	Cast Iron
②	250# FF ASA Flanges (Optional)	Max. Suction Pressure PSIG (bar)	200 (14)	200 (14)	200 (14)	200 (14)	200 (14)	200 (14)	200 (14)
		Max. Working Pressure PSIG (bar)	400 (27)	400 (27)	300 (21)	300 (21)	300 (21)	300 (21)	300 (21)
		Max. Hydrostatic Test Pressure PSIG (bar) ③	600 (41)	600 (41)	450 (31)	450 (31)	450 (31)	450 (31)	450 (31)
		Casing Material	Ductile Iron	Ductile Iron	Ductile Iron	Ductile Iron	Ductile Iron	Ductile Iron	Ductile Iron
		Casing Wall Thickness	.625 (16)	.625 (16)	.625 (16)	.625 (16)	.625 (16)	.625 (16)	.625 (16)

STUFF BOX DATA

All dimensions in inches (mm)

Bore			5.125 (130)	5.125 (130)	5.125 (130)	5.125 (130)	5.125 (130)	5.125 (130)	5.125 (130)
Depth			4.812 (122)	4.812 (122)	4.812 (122)	4.812 (122)	4.812 (122)	4.812 (122)	4.812 (122)
Seal Cage Width			.75 (19)	.75 (19)	.75 (19)	.75 (19)	.75 (19)	.75 (19)	.75 (19)
Packing No. Rings / Size Sq. with Seal Cage			6 / .625	6 / .625	6 / .625	6 / .625	6 / .625	6 / .625	6 / .625
Shaft Sleeve O.D.			3.875 (98)	3.875 (98)	3.875 (98)	3.875 (98)	3.875 (98)	3.875 (98)	4.625 (117)
Mechanical Seal Size Type 8-1			3.875 (98)	3.875 (98)	3.875 (98)	3.875 (98)	3.875 (98)	3.875 (98)	4.625 (117)
⑤ Mechanical Seal Size (Type 8B1)		Major Diameter	4.125 (105)	4.125 (105)	4.125 (105)	4.125 (105)	4.125 (105)	4.125 (105)	4.75 (121)
		Minor Diameter	3.875 (98)	3.875 (98)	3.875 (98)	3.875 (98)	3.875 (98)	3.875 (98)	4.50 (114)

IMPELLER DESIGN DATA

All dimensions in inches (mm)

Number of Vanes	5	6	6	5	6	6	6
Inlet Area (sq. inches)	68	80	112	128	150	171	212
Inlet Velocity per 100 GPM (feet/second)	.47	.40	.29	.25	.21	.19	.15
Maximum Diameter	21.0 (533)	23.0 (584)	19.8 (503)	19.8 (503)	23.0 (584)	17.5 (445)	23.0 (584)
Minimum Diameter	12.0 (305)	12.0 (305)	9.4 (239)	14.0 (356)	13.0 (330)	11.0 (279)	14.0 (356)
Maximum Sphere	1.4 (36)	1.6 (41)	1.63 (42)	1.56 (40)	1.63 (42)	1.2 (30)	2.1 (53)
VR ^ 2 for Maximum Diameter (lbs • ft ^ 2)	52.0	58.5	46.6	52.0	108.9	45.5	120.1
Wear Ring Clearance – Diameter BRZ Impellers	.016-.019 (.40-.48)	.016-.019 (.40-.48)	.016-.019 (.40-.48)	.016-.019 (.40-.48)	.016-.019 (.40-.48)	.016-.019 (.40-.48)	.016-.019 (.40-.48)

SHAFT AND BEARING DATA

All dimensions in inches (mm)

At Coupling		3.125 (79)	3.125 (79)	3.125 (79)	3.125 (79)	3.125 (79)	3.125 (79)	3.125 (79)
Thru Impeller and Sleeves		3.311 (84)	3.311 (84)	3.311 (84)	3.311 (84)	3.311 (84)	3.311 (84)	4.061 (103)
Shaft Span	Bearing to Bearing Centerline	35.8 (909)	35.8 (909)	40.5 (1029)	40.5 (1029)	40.5 (1029)	40.5 (1029)	41.375 (1050)
Bearings	Inboard	6316	6316	6316	6316	6316	6316	6316
	Outboard	21316	21316	21316	21316	21316	21316	21316
Frame Designation	F21-D4	F21-D4	F21-E4	F21-E4	F21-E4	F21-E4	F21-E4	F21-F4

① Flange dimensions are in accordance with ANSI A21.10, AWWA C110 and ANSI B16.1 Class 125.

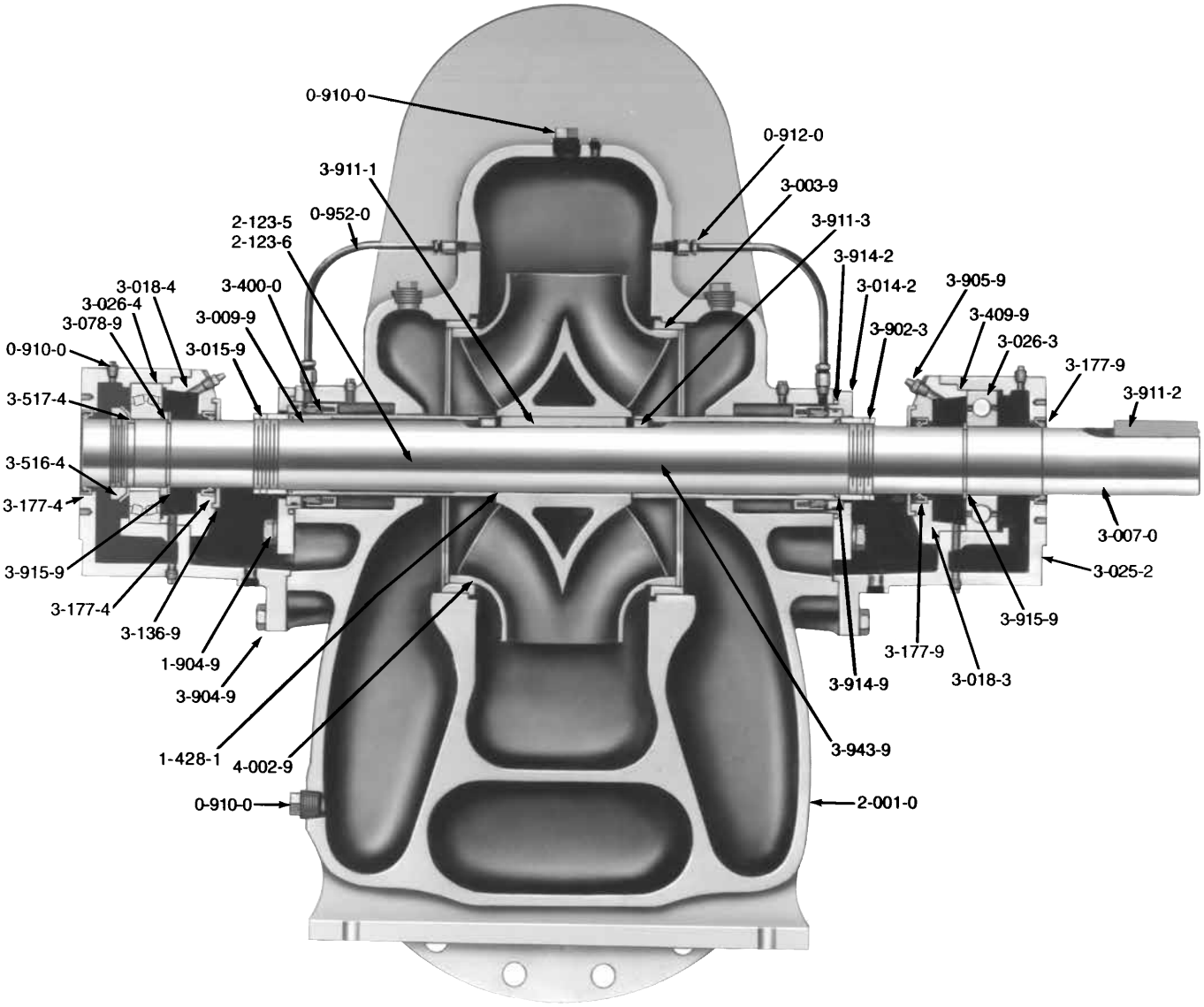
② Flange dimensions are in accordance with ANSI B16.1 Class 250 except flanges are flat faced, i.e. FF.

③ The hydrostatic test will be in accordance with the latest edition of the Hydraulic Institute Standards, test will be maintained for a minimum of 10 minutes.

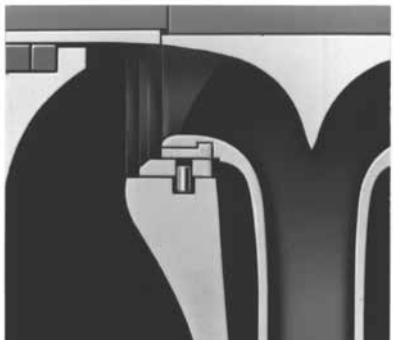
④ 12x8x22M and 12x8x22L are standard with 125 PSI ASA FF suction and 250 PSI ASA FF discharge flanges.

⑤ Balanced mechanical seals have a major and a minor diameter as listed.

Materials of Construction
Series A-C 9100 Large Split Case Pumps



Impeller Wearing Rings



Impeller rings can be
added – Optional Extra

Materials of Construction
Series A-C 9100 Large Split Case Pumps

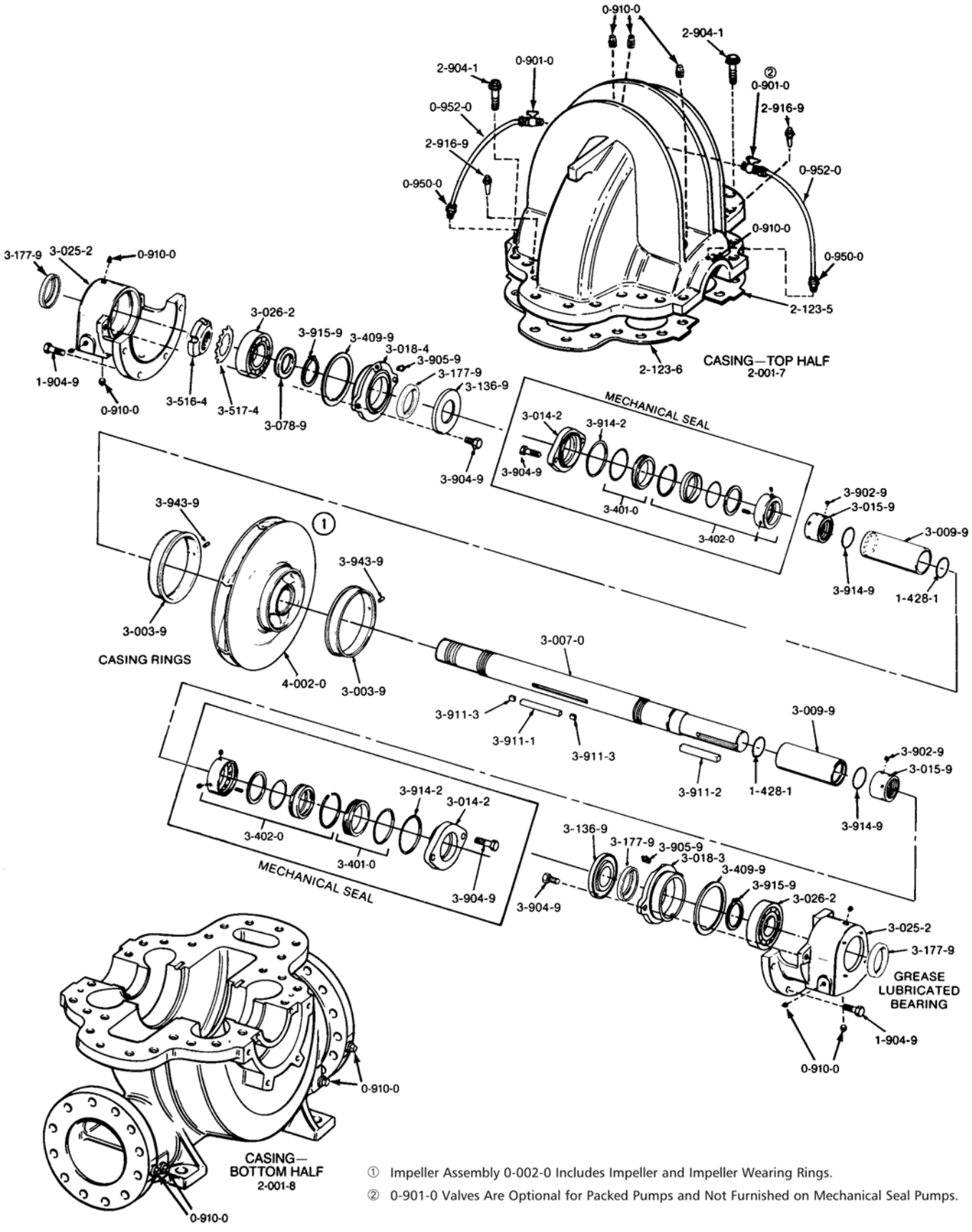
MECHANICAL SEALS MOUNTED ON SLEEVE

CATALOG NO.	PART NAME	STANDARD MATERIALS	OPTIONAL MATERIALS
0-910-0	Pipe Plugs (Casing, Bearing Housings)	Steel	
0-912-0	Male Connectors	Brass	
0-952-0	Flush Line	Copper	
1-428-1	Gaskets (Sleeve)	Synthetic (Non-Asbestos)	
1-904-9	Bolts (Gland)	Stainless Steel (AISI 316)	
2-001-0	Casing	Cast Iron (ASTM A48 Class 35)	Ductile Iron (ASTM A536, Grade 65-45-12)
2-123-5	Casing Joint Gasket (Suction)	Paper (Vellumoid 505)	
2-123-6	Casing Joint Gasket (Discharge)	Paper (Vellumoid 505)	
2-904-1	Bolts (Casing)	Steel (Grade 8)	
3-400-0	Mechanical Seal (Type 8 or equal)	Viton / Carbon vs. Ceramic	
3-014-2	Glands (Mechanical Seal)	Cast Iron (ASTM A48 Class 25A)	
3-003-9	Casing Rings	Bronze (ASTM B584 Alloy 932)	
3-007-0	Shaft	Steel (SAE 1045) ①	316SS A276 UNS S31600 ②
3-009-9	Shaft Sleeves	Bronze (ASTM B584 Alloy 932)	
3-015-9	Shaft Sleeve Nuts	Bronze (ASTM B594 Alloy 932)	
3-018-3	Bearing Housing Cover (Inboard)	Cast Iron (ASTM A48 Class 30B)	
3-018-4	Bearing Housing Cover (Outboard)	Cast Iron (ASTM A48 Class 30B)	
3-025-2	Bearing Housings	Cast Iron (ASTM A48 Class 30B)	
3-026-3	Bearing (Inboard)	Steel	
3-026-4	Bearing (Outboard)	Steel	
3-078-9	Thrust Washer (Outboard)	Steel	
3-136-9	Deflectors	Rubber (BUNA-N)	
3-177-4	Lip Seal (Outboard Bearing)	Rubber (BUNA-N)	
3-177-9	Lip Seals (Bearings)	Rubber (BUNA-N)	
3-409-9	Gaskets (Bearing Housing Covers)	Paper (Vellumoid 505)	
3-516-4	Locknut (Bearing)	Steel	
3-517-4	Lockwasher (Bearing)	Steel	
3-902-9	Set Screws	316 Stainless Steel	
3-904-9	Bolts (Bearing Covers)	Steel	
3-905-9	Grease Fittings	Steel	
3-911-1	Key (Impeller)	316 Stainless Steel	
3-911-2	Key (Coupling)	Steel	
3-911-3	Keys (Shaft Sleeves)	316 Stainless Steel	
3-914-2	O-Ring (Gland)	Rubber (Buna-N)	
3-914-9	O-Rings (Shaft Sleeves)	Rubber (Buna-N)	
3-915-9	Snap Rings	Steel	
3-943-9	Spirol Pins (Casing Rings)	302 Stainless Steel	
4-002-9	Impeller	Bronze (ASTM B594 Alloy 875)	
OPTIONAL COMPONENTS*			
4-004-9	Impeller Rings	Bronze (CDA 925)	
3-400-0	Balanced Mechanical Seal (Type 8B)	Viton / Carbon vs. Ceramic	

① Standard shaft material for size 14x10x20L is 4140. For speeds greater than 1200 RPM, the standard shaft material is 17-4 PH condition H1150 for sizes 16x12x23 and 16x14x17.

② Shaft material option is 17-4 PH condition H1150 for sizes 14x10x20L, 16x12x23 and 16x14x17.

Exploded View
Series A-C 9100 Large Split Case Pumps



① Impeller Assembly 0-002-0 Includes Impeller and Impeller Wearing Rings.

② 0-901-0 Valves Are Optional for Packed Pumps and Not Furnished on Mechanical Seal Pumps.

Notes

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1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're 12,500 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

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Let's Solve Water

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