

WELCH-ILMVAC

OWNER'S MANUAL FOR DUOSEAL® VACUUM PUMP MODELS: 1376B-01, 1376B-10, 1376C-03, 1376L-01, 1376M-01 & 3Z656



WARNING

Never block the Exhaust Port.

If the exhaust port is blocked, pressure will build-up in the pump with the potential of the pump body bursting and causing possible injury to personnel in the area.

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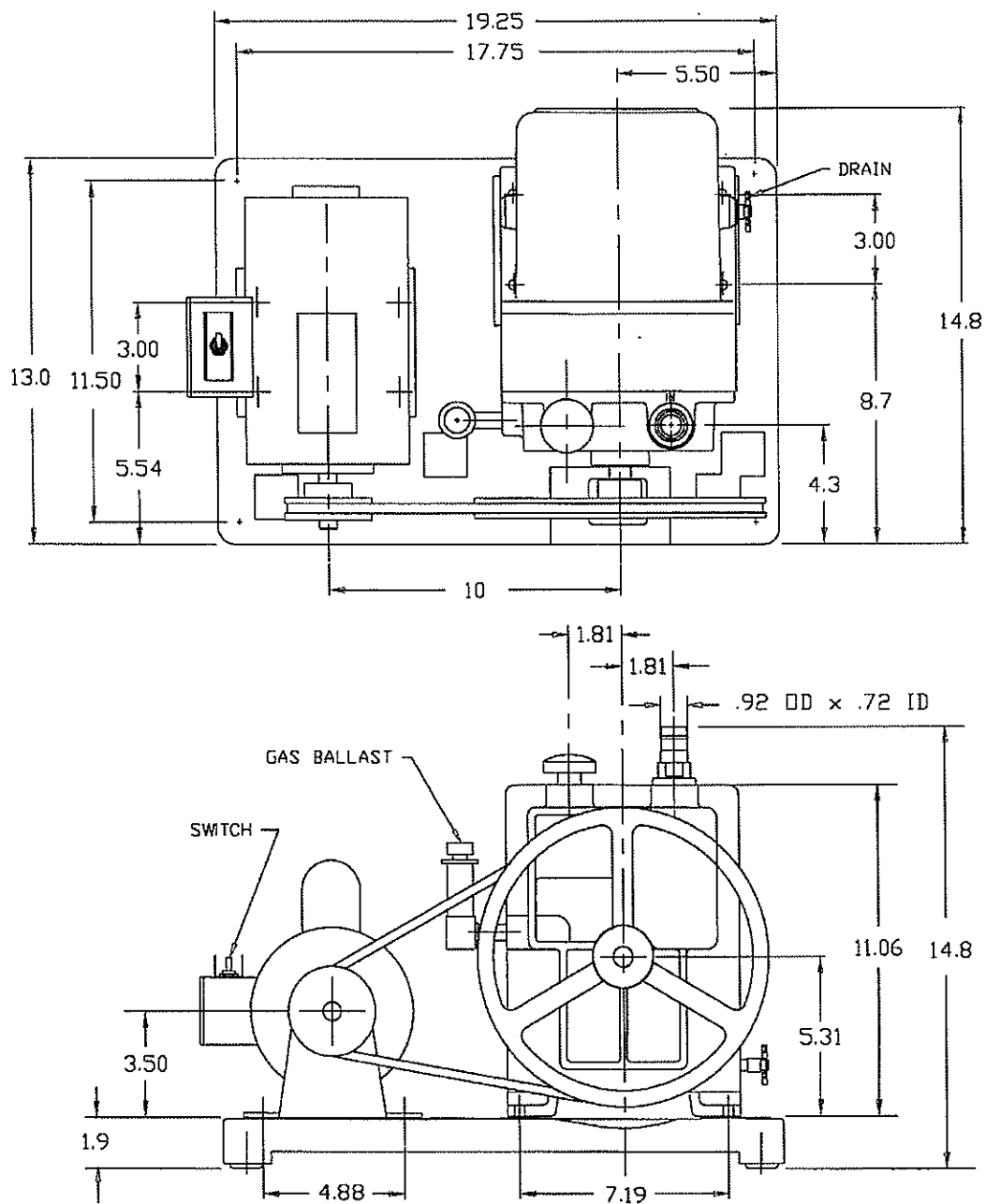
Section 5: QUICK REFERENCE CHART

Motor Options	1376
Wired for 115V, 60Hz, 1Ph	1376B-01
Wired for 230V, 60Hz, 1Ph	N/A
Wired for 230V, 50Hz, 1Ph	1376C-03*
Wired for 230V, 60Hz, 3Ph	1376M-01
Wired for 230V, 50Hz, 3Ph	N/A

Replacement Parts	
Shaft Seal: Lip Seal	1401D -01
Shaft Seal: Mechanical Seal	1401D
Dust Cap	61-8912
Air Filter Screen	41-1692
Intake Chamber Cover Gasket	41-0234
Oil Case Gasket	41-0403
Drain Plug	61-2278
Oil Window	61-2229A
Large Vane	41-1684
Small Vane	41-1487
Large Vane Spring	41-1304
Small Vane Spring	41-1304
Large Vane Spring Holder	41-1685
Small Vane Spring Holder	41-1685
Shaft	41-1683
Upper Exhaust Valve	41-2153
Lower Exhaust Valve	41-2154
Optional Exhaust Filter	1417P-10
Optional Exhaust Filter Element	1417G
Pump Pulley	41-2074
Standard Belt	1405A
Standard Hose Barb Fitting	1393K
Standard Flange Adapter Fitting	1393G
Pressure Release Valve	41-0992
Repair Kits	
Minor Repair Kit	1376K-05
Major Repair Kit	1376K-06
Base and Belt Guard Kit	1371B-01

Specifications	
Free Air Displacement, L/M (CFM)	300 (10.6)
Gas Ballast	Yes
Ultimate Pressure, Torr (mbar)	1 (1.3)x10 ⁻⁴
Rotational Pump (RPM)	525
Oil Capacity, quarts (Liters)	2.5 (2.4)
Net Wt. Unmounted Pump, lb (Kg)	107 (52)
Net Wt. Mounted Pump, lb (Kg)	156 (71)
Standard Flange Size	NW25
Tubing Needed (I.D. Inches)	13/16
Intake Thread Size	1-20
Exhaust Thread Size	1-20
Electrical Requirements 1	115V/230V
Electrical Requirements 2	60Hz
Electrical Requirements 3	1 Phase

Section 6: DIMENSIONAL DRAWING



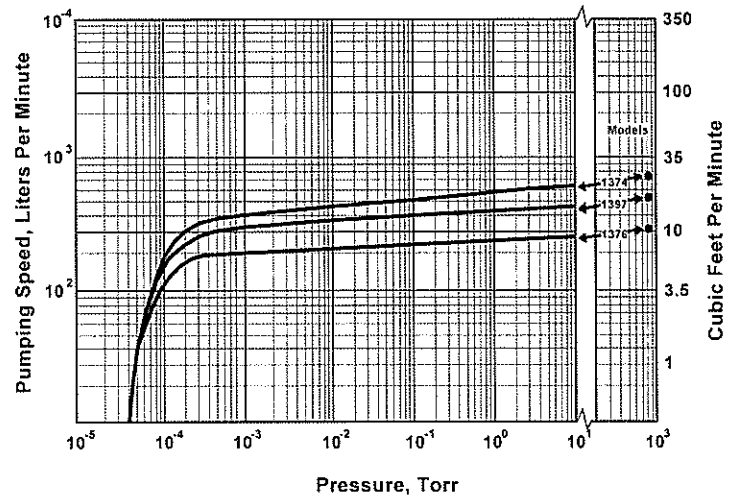
Section 7: PUMPING SPEED CURVES

HIGH EFFICIENCY PUMPING CHARACTERISTIC OF DUOSEAL® PUMPS

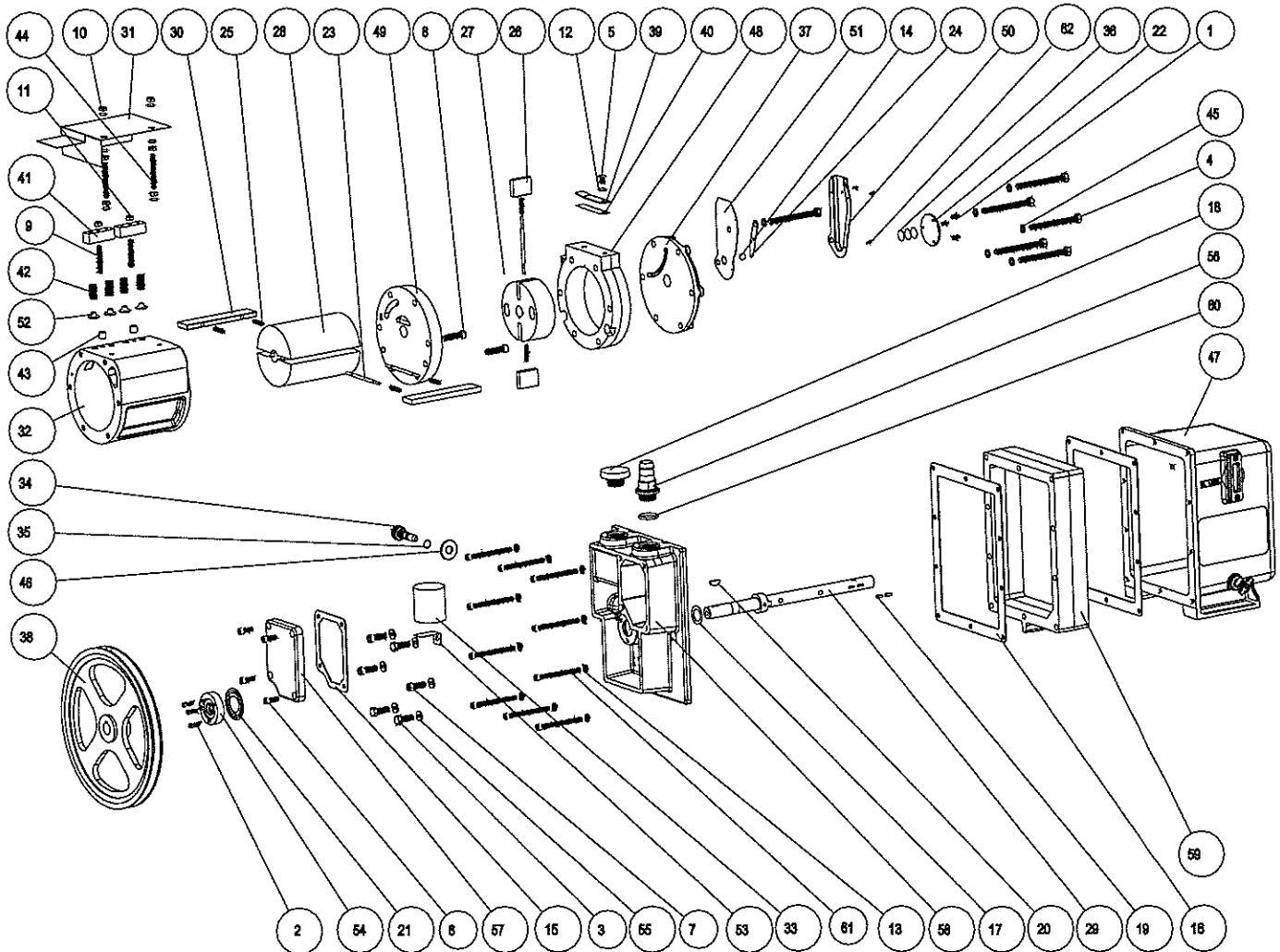
The low RPM design of DuoSeal vacuum pumps makes it possible to maintain high pumping efficiencies into the low micron range. High RPM direct drive vacuum pumps, on the other hand, experience a rapid fall off of pumping speed below 100 microns.

A comparison of the DuoSeal pumping speed curves shown below, versus high RPM pump speed curves conclusively illustrates the superior performance of the DuoSeal pump.

What does that mean for the vacuum pump user? DuoSeal pumps provide considerable faster pump down time in the low micron range.



Section 8: EXPLODED VIEW



PARTS LIST

ITEM	QTY	P/N	A*	B*	DESCRIPTION	ITEM	QTY	P/N	A*	B*	DESCRIPTION
1	3	2-00-2705			SCREW PAN HD 10-32 x 3/8" LG	32	1	41-1688			LARGE RING
2	3	2-00-6712			SCREW SOCKET HD 10-32 x 3/4" LG	33	1	41-1692	1	1	AIR FILTER, MESH
3	3	2-01-0316			SCREW HEX HD 5/16-18 x 1" LG	34	1	41-1736			GAS BALLAST VALVE
4	6	2-01-0356			SCREW HEX HD 5/16-18 x 3-1/2" LG	35	1	41-1742	1	1	O-RING #011 BUNA-N
5	1	2-01-5105			SCREW SOCKET HD 1/4-20 x 3/8" LG	36	3	41-1766			THRUST DISK
6	4	2-01-6112			SCREW SOCKET HD 1/4-20 x 3/4" LG	37	1	41-2045			SMALL END PLATE, FINISHED
7	3	C91590			SCREW SOCKET HD 5/16-18 x 1" LG	38	1	41-2074			PULLEY w/ SET SCREW
8	2	2-01-6320			SCREW SOCKET HD 5/16-18 x 1-1/4 LG	39	1	41-2153	1	1	EXHAUST VALVE, UPPER
9	2	2-01-8128			SETSCREW 1/4-20 x 1-3/4" LG	40	1	41-2154	1	1	EXHAUST VALVE, LOWER
10	6	2-31-0112			HEX NUT 1/4-20, STEEL	41	2	61-8313A			VALVE BLOCK S S
11	2	2-36-9900			HEX LOCK NUT 1/4-20	42	4	41-2158	4	4	VALVE SPRING
12	7	2-61-0000			WASHER, STEEL 3/16	43	2	41-2159	2	2	VALVE BLOCK SPACER
13	10	2-63-0193			WASHER, LOCK 1/4" MEDIUM	44	2	41-2175			SETSCREW 1/4-20 x 2.25" LG
14	1	4-40-1200	1	1	STEEL BALL 3/8" DIA	45	6	41-2363			WASHER 5/16 ID x 1/2 OD
15	1	41-0234	1	1	GASKET, INTAKE CHAMBER COVER	46	1	41-2757			LOCK NUT
16	2	41-0403	2	2	GASKET, OIL CASE	+ 47	1	61-8101			OIL CASE ASSEMBLY
17	1	41-0508	1	1	WASHER, THRUST	48	1	61-8108D			EXHAUST RING
18	1	61-8912			DUST CAP	49	1	61-8250C			CENTER PLATE
19	2	41-0613	2	2	WOODRUFF KEY #404	50	1	61-8309B			PRESSURE RELEASE TUBE #1
20	1	41-0524	1	1	WOODRUFF KEY	51	1	61-8310A			PRESSURE RELEASE TUBE #2
21	1	41-0543			GASKET, SEAL	52	4	61-8314A	4	4	VALVE
22	1	41-0672			SHAFT END PLATE	53	1	61-8329A			BRACKET, INTAKE SCREEN
23	3	41-1685	3	3	SPRING HOLDER	54	1	61-8107A			SHAFT SEAL ASSEMBLY
24	1	41-0992	1	1	PRESSURE RELEASE VALVE	55	6	61-8456A			WASHER 5/16, COPPER
25	6	41-1304	6	6	VANE SPRING	56	1	61-8468A			HOSE ADAPTER 13/16 HOSE ID
26	2	41-1487	2		VANE, SMALL	57	1	61-8671			COVER, FINISHED
27	1	41-1518			ROTOR, EXHAUST	58	1	61-8685			LARGE END PLATE
28	1	41-1682			LARGE ROTOR	59	1	61-8687			OIL CASE SPACER
29	1	41-1683			SHAFT	60	1	61-9284A	1	1	O-RING #214 FLUOROELASTMER
30	2	41-1684	2		VANE, INTAKE	61	10	62-0015			SCREW SOCKET HD 1/4-20 x 3 125" LG
31	1	41-1686			BAFFLE ASSEMBLY	62	3	62-0259			SCREW #6-1/4, SELF-TAPPING
N/S		1401D	1	1	MECHANICAL SEAL KIT	N/S		1-99-5282	1	1	SEALANT, 6cc

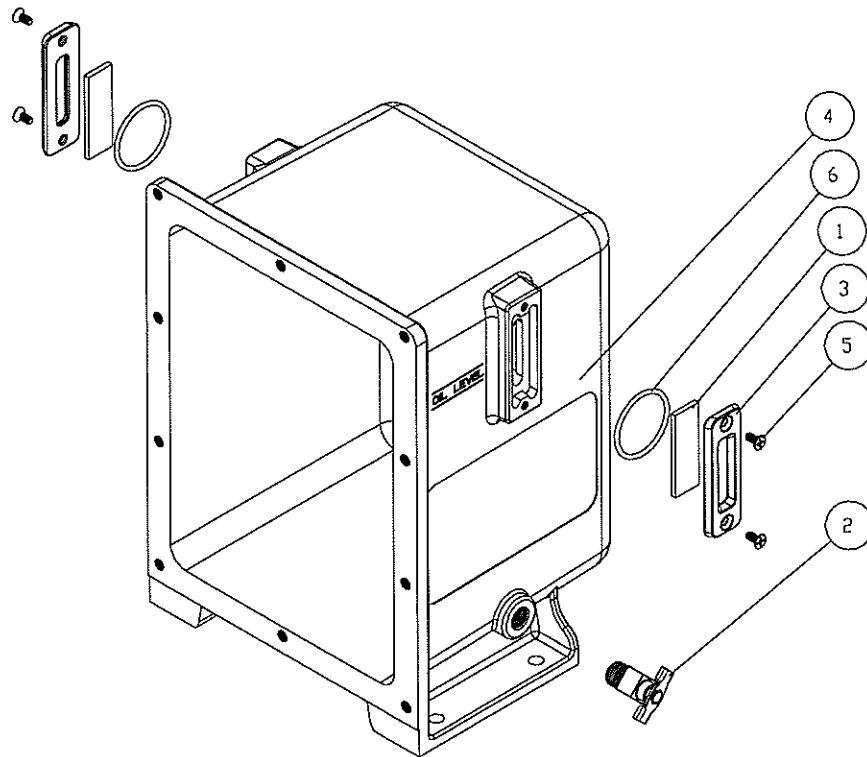
A*: Major Repair Kit Catalog # 1376K-06

B*: Minor Repair Kit Catalog # 1376K-05

+ Item 47 exploded view shown on page 18

1401D is a Mechanical Seal Kit-includes Mechanical Seal, Gasket and 3 screws.

VIEW AND PARTS LIST FOR MODEL 61-8101



Parts List for Model 61-8101			
Item	Qty.	P/N	Description
1	2	61-2229A	Oil Window Glass
2	1	61-2278	Drain Valve
3	2	61-2370	Oil Window Cover
4	1	61-8833	Oil Case, Machined
5	4	62-1014	Screw 8-32x3/8" Flat Head
6	2	66-0304	O-ring #127 Aflas

Section 9: ACCESSORY SECTION

Exhaust Filter

Filters oil mist from pump exhaust / Easy Replacement
Reduces pump noise / Filters to 0.3 micron particle size

Standard Exhaust Filter				
Use with pump model	Dimension		Catalog Number	
	Diameter	Height	Filter	Replacement Element
1392, 1399, 1400	2.5	2.5	1417	1417L
1376,1380, 1402,1400	5	6.25	1417P-10	1417G
1397,1374	5	9	1417P-20	1417H-01

Directional Exhaust Filter

Large, high capacity / Screw-in type / 360 Swivel outlet with tubing connector

Directional Exhaust Filter				
Use with pump model	Dimension		Catalog Number	
	Diameter	Height	Filter	Replacement Element
1392, 1399, 1400	2.5	2.5	1417L	1417L
1376,1380, 1402,1400	5	6.25	1417G	1417G
1397,1374	5	9	1417H-01	1417H-01

Exhaust Mist Eliminator

Exhaust oil recyclers capture oil mist expelled from the pump, separated air from oil, and return collected oil to the pump via a line connected to the gas ballast inlet. This process effectively reduces oil consumption and minimizes maintenance requirements by extending the time between oil changes.

Catalog Number	Use with pump model
1416H-01	1400
1416C-01	1405, 1376, 1380, 1400

Requires gas ballast connection kit: Cat. No. 141601 - For models 1400,1405,1376,1380,1402

Coaxial Traps

Reduces oil back streaming / Stainless steel construction / Easy Replacement of Element

ISO Size	Capacity	Diameter	Height	A2	Cat.No.1
NW16	to 4 CFM (140 L/min)	3.75	5.25	8.25	541001
Stainless Steel Element for ISO NW 16 Trap 1					541921
Stainless Steel Element for ISO NW 25 and NW 40 Traps1					541922

Cat. No.1. Element must be ordered with trap.

A2. Distance between ISO NW inlet and outlet connections

Dry Ice Cold Traps

Removable 3 quarter center well for dry ice/alcohol slurry (do not use acetone) / Visible trapping surface

Cold temperature up to 12 hours depending on vapor / Available with straight tube connections

ISO Size	Diameter	Height	A1	I/O Offset	Cat. No	Replacement Seal Cat. No.
Straight Tube						
1/2 O.D.	10.00	8.25	10.75	3.5	1420H-14	545200

A1. Distance between ISO NW inlet and outlet connections