

Welch®

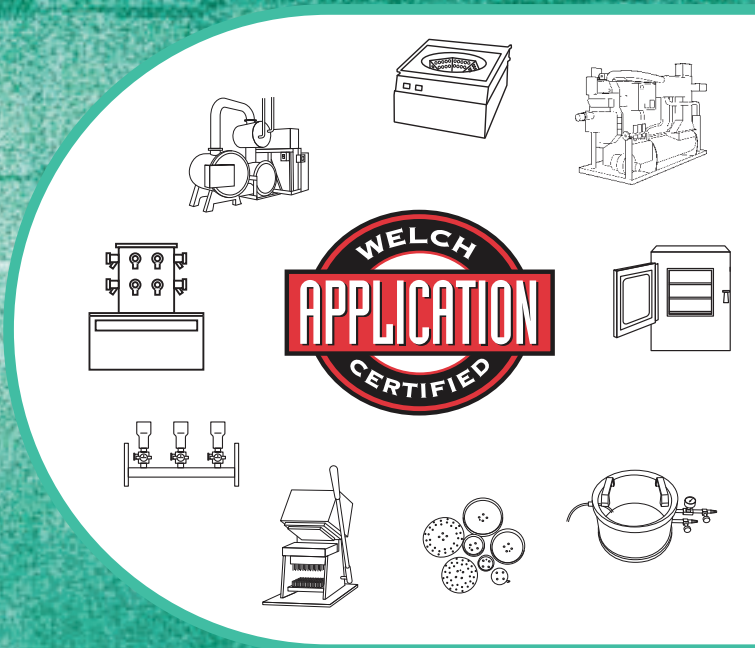
OEM, Industrial & Refrigeration Catalog

High Vacuum Rotary Vane Pumps

Dry (oil-free) Vacuum Pumps

Refrigeration Vacuum Pumps

Components, Traps & Gauges



for more info [CLICK HERE](#)

Ideal
vacuum products
www.idealvac.com

 **Welch**
Rietschle Thomas
A Thomas Industries Company

OEM, Refrigeration & Industrial Catalog

Welch Application Certified

The business of Welch Rietschle Thomas is serving your vacuum application needs. For over 100 years, Welch has been supplying pumps for your vacuum applications. Welch has developed an in-depth knowledge from these years of experience on selecting the correct vacuum pump mechanism and modifying the vacuum mechanism to meet particular application needs. Our reasons for doing this are as follows: 1) most cost effective solution; 2) built-in health and safety considerations; 3) extended service interval with correct pumping mechanism; 4) complete solution with necessary accessories and instructions and 5) provides peace of mind when selecting the correct pump since each is application certified. To learn more about our application specific pumps and systems, please see pages 16 to 21 of this catalog or visit our web site at www.welchvacuum.com. We are proud to offer these products to serve your vacuum needs.

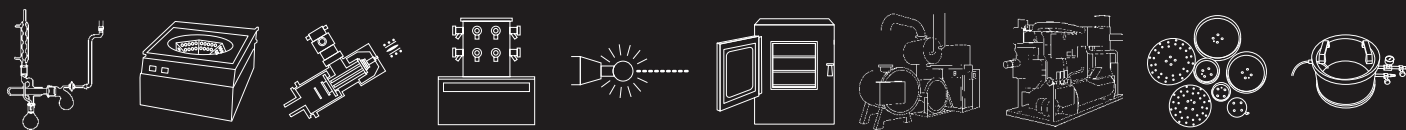
CONTENTS

Vacuum Pumps	
Compact Direct-Drive High Vacuum Pumps	2, 3 & 8
DUOSEAL® Rugged Belt-Drive Vacuum Pumps	4, 5 & 9
CHEMSTAR® Pumps & Accessories for Corrosive Gases	6 & 7
OEM Dry (Oil-Free) Vacuum Pumps	10 & 11
Standard Duty Dry Vacuum Pumps	12 & 13
Chemical Duty Dry Vacuum Pumps	14 & 15
Dry Rotary Vane Low Vacuum Pumps & Systems	18
Application Specific Information	
Summary Chart of Common Pump Applications	1
Aspiration/Filtration Systems	16
LCMS Vacuum Pump	17
Low Pressure Refrigerant Recovery	19
Commercial & Industrial Refrigeration Service	20
Refrigeration & Air Conditioning Manufacturing	21
Vacuum Components & Service Kits	
Vacuum System Connectors & Accessories	22-24
Exhaust Filters & On/Off Foot Switch	25
Foreline Traps & Hose Adapter Kits	26, 27
Vacuum Pump Oils	28
QUICKCHANGE™ Oil Change System	28
Vacuum Regulators, Vacuum Gauges	29
Service Kits	29-30
Pumping Speed Curves	31
Index of Catalog Numbers	32
Ordering, Service & Trademarks	33

See our online catalog for additional information, U.S.A. list prices, and repair part information.



Common Applications for Welch® Vacuum Pumps & Systems



Degassing

Heat Treating

Freeze Drying

Lighting

Picture Tube

Refrigeration Manufacturing

Refrigeration Service

Crystallizers

Optical Coating

Metallizing

Evaporators

Vacuum Holding

Vacuum Distillation

Oil Purification

Vacuum Coating

Pharmaceutical

Packaging

Altitude Chambers

Vacuum Chamber

Glove Boxes

Laser Technology

Semiconductor

Automotive Manufacturing

Scientific Instrumentation

Physics/Materials Research

Food Processing

Sterilization

Vacuum Ovens

Aspiration

Filtration

Gel Drying

Concentrator

Cell Harvester

Vacuum Manifold

Tissue Culture Aspiration

Rotary Evaporation

Transfer Line

Glove Box

Turbo Backing

Diffusion Pump Backing

Annular Space

Schlenk Line

Vacuum Oven

Rice Porosity

Neon Tube Manufacturing

Aluminizer

Laboratory Automation

Transfer Chambers

Vacuum Chucking

Water Aspirator Replacement

Welch® Vacuum Pumps

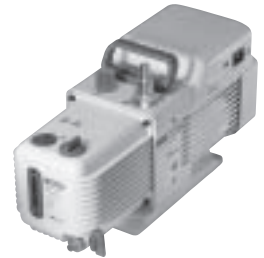
Lightweight, Compact, High
Performance Pumps

Suited For:

- General Vacuum Work
- Heat Treating
- OEM Instrumentation
- Replacement Pumps for Instruments and Equipment

8890A
(see note 3)

8905A



8907A/8912A/8917A

Specifications

TWO-STAGE VACUUM PUMPS¹

Welch Model	8890	8905	8907	8912	8917	8920
Free Air Displacement						
CFM (L/min) @ 60Hz	1.1(31)	1.8(51)	2.6(73)	3.8(108)	6.1(173)	7.7(218)
m ³ /hr (L/min) @ 50Hz	1.6(26)	2.6(43)	3.7(61)	5.4(90)	8.6(144)	10.9(182)
Ult. Pressure, Torr (mbar) ¹	1 x 10 ⁻³ (0.133)	2 x 10 ⁻³ (0.0027)	1x10 ⁻⁴ (0.00013)	1x10 ⁻⁴ (0.00013)	1x10 ⁻⁴ (0.00013)	3 x 10 ⁻⁴ (0.0004)
Ult. Pressure, microns Hg	100	2.0	0.1	0.1	0.1	0.3
Sound Level, dBA	58	52	50	50	50	54
Motor/Pump Speed (60Hz)	3450	3450	1725	1725	1725	1725
Motor Horsepower (watts)	1/4(190)	1/4(190)	1/2(370)	1/2(370)	1/2(370)	1/2(370)
Oil Capacity, qt. (liters)	0.48(0.45)	0.42(0.4)	1.0(0.95)	0.9(0.86)	0.9(0.86)	1.3(1.2)
Tubing Needed, I.D. in. (mm)	3/8 (10)	3/16, 7/16 (5, 11)	7/16, 13/16 (11, 20)	7/16, 13/16 (11, 20)	7/16, 13/16 (11, 20)	9/16, 13/16 (14, 20)
Intake Connection ² (thread)	Barb (1/4 in NPT)	UNIBARB (3/4-20)	UNIBARB (1 1/8-20)	UNIBARB (1 1/8-20)	UNIBARB (1 1/8-20)	UNIBARB (1 1/8-20)
Exhaust Connection ³	3/4-20	3/4-20	1-20	1-20	1-20	1-20
Weight, lbs (kg)	24.5(11.1)	24.5(11.1)	40(18)	41(18)	43(19.5)	58.5(26.6)
Overall Dimensions						
L in. (cm)	14.5(36.8)	14.1(35.9)	18.5(47.1)	18.5(47.1)	18.5(47.1)	20.5(52.1)
W in. (cm)	5.1(13)	5.1(13)	6.5(16.5)	6.5(16.5)	6.5(16.5)	7.1(17.9)
H in. (cm)	8.4(21.3)	8.4(21.3)	9.6(24.3)	9.6(24.3)	9.6(24.3)	10.7(27.2)
Ship Weight, lbs (kg)	33(15)	33(15)	55(25)	55(25)	60(27.3)	71(32.3)
Shipping Carton Dimensions						
L x W x H in. (cm)	21.5 x 12.5 x 16 (54.6 x 31.8 x 40.6)	21.5 x 12.5 x 16 (54.6 x 31.8 x 40.6)	24 x 15.8 x 14 (61 x 40.1 x 35.6)	24 x 15.8 x 14 (61 x 40.1 x 35.6)	24 x 15.8 x 14 (61 x 40.1 x 35.6)	24 x 15.8 x 14 (61 x 40.1 x 35.6)

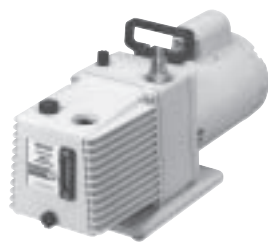
Ordering Information^{4, 5, 6.}

Catalog Number						
Wired for 115V, 60Hz, 1 Ph with N. American 115V Plug	8890A ^{7,8}	8905A	8907A	8912A	8917A	8920A
Wired for 230V, 50Hz, 1 Ph with Cont. Euro. (Schuko) Plug	8890C-02 ^{7,8}	8905C-02	8907C-02	8912C-02	8917C-02	8920C-02
Wired for 230V, 60Hz ^a with N. American 230V Plug	_____	_____	_____	8912C-01	8917C-01	_____
Wired for 115V, 60Hz, 1 Ph with N. American 115V Plug & ISO NW inlet flange ⁵	_____	8905B-24	8907B-24	8912B-24	8917B-24	8920B-24

Notes:

- Models 8905, 8907, 8912, 8917, 8920, and 8925 should not be operated continuously at pressures above 10 Torr. Ultimate pressure measured with a trapped McCleod gauge.
- UNIBARB™: Convenient inlet barb connection accepts two sets of tubing ID (see page 22).

- Cat. nos. 8890A & 8890C-02 includes an exhaust filter; not included with any other model.
- All single phase motors have overload protection. 115V, 60Hz models are CSA approved.
- NW inlet flange replaces UNIBARB on these Cat Nos. Cat. No. 8905B-24 comes w/NW 16 inlet flange. Cat. Nos. 8907B-24, 8912B-24, 8917B-24 & 8920B-24 comes w/NW 25.



8920A



8925A

SPECIAL APPLICATION SYSTEMS

8925	GEM® System ⁸	For Harsh Chemicals ⁹
11.3(320)	1.1(31)	6.1(173)
16(267)	1.6(26)	8.6(144)
4 x 10 ⁻⁴ (0.00053)	1x10 ⁻⁴ (0.133)	1x10 ⁻² (0.013)
0.4	100	0.1
55	58	50
1725	3450	1725
3/4(560)	1/4(190)	1/2(370)
1.2(1.1)	0.48(0.45)	1.4(1.3)
9/16, 13/16 (14, 20)	3/8 (10)	7/16, 13/16 (11, 20)
UNIBARB (1 1/8-20)	Barb (1/4 in NPT)	UNIBARB (1 1/8-20)
1-20	3/4-20	1-20
69(31.3)	27.5(12.5)	55(25)
21.2(53.8)	14.5(36.8)	18.6(47.2)
7.1(17.9)	5.1(13)	11.5(29.2)
10.7(27.2)	14.3(36.3)	9.6(24.4)
74(33.6)	37(16.8)	70(31.8)
24 x 15.8 x 14 (61 x 40.1 x 35.6)	21.5 x 12.5 x 16 (54.6 x 31.8 x 40.6)	25 x 18.5 x 14 (63.5 x 47 x 35.6)

8925A	8890A-70	8917A-80 ¹⁰
8925C-02	8890C-72	8917C-80
_____	_____	_____
_____	_____	_____

Accessories and Oil

Exhaust Filter

A replaceable filter element captures oil mist from the exhaust port of the pump and reduces pump noise.

Pump Model	Cat. No.
8890, 8905	1417
8907, 8912, 8917	1417P-7
8920, 8925	1417P-10



Exhaust Oil Recycler

Use when pumping continuously above 1 Torr. Captures oil mist from the pump, and returns collected oil to the pump via a gas ballast connection.

Pump Model	Cat. No.
8890 (GEM)	1416B
8905	1416H
8907, 8912, 8917, 8920, 8925	1416C



Dry Ice/Liquid Nitrogen Trap

Recommended to protect pump from condensable vapors. Use either dry ice slurry or LN2 in the 3 quart center well. Accepts 7/16" I.D. hose. See pg. 27.

Pump Model	Cat. No.
8890, 8905, 8907, 8912, 8917, 8920, 8920	1420H-14



Premium Vacuum Pump Oil

Higher viscosity formula that resists breakdown at higher RPM and temperatures of direct drive vacuum pumps.

Size	Cat. No.
Liter	8995P-11
Gallon	8995P-15
5 Gallon	8995P-20
55 Gallon	8995P-25



Gold Vacuum Pump Oil

Specially formulated oil for challenging applications. This highly saturated synthetic oil is resistant to breakdown at higher temperature and is highly stable in chemical environments.

Size	Cat. No.
Liter	8995G-11
Gallon	8995G-15
5 Gallon	8995G-20
55 Gallon	8995G-25



6. 230V, 50 Hz models which are provided with CE mark.

7. Cat No. 1416B Exhaust Oil Recycler is recommended when operating the GEM at pressures of 1 Torr or higher.

8. GEM System includes 1416B Exhaust Oil Recycler & 1421 Vacuum Regulator.

9. System comes with integral oil filtration system. See page 8 for more details.

10. Order 8917C-80 and cord set 8906M for 230V, 60Hz, 1 Ph.

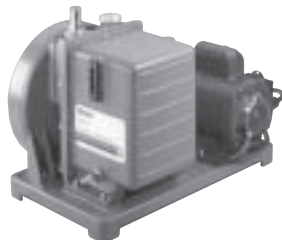
DUOSEAL® Vacuum Pumps



1 1



1 1



1 11 1

Specifications

1	1													
	1			1			1			1				
							1			1				
	1			1			1			1				
	1			1			1			1				
							1			1				
	1			1			1			1				
							1			1				
	1			1			1			1				
	1						1			1 1				
	1 11			1 11			1 1 1			1 1 1			1 1	
	1						1			1			1	
	1						1			1			1	
	11 1						11 1			1 1				
	1 1			1			1			1				
	1						1			1 1			1	
	1 1			1 1			1 1			1			1	
	1			1			1			1 1			1	
	1 1 1			1 1			1 1			1 1			1	
	1 1 1													

Ordering Information^{3,4.}

11	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1

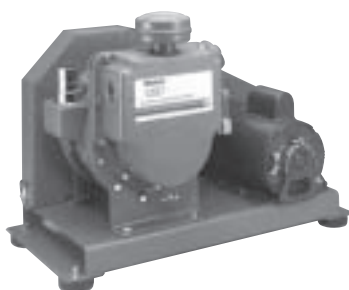
Notes:
1

1 11 1 1 1

Vacuum Pumps



1376B 01



1397B 01/1374B 01

ONE STAGE VACUUM PUMPS²

w/o plate

w/bell jar plate

1374	1399	1399N
23	1.2	1.2
650	35	35
1 10 ⁻⁴ 0.00013	1.5 10 ⁻² 0.019	1.5 10 ⁻² 0.019
0.1	15	15
Yes	No	No
510	750	750
1 1/2 1120	1/3 250	1/3 250
1.25 1.2	0.5 0.47	0.5 0.47
1 5/8 41	7/16 11	7/16 11
1.75 20	3/4 20	3/4 20
1.75 20	3/4 20	3/4 20
220 100	51 23	63 28.6
26 66	17 43.2	17 43.2
13.7 34.8	9 22.9	9 22.9
18.8 47.6	10 25.4	10 25.4
215 97.7	62 28.2	74 33.6
27.3 18 22	20.5 13.8 14.5	20.5 13.8 14.5
69.3 45.7 55.9	52.1 35.1 36.8	52.1 35.1 36.8

1374B 01 ⁵	1399B 01	1399N 01
1374C 02 ⁵	1399C 02	
1374M 01		

5. Conduit wiring installation required. No cord plug or switch provided. See page 9 for more details.

6. CSA approved models are 1400B 80 1405B 80 and 1402B 80.

Accessories and Oil

Exhaust Filter

A replaceable filter element captures oil mist from the exhaust port of the pump and reduces pump noise.

Pump Model	Cat. No.
1399 1400	1417
1376 1402 1405	1417P 10
1397 1374	1417P 20



Exhaust Oil Recycler

Use when pumping continuously above 1 Torr. Captures oil mist from the pump and returns it to the pump via a gas ballast connection.

Pump Model	Cat. No.
1400	1416H 01
1376 1402 1405	1416C 01



Dry Ice/Liquid Nitrogen Trap

Recommended to protect pump from condensable vapors. Use either dry ice slurr or LN2 in the 3 quart center well. Accepts 7/16 I.D. hose. See pg. 27.

Pump Model	Cat. No.
1400 1405 1402	1420H 14
1376 1399	



DuoSEAL® Vacuum Pump Oil

Tested to high vacuum levels this oil meets rigid requirements for vapor pressure stability and viscosity.

Size	Cat. No.
Quart	1407K 11
Gallon	1407K 15
5 Gallon	1407K 20
55 Gallon	1407K 25



Gold Vacuum Pump Oil

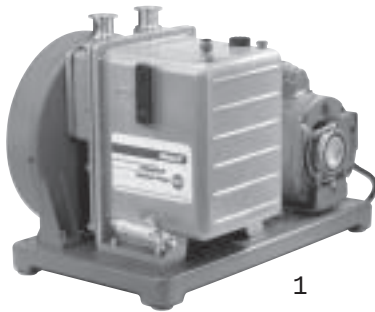
Special formulated oil for challenging applications. This highly saturated hydrocarbon oil is resistant to breakdown at higher temperature and is highly stable in chemical environments.

Size	Cat. No.
Liter	8995G 11
Gallon	8995G 15
5 Gallon	8995G 20
55 Gallon	8995G 25



CHEMSTAR® Pumps For Corrosive Gases

CHEMSTAR Vacuum Pumps



1

1

1

1

Specifications¹.

1	1			1			1				
							1				
	1										
	1	1		1	1		1	1	1		
	1	1			1						
1 11			1 1 1			1 1 1					
1											
1			1			1 1 1			1 1 1		
			11 1			1 1					
1			1			1 1					
1 1 1			1 1			1 1					
1			1			1 1					

Ordering Information^{2,3,5}.

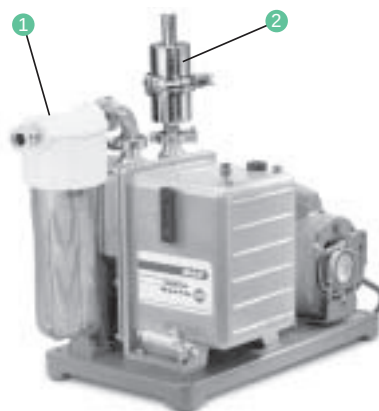
11	1	1	1	1	1	1	1
	11						
11	1						
		1					
			1				
				1			
					1		
						1	
							1

Notes:
1

Protective Accessories For Corrosive Gases

Protective Accessories For CHEMSTAR® PUMPS

- Heavy Corrosive Gas Loads
- Contaminated Exhaust Oil Mist
- Particulates In Gas Streams



- ① Acid Neutralization Trap
- ② Hermetically Sealed Oil Mist Eliminator
- ③ Make The Clear Choice



③

Acid Neutralization Traps



The Acid Neutralization Trap contains a large alkaline element cartridge to neutralize hydrous acids before they enter the vacuum pump. The element changes from white to bluish-transparent when spent and can be observed through the transparent trap body. Dimensions: 1420H-21, 8" W x 9" H; 1420H-20, 8" W x 13" H. (See CHEMSTAR application booklet for specific recommendations for use.)

ISO SIZE	CAPACITY	CATALOG NUMBER		
		TRAP	PUMP CONNECTOR KIT FOR TRAP ¹	REPLACEMENT ELEMENT
NW 16	To 2 CFM	1420H-21	1420K-16	1420E-02
NW 25	To 12 CFM	1420H-20	1420K-25	1420E-01

1. Includes hinge clamp, centering ring and elbow. Use with CHEMSTAR vacuum pumps.

Hermetically Sealed Oil Mist Eliminators



When attached to an effective exhaust line, the hermetically sealed oil mist eliminator prevents corrosive vacuum pump exhaust gases from escaping into the room. It also coalesces oil mist from the pump exhaust and allows it to drain back into the pump. Coalescing the oil mist prevents loss of oil and the frequent need to add expensive vacuum fluids. Stainless steel construction with borosilicate microfiber element and fluoroelastomer gaskets. Requires but does not include pump adapter kit. Dimensions of cat no. 1416D: 5" W x 7-3/4" H; 1416F, 5" W x 13-3/8" H. 1416D exhaust port accepts 13/16" I.D. hose.

USE WITH PUMP MODEL	CATALOG NUMBER		
	MIST ELIMINATOR	PUMP ADAPTER KIT	REPLACEMENT ELEMENT
1400N	1416D	1416E-01	1417Y-05
1402N, 1376N	1416D	1416E-02	1417Y-05

Make The Clear Choice



8995G-11

Pump oil Condition Color



Good



Bad(Possible Pump Damage)

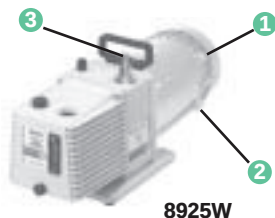


The choice is clear. Pump oil can become contaminated with ingested fluids and vapors. Use recommended pump oil and change your pump oil regularly. Cloudy and discolored oil will lead to premature pump failure.

Make the clear choice and change your oil regularly.

Special Configuration Direct Drive Pumps

Pump With Explosion Proof Motor

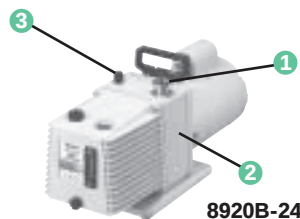


- ① Explosion proof motor, Class I Group D, Class II Groups E,F,G
- ② Conduit wiring installation required. No Cord, plug or switch provided
- ③ UNIBARB™ Inlet Connection

Cat. No.	Description ¹
8917W	173L/min, 1×10^{-4} Torr(1.3×10^{-4} mbar), 115/230V, 60Hz, 1Ph
8925W	320L/min, 4×10^{-4} Torr(5.3×10^{-4} mbar), 115/230V, 60Hz, 1Ph

Note: See pages 2 & 3 for more details.

Pump With ISO Inlet Flange

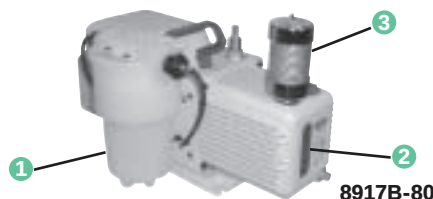


- ① NW 25 inlet connection
- ② Isolation & anti-oilsuckback solenoid valve
- ③ Gas ballast

Cat. No.	Description ¹
8905B-24	51L/min, 2×10^{-3} Torr(2.7×10^{-3} mbar), 115/230V, 60Hz, 1 Ph
8917B-24	173L/min, 1×10^{-4} Torr(1.3×10^{-4} mbar), 115/230V, 60Hz, 1 Ph
8920B-24	218L/min, 3×10^{-4} Torr(4×10^{-4} mbar), 115/230V, 60Hz, 1 Ph

Note: See pages 2 & 3 for more models and details.

Pump With Integral Oil Filtration System

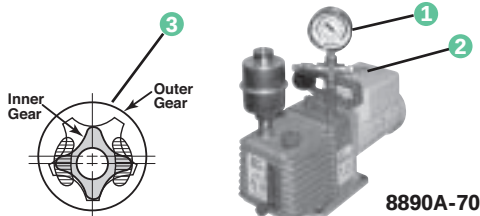


- ① Continuous neutralization of acids in oil
- ② Gold oil resistant to chemical attack
- ③ Mist eliminator included

Cat. No.	Description ¹
8917B-80	173L/min, 1×10^{-2} Torr(1.3×10^{-2} mbar), 115/230V, 60Hz, 1 Ph
8917C-80	Same as 8917A-80 except 143L/min @50Hz, 230V with universal IEC connector and detachable Schuko line cord, CE

Note: See page 3 for more details.

GEM® Pump With Vacuum Regulation



- ① Vacuum regulation with dial vacuum gauge
- ② Pump operates from 0.1 Torr to 760 Torr
- ③ Gear pumping mechanism very tolerant of vapors

Cat. No.	Description ¹
8890A-70	31L/min, 0.1Torr(0.13 mbar), 115V, 60Hz, 1 Ph with N. American 115V plug, CSA
8890C-72	Same as 8890A-70, except 26L/min, wired for 230V, 50Hz with cont. European(Schuko) plug, CE

Note: See page 3 for more details.

Special Configuration Belt Drive Pumps

Pump With Explosion Proof Motor



1402W-01

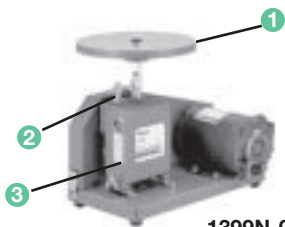
- 1 Explosion proof motor, Class I Group D, Class II Groups E,F,G*
- 2 Conduit wiring installation required. No Cord, plug or switch provided
- 3 Large oil reservoir dilutes contaminants

1 1

Cat. No.		Description ¹					
1	1	1	1	1	11	1	
1	1	1	1	1	11	1	
1	1	1	1	1	11	1	

Note:

Pump With Bell Jar Plate



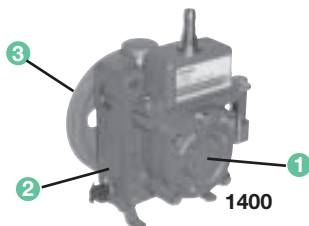
1399N-01

- 1 Includes bell jar plate
- 2 Delivers pressure of 15 PSIG
- 3 One stage vacuum pump

Cat. No.		Description ¹					
1	1	1	1	1	11	1	

Note:

DUOSEAL[®] Pump Only



1400

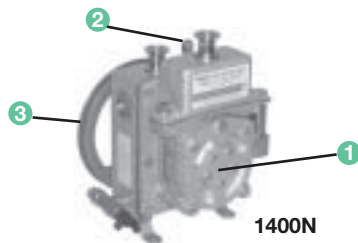
- 1 Low pump RPM for long service life
- 2 High contamination tolerance
- 3 Pump only, no motor, base or belt guard

Cat. No.		Description ¹					
1		1	1	1	1		
1		1	1	1	1		

Note:

1 1 1 1 1

CHEMSTAR[®] Pump Only, For Corrosive Gases



1400N

- 1 Vital parts corrosion resistant
- 2 Nitrogen purge standard
- 3 Pump only, no motor, base or belt guard

Cat. No.		Description ¹					
1		1	1	1	1		
1		1	1	1	1		

Note:

1 1 1 1

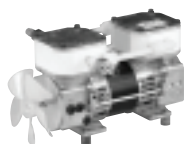
Dry Diaphragm and WOB-L® Piston Vacuum Pumps^{1,2,3.}



11 1



1



1 1

Specifications

11 1	1	1 1		
1 1	1		1	1
1	1			1
	1			1 1
1 1	1 1	1 1	1	1
1	1	1	1 11	1 11
1	1	1		
1	1	1	1	1
1 1	1 1	11	1	1
		1	11 1	11 1
1	1	1	1	1
1	1	1	1	1
1 1 1	1 1 1	1 1 1	1 1	1 1
			1	1

Ordering Information^{1,2,3.}

11 1	11 1	11 1	1 1	1	1
1 1					
1					

Notes:
1 11 1 111
11 1

Vacuum Pumps



2090B-01/
2085B-01



8111B-01



2561B-24



2562B-01/
2567B-01



2580B-01/
2585B-01



2581B-24

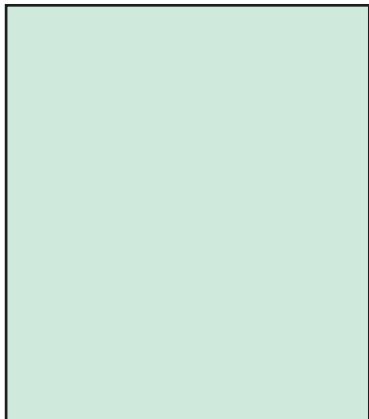
8111 ¹	2561 ³	2562 ³	2567 ³	2580 ³	2581 ³	2585 ³
1.3(36)	2.1(60)	2.3(65)	3.5(100)	3.5(99)	3.5(100)	7.1(201)
1.8(30)	36(50)	3.4(57)	4.9(83)	4.9(83)	5.0(83)	10(168)
1.5(2)	4(5)	9(12)	60(80)	9(12)	4(5)	60(80)
29.9	29.8	29.6	27.6	29.6	29.8	27.6
Diaphragm	Piston	Piston	Piston	Piston	Piston	Piston
Standard	Standard	Standard	Standard	Standard	Standard	Standard
1/5(150)	1/3(250)	1/3(250)	1/3(250)	1/3(250)	1/3(250)	1/3(250)
NW16 Flange	1/4(7) ⁴	1/4(7)	1/4(7)	3/8(10)	3/8(10) ⁵	3/8(10)
1/6	1/4	1/4	1/4	3/8	3/8	3/8
13(5.9)	16.5(7.5)	16.5(7.5)	16.5(7.5)	22.5(10.3)	22.5(10.3)	22.5(10.3)
10.25(261)	11.7(297)	11.7(297)	11.7(297)	13.25(336)	13.25(336)	13.25(336)
5(27)	7.2(183)	7.2(183)	7.2(183)	7.6(193)	7.6(193)	7.6(193)
7.25(189)	9.5(241)	9.5(241)	9.5(241)	11.7(297)	11.7(297)	11.7(297)
17(7.7)	18(8.2)	18(8.2)	18(8.2)	28(12.7)	30(13.6)	28(12.7)
14 x 14 x 14	21.5 x 12.5 x 16	21.5 x 12.5 x 16	21.5 x 12.5 x 16	17 x 10.5 x 13	21.5 x 16.3 x 17.5	17 x 10.5 x 13
(35.6 x 35.6 x 35.6)	(54.6 x 31.8 x 40.6)	(38.1 x 26.7 x 30.5)	(38.1 x 26.7 x 30.5)	(43.2 x 26.7 x 33)	(54.6 x 41.4 x 44.5)	(43.2 x 26.7 x 33.)

8111B-24	2561B-24	2562B-01	2567B-01	2580B-01	2581B-24	2585B-01
8111C-24	2561C-24	2562C-02	2567C-02	2580C-02	2581C-24	2585C-02
-----	2561C-25	2562C-05	2567C-05	2580C-05	2581C-25	2585C-05

4. Dual inlet flange ISO NW16 with 1/4 in.(7mm) hose barb supplied which will thread into NW16.

5. Dual inlet flange ISO NW25 with 1/4 in.(7mm) hose barb supplied which will thread into NW25.

WOB-L® Piston Dry Vacuum Pumps¹



11 1



1 1



1



1

Specifications

11					1										1
11				1		1		1		1		1		1	
		1 1 1		1											
1		1	1												
	1	1	1			1		1	1						
1															
1		1		1		1	1	1		1		1		1	
	1		1	1		1			1		1			1	
1		1		1		1		1		1		1		1	
		11		11		1		1		1					
1															
1		1		1		1		1		1	1	1		1	
11						1 1		1		1				1 1	
1 1		1		1				1		1				1	
		1		1		1		1		1				1	
1		1	1	1		1	1	1		1	1	1		1	1
	1	1			1		1		1		1			1	

Ordering Information^{1,2.}

	11	1							
		11	11	1	1	1	1	1	1
			1						
			1		1	1			
		1	11				1	1	
1	1		11					1	1

Notes:
1

Vacuum Pumps



2585B-50/2581B-50



2511B-75



2515B-75

Aspiration/Filtration Systems include
6Ft. of tubing and two hydrophobic filters

Aspiration/Filtration Systems

2585	2511	2515
7.1(201)	0.39(11)	1.2(34)
10(168)	0.55(9.2)	1.7(28)
60(80)	219(292)	70(93)
_____	33(3.3 x 10 ⁵)	_____
27.6	21.3	27.2
1/3(250)	1/30(25)	1/8(93)
3/8(10)	3/16(5)	1/4(7)
1/4	3/16 in. Hose	1/4
24.5	5.7	13.2
17(43.2)	11.0(28)	14.8(37.5)
7.5(19.1)	8.3(21)	8.3(21)
12(30.5)	10.0(25.5)	10.0(25.5)
32(14.5)	11(5)	14.8(6.7)
21.5 x 12.5 x 16	21.5 x 12.5 x 16	21.5 x 12.5 x 16
(54.6 x 31.8 x 40.6)	(54.6 x 31.8 x 40.6)	(54.6 x 31.8 x 40.6)

2585B-50	2511B-75	2515B-75
_____	_____	_____
2585C-50	2511C-75	2515C-75
_____	2511C-76	2515C-76

- Model 2511 can deliver 33 PSIG (3.3 x 10⁵ pascal).
- Models 2522, 2534 and 2546 come with vacuum (and pressure) regulator, vacuum (and pressure) gauge, silencer and water trap. Models 2522 and 2546 can deliver 100 PSIG (10⁶ pascal). Model 2534 can deliver 50 PSIG (5 x 10⁵ pascal).

Accessories

Vacuum Hose

Thick walled hose for vacuum or pressure applications. Hose clamp information available on page 23.



Pump Model	Cat. No.
2522, 2534, 2545, 2561, 2565, 2581, 2585	331030-5
2511	331020-5

Exhaust Silencer

Exhaust silencers are installed in the exhaust port of the pump to reduce pump noise.



1412B



1412C



1412D/1412E

Pump Model	Cat. No.
2565, 2585	1412C
2561	1412D
2581	1412E
2012, 2022, 2030, 2015, 2017	1412B

Replacement Jars

Plastic (1415C) or glass jar (1415B) to replace the collection jar included with the pumps.



1415B

1415C

Spare receiver kit (1475K-20) includes a 1.2 L autoclaveable jar, 6Ft. of tubing and two hydrophobic filters.



1475K-20

Pump Model	Cat. No.
2522, 2546, 2534	1415C
2561, 2565, 2581, 2585 202501, 202601, 202701	1415B
2511B-75, 2511C-75 2515B-75, 2515C-75	1475K-20

Particulate, Hydrophobic In-line Filters

The filters are an economical solution to protect your piston vacuum pump from fine particulates and aerosols to 0.2 microns in diameter.



1475K-21



1475K-22

Made of Polypropylene housing, cat. no. 1475K-21 fits 1/4" to 3/8" I.D. hose and cat. no. 1475K-23 fit 1/4" I.D. hose.

Made of SBS resin housing, model 1475K-22 fits 3/8" to 7/16" I.D. hose.

Pump Model	Cat. No.	Pore Size
2511, 2515, 2522, 2534, 2546	1475K-21	0.8 micron
2561, 2581, 2562, 2567	1475K-22	0.8 micron
2562, 2567	1475K-23	0.2 micron



1475K-23

Dry Diaphragm PTFE Vacuum Pumps^{1.}



CE



1 1



1 1



1 1

Specifications

1	1	1		
1				1 1
1	1 1 1	1 1 1	1 1 1	1
1 1 1	1 1	1		1
1 1	1 1	1 1	1 1	1 1
1	1	1	1	1
1	1	1	1	1
	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1 1 1	1 1 1	1 1 1	1 1 1	1 1 1
1	1	1	1	1

Ordering Information^{3,4.}

1 1 1	1 1	1 1	1	1 1	1
1	1	1	1	1	
1	1	1	1	1	

Notes:
1

1 1 1 1 1 1

Accessories



2021B-01/2031B-01
DRYFAST ULTRA



2015B-01/2017B-01

2031	2015	2017
1.1(32)	1.8(50)	2.2(64)
1.6(27)	2.5(42)	3.1(53)
2(2.7)	80(106)	80(106)
29.85	26.7	26.7
1/5(150)	1/5(150)	1/5(150)
Yes	No	No
1/4(7)	1/4(7)	1/4(7)
1/4	1/4	1/4
20(9.1)	20(9.1)	20(9.1)
10(25.4)	10(25.4)	10(25.4)
10(25.4)	10(25.4)	10(25.4)
6.9(17.5)	6.9(17.5)	6.9(17.5)
22(10)	22(10)	22(10)
16 x 12.5 x 13 (40.6 x 31.8 x 33)	16 x 12.5 x 13 (40.6 x 31.8 x 33)	16 x 12.5 x 13 (40.6 x 31.8 x 33)

2031B-01	2015B-01	2017B-01
2031C-02 ²	2015C-02 ²	2017C-02 ²
2031C-05	2015C-05	2017C-05

4. All stand-alone pumps supplied with an exhaust silencer, loose hose barb for exhaust port and an installed intake hose barb.

Vacuum Regulator

Connects to pump intake for easy regulation of vacuum level. Includes an easy to read dial gauge. All stainless steel.

Pump Model	Ca No
2012, 2022, 2030, 2015, 2017, 2010, 2021, 2031	1421D



Inlet Exhaust Separator

Glass jar assembly that attaches to the pump intake or exhaust. Captures accidentally ingested liquids before they move into the pump. Capacity 230 ml.

Pump Model	Ca No
2010, 2012, 2022, 2030, 2015, 2017, 2025, 2021, 2031	1423B



Vacuum Hose

Thick walled hose for vacuum or pressure applications. Hose clamp information available on page 23.

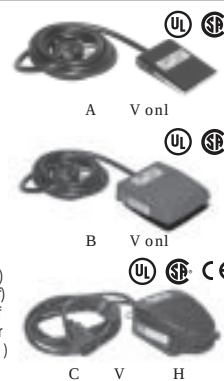
Pump Model	Ca No
2010, 2012, 2022, 2030, 2015, 2017, 2021, 2031	331030-5



On Off Foot Switch

Hands free on/off pump operation
No adaptors or special connection needed
Plug directly into the power source outlet
All maintained models feature Push On-Push Off action

Pump Model	Ca No
2010, 2012, 2022, 2030, 2015, 2017, 2021, 2031, 2511, 2515, 2522, 2534, 2546, 2561, 2567, 2581, 2585	1430A, (main ained on/off) 1430B, (momen ar on/off) 1430C, (momen ar on/off) i h IEC connec ion for 90-230V, 50/60H p mp)

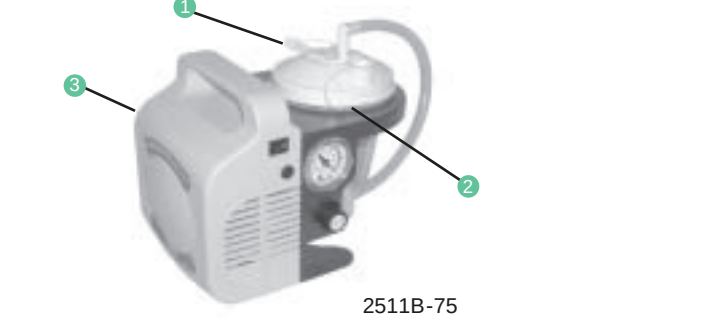


Pocket Torr Vacuum Gauge

Gauges a range of vacuum in Torr from 1 to 760. Easy calibration via the touch panel. Vacuum connection is 1/4 in. I.D. hose barb. Sensor type is capacitance.

Range Torr	Ca No
1 to 760	151401

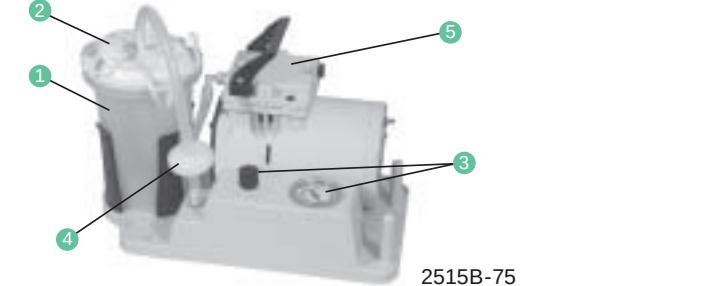




- 1 Pumping capacity 11 L/min, vacuum to 21.3 Hg(292 mbar)
- 2 Automatic shutoff when 1.2 L collection receiver full
- 3 Pressure capability to 33 PSIG(3.3×10^5 pascal)

1

Cat. No.	Description ¹						
11	11	1	1	1	11	1	1
11		11			1		
Note: 1	1						



- ① Pumping capacity 34 L/min, vacuum to 27.2 Hg(93 mbar)
- ② Automatic shutoff when 1.2 L collection receiver full
- ③ Bleach resistant construction extends service life

1 11 1

1

Cat. No.	Description ¹
1	11 1 1
1	1 1
Note:	1



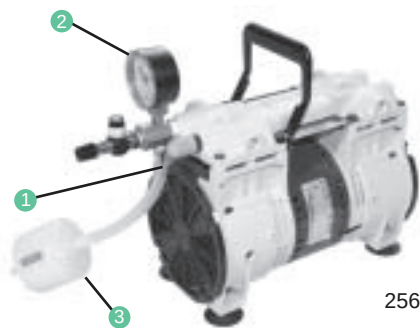
- 1 Handheld pipette with various style tips available
- 2 Spare autoclaveable collection receiver kit
- 3 Variable on/off foot switch

Model	Description
1 1	1
1	1
1	11
1	

Note:

Cell Harvesting & Aeration Pumps

High Flow for Cell Harvesting



2567B-70

- 1 Vacuum to 27.6 Hg(80 mbar)
- 2 Vacuum regulator for continuous vacuum level control and monitoring
- 3 PTFE hydrophobic filter inhibits ingestion of aerosol or fluids into pump

Standard Duty Dry Cell Harvesting System

1 1

Cat. No.	Description ¹		
1	11	1	
	1		

Economical Source of Air for Aeration



2430B-01

- 1 Quiet, linear diaphragm mechanism
- 2 Continuous pressure to 4 PSI
- 3 Oil-less

Linear Diaphragm Compressor

Specifications

1							1				1	
1												
	1				1				1	1		
1								1				
	1				1				1	1		
11							1				1	
									1	1		
1	1	1	11	1	1	1	1	1			1	1
						1				1		

Ordering Information

11 1
11
1

1	1	1	1

Notes:
1

Dry Rotary Vane Low Vacuum Pumps & Systems (Oil-Free)

Extended Life Graphite Vane Design

Economical, lightweight design

Suited For:

-
-
-
-
-



1 1 1 1



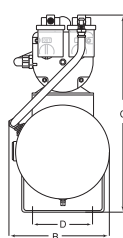
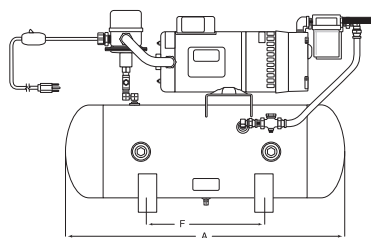
1 1

Two Options Available:

Option A:

		Free Air Flow (SCFM) @ in. Hg, 60 Hz					
Cat. No.	HP	0	5	10	15	20	25
1 1 1	1				1		
1 1	1					1	
1 1		1	1				

Option B:



Dimensions, in. (cm)						
1		1	1	1 1	1 1	
1		1	1	1 1	1 1	1

Specifications

1	1	1
1	1	1
1 1	1 1	1 1
1	1	
1	1	1
1	1	
1	1	
1	1	1
1	1	1
1	1	1
1 1	1 1	1 1 1
1 1	1 1	

Ordering Information¹

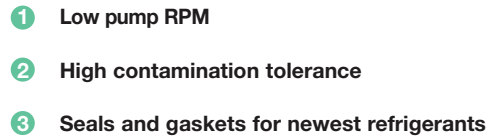
11	1	1	1	1	1	1
11	1	1	1	1	1	1

Notes:

1

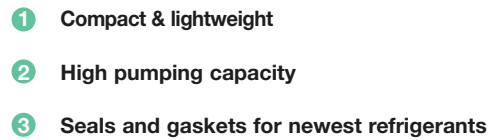
11

Handles Harsh Absorption Chiller Servicing



Cat. No.	Description ¹
1	1 1 1 1 11 1
1	1 1 1 1 11 1
1	1 1 1 1 11 1 1 1

Lightweight For Rooftop Jobs



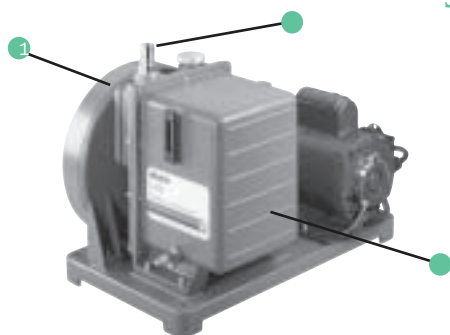
Cat. No.	Description ²
1	1 1 11 1
11	1 1 11 1 1

Pump Selection Guide For Refrigeration Service

Pump Selection Guide For Refrigeration Service									
	1		1						
	1	1	1	1					
	1	1	1						
	1		1						
			1	1					
		1	1						
	1		1						
			1	1					
		1	1		11	1	11	1	1
			1		11	1	11		

Refrigeration & Air Conditioning Manufacturing

Durability At The Deepest Vacuum



- ① Low pump RPM ensures long service life
- ② High efficiency pumping below 100 millitorr
- ③ Few moving parts increase pump durability

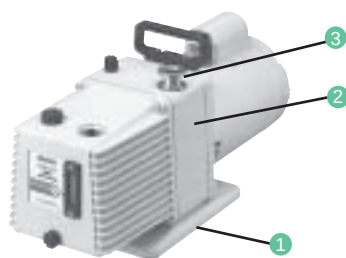
DUOSEAL® High Vacuum Pump

1

Note: 1

Cat. No.	Description ¹
1 1	1 1 1 1 11 1 1
1 1	1 1 1 1 11 1 1
1 1	1 1 1 1 11 1 1
1 1	1 1 1 1 11 1 1

Note: 1



- ① Small footprint
- ② Built-in isolation device
- ③ ISO NW 25 inlet connection

Welch® Direct-Drive Vacuum Pump

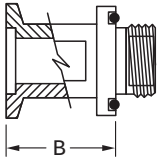
Cat. No.	Description ²
1	1 1 1 1 1 1 11 1
	1 1 1 1 11 1
	11 1 1 11 1

Note:

The A,B,C's of Vacuum Pump Selection			
	A Coil Size	+ B Desired Vacuum	= C Flow Needed
Units	Ton	micron Hg(mbar)	L/min
	1		1
	1		
			1 1
	1		1

Vacuum System Connectors & Tubing

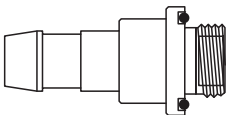
ISO NW Inlet Connectors For High Vacuum Pumps



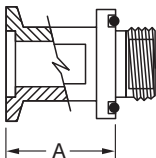
- Stainless steel with o-ring
- No sealant required for installation
- For pumps above listed serial number

ISO	THREAD SIZE	PUMP MODEL	SERIAL NO.	B	CAT. NO.
NW 16	3/4-20	1399	>26461	1.12	1393F
NW 16	3/4-20	1400, 1400N	>18069	1.12	1393F
NW 25	1-20	1405	>77703	1.2	1393G
NW 25	1-20	1380	>2114	1.2	1393G
NW 25	1-20	1402, 1402N	>133218	1.2	1393G
NW 25	1-20	1376, 1376N	>14594	1.2	1393G
NW 40	1-20	1374	>73519	1.4	1393H
NW 40	1.75-20	1397	>51217	1.4	1393H
NW 16	3/4-20	8905	All	1.12	8905K-05
NW 25	1 1/8-20	8907, 8912, 8917, 8920, 8925	All	1.4	8907K-05

Exhaust Connectors For High Vacuum Pumps



Hose Connector



ISO Connector

- For adding an exhaust line to a pump
- Connectors for vacuum hose and ISO NW

PUMP MODELS	HOSE CONNECTOR		ISO CONNECTOR			
	HOSE I.D.	CAT. NO.	THREAD SIZE	ISO NW	A	CAT. NO.
1399, 1400, 8905, 8890	7/16	1393J	3/4-20	NW 16	1.12	1393F
1402, 1380, 1376, 8920, 8925, 8907, 8912, 8917, 1405	13/16	1393K	1-20	NW 25	1.2	1393G
1374, 1397	1-5/8	1393L	1 3/4-20	NW 40	1.4	1393H
1405, 1402	7/16	1393M	1-20	NW 25	1.2	1393G

UNIBARB™ Inlet Connectors For High Vacuum Pumps



- Accepts two sets of tubing ID
- Aluminum
- With inlet screen

THREAD SIZE	PUMP MODEL	Hose I.D.	CAT. NO.
3/4-20	1400, 1399, 8905	3/16" & 7/16"	8905K-06
1 1/8-20	8907, 8912, 8917	7/16" & 13/16"	8907K-06
1 1/8-20	8920, 8925, 8917	9/16" & 13/16"	8920K-06

Brass Hose Barb



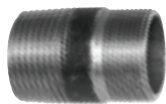
1

1	1	1	1

Dimensions are in inches

Vacuum System Connectors & Tubing

Male NPT Pipe Inlet And Exhaust Adapters



1	1				1		1
1	1	1	1	1			1

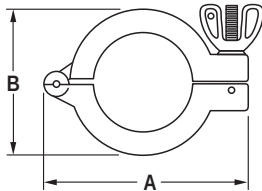
Red Vacuum Hose • Hose Clamps



1

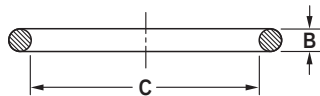
				1	1			1
1	1	1 1	1	1 1				
1	1		1					
1	1	1 1 1	1	1 1				
		1	1	1 1			1	
1 1		1 1	1	1 1	1 1			
1	1 1		1	1 1				

Hinged Clamps



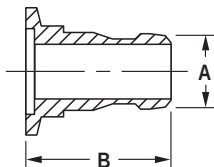
1	1	1	1	1
		1	1	

Centering Assemblies • Replacement O-Rings



1		1 1	1	1
		1	1 1	
	1	1	1	1

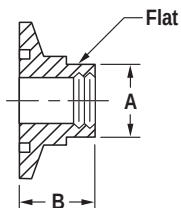
Rubber Hose Adapters



1	1		1	1 1
1			1	1 1
	1 1		1	1
	1	1	1	1

Vacuum System Connectors & Tubing

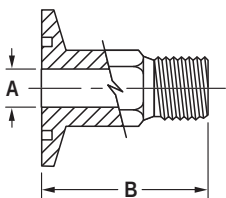
Female Pipe Adapters



- Female stubs have 1/8 in. to 3/4 in. NPT
- Stainless steel
- Can be used with many gauge probes including Welch No. 1515A and 1516A (see page 31)
- Can be used with brass hose barbs (see page 25)

ISO	NPT	A	B	CAT. NO.
NW 16	1/8	0.62	0.50	506111
NW 16	1/4	0.62	0.50	506121
NW 25	1/8	0.88	0.50	506112
NW 25	1/4	0.88	0.50	506122
NW 25	1/2	0.88	0.50	506142

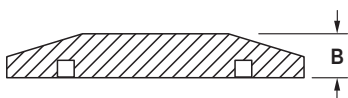
Male Pipe Adapters



- Male stubs have 1/8 in. to 3/4 in. NPT
- Hex shank
- Stainless steel

ISO	NPT	A	B	CAT. NO.
NW 16	1/4	0.281	1.6	505121
NW 25	1/8	0.188	1.6	505112
NW 25	1/4	0.281	1.6	505122
NW 25	1/2	0.496	1.6	505142
NW 25	3/4			505162

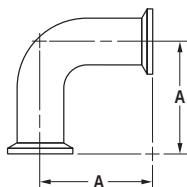
Blank-Off Flanges



- Stainless steel
- To close off unused parts

ISO	B	CAT. NO.
NW 16	0.20	388101
NW 25	0.20	388102

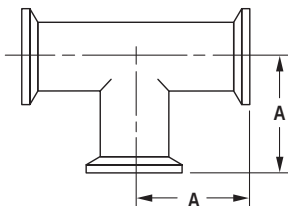
90° Elbows



- Stainless steel
- Same size flange on both ports

ISO	A	CAT. NO.
NW 16	1.50	383101
NW 25	2.04	383102

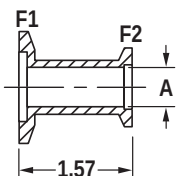
Tees



- Stainless steel
- Same size flanges on all ports

ISO	A	CAT. NO.
NW 16	1.50	384101
NW 25	2.04	384102

Reducers



- Makes differing sizes of ISO flanges
- Stainless steel

ISO F1	ISO F2	A	CAT. NO.
NW 25	NW 16	0.555	387121
NW 40	NW 16	0.555	387131
NW 40	NW 25	0.900	387132

Exhaust Filters & On/Off Foot Switch

Standard Exhaust Filters & Directional Exhaust Filters



1 1

1 1 1			1 1	1 1
1 1			1 1	1 1
1 1 1 1			1 1 1	1 1
1 1			1 1	1 1 1
1			1 1	1 1

1 1 1 1



1 1

1 1 1 1			1	1 1	1 1	1 1 1
1 1 1 1				1 1	1 1	1 1 1
1 1		1		1 1	1 1	1 1 1
1				1 1		

Exhaust Oil Recycler

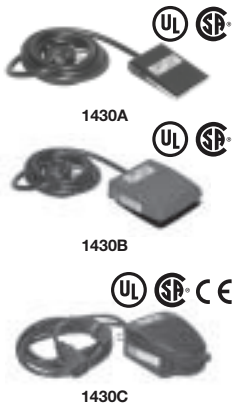


1 1 1

1 1	
1 1	
1 1	1 1
1 1 1	1 1
1 1 1	1 1 1 1 1

1 CAUTION: 1 1 1 1 1 1 1 1 1 1

On/Off Foot Switch



1 1 1 1 1

1 1 1 1	1 11
1 1 11 1	1 11
1 1	1

Dimensions are in inches

Foreline Traps

Foreline Trap Selection

For protection against contaminants in vacuum systems



1 1 1 1

1				
				1
	1	1	1	1

Note:
1

Application Note for Cold Traps

Foreline Traps & Hose Adapter Kits

Dry Ice/Liquid Nitrogen Trap



- Hose barb connection accepts 7/16 in. (11 mm) I.D. hose
- Removable 3 quart center well for dry ice/isopropyl alcohol slurry (do not use acetone) or liquid nitrogen
- Visible trapping surface
- Cold temperature up to 12 hours depending on vapor load with dry ice slurry
- Cold temperature up to 2 hours depending on vapor load with liquid nitrogen

TUBING NEEDED	DIAM.	HEIGHT	DIAMETER	IN/OUT OFFSET	TRAP CAT. NO.	REPL. SEAL CAT. NO.
7/16 I.D.	10	8.25	10.75	3.5	1420H-14	545210

Tubing cat. no. 331040-5

Coaxial Traps



- ISO NW flange connection
- Reduces oil backstreaming
- Stainless steel construction
- Easy replacement of elements
- Element must be ordered separate from trap

ISO SIZE	CAPACITY	DIAM.	HEIGHT ¹	CAT. NO.
NW 16	To 4 CFM (140 L/min)	3.75	8.25	541001
NW 25	To 12 CFM (340 L/min)	5.50	8.25	541002
Stainless steel element for ISO NW 16 Trap				541921
Stainless steel element for ISO NW 25				541922

1. Distance between ISO NW inlet and outlet connections.

Acid Neutralization Trap



- ISO NW flange connection
- Calcium Hydroxide element
- Element changes from white to bluish-transparent when spent

ISO SIZE	CAPACITY	CATALOG NUMBER		
		TRAP	REPLACEMENT ELEMENT	PUMP CONNECTOR KIT FOR TRAP ¹
NW 16	To 2 CFM (57L/min)	1420H-21	1420E-02	1420K-16
NW 25	To 12 CFM (340L/min)	1420H-20	1420E-01	1420K-25

1. Includes hinge clamp, centering ring and elbow. Use with CHEMSTAR® vacuum pumps.

Hose Adapter Kits • Hose Adapters • Hose Valves



1420H-01

- Kits ensure proper sized tubing adaptors, and clamps for vacuum tight connections
- Kits include at least 5 ft(1.5m) of thick walled rubber vacuum hose

ADAPTER KITS FOR PUMP MODELS	PUMP INLET O.D.	APPLIANCE CONNECTOR O.D.	CAT. NO.
8890 (GEM)	3/8	1/4 and 3/8	1420H-12
8890 (GEM)	3/8	7/16 and 1/2	1420H-01
1400, 1405, 1399, 8905	7/16	1/4 and 3/8	1420H-01
1402, 1380, 8907, 8912, 8917, 8920, 8925	13/16	1/4 and 3/8	1420H-02

Dimensions are in inches

Vacuum Pump Oils & Oil Change System

Gold Vacuum Pump Oil



	11	1		

Premium Vacuum Pump Oil



	11	1		

DUOSEAL® Vacuum Oil



	1	11	1	1	1	1

QUICKCHANGE Oil Change System



111

1

1

1

1

1 1 1	11 1	111

Vacuum Regulators, Vacuum Gauges & Service Kits

Vacuum Regulators



1



1 1 1 1

1	1		1	1
1	1	1		1
1			1	
1	1	1	1	
				1 1

1

1

1

1 1 1 1

1 1

1 1

CAUTION: Do not use with DUOSEAL®, CHEMSTAR® or Direct-Drive pumps.

Dial Pressure & Vacuum Gauge



		1	1
		1	
		1	
		1	
		1	
		1	
		1	

Thermocouple Vacuum Gauges



1

1

1 1 1 1

1 1		11	1	1 1

Standard Duty Dry Piston Pump Kits



	1	
	1	
	1	
	1	
1	1	1
1	1	1

Service Kits

Chemical Duty PTFE Diaphragm Pumps



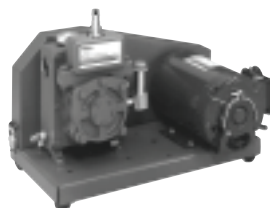
Pump Model	Kit No.	Description
2010	2010K 01	One head service kit
2012 2015 2022	2022K 01 2025K 01	One head service kit S/N <EG040000 One head service kit S/N >EG050000
2016 2024 2030	2025K 01	One head service kit
202501	2025K 01 2025K 02 2025K 06	One head service kit Tubing service kit for 202501 S/N <EC091299 Tubing service kit for 202501 S/N >EC091300
2021 2031	2027K 01	One head service kit
202601 202701	2027K 01 2025K 06	One head service kit Tubing service kit

Diaphragm Pumps



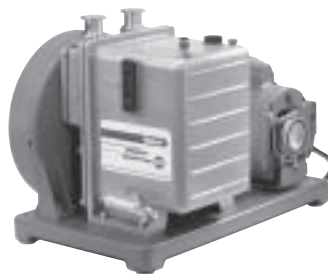
Pump Model	Kit No.	Description
8111	8111K 01	Two head diaphragm and valve kit
2085 2090	2090K 01 2090K 02	One head diaphragm kit Valve plate service kit

DUOSEAL Vacuum Pumps



Pump Model	Kit No.	Description
1400	1400K 03 1400K 04	Minor repair kit 1400 Major repair kit 1400
1402	1402K 05 1402K 06	Minor repair kit 1402 Major repair kit 1402
1405	1405K 05 1405K 06	Minor repair kit 1405 Major repair kit 1405
1376	1376K 05 1376K 06	Minor repair kit 1376 Major repair kit 1376
1397 1374	1397K 07 1397K 08	Minor repair kit 1397 1374 Major repair kit 1397 1374
1399	1399K 03 1399K 04	Minor repair kit 1399 Major repair kit 1399
1373	1373K 05 1373K 06	Minor repair kit 1373 Major repair kit 1373

CHEMSTAR Vacuum Pumps



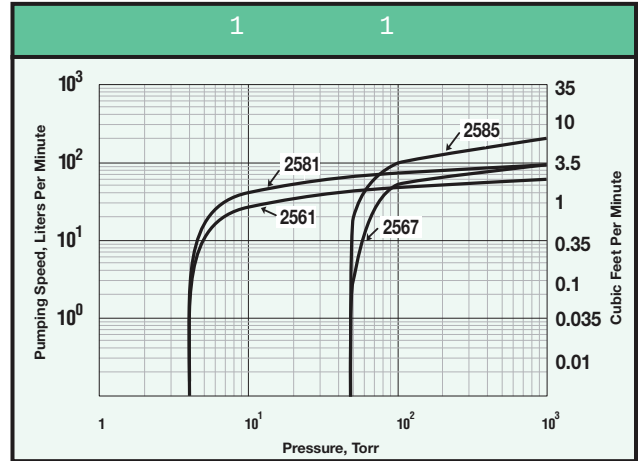
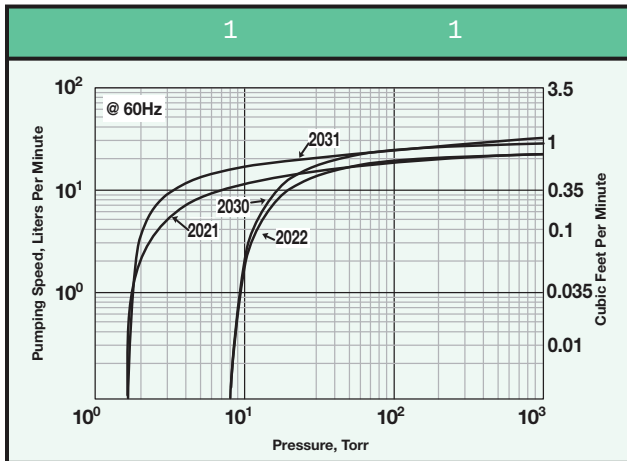
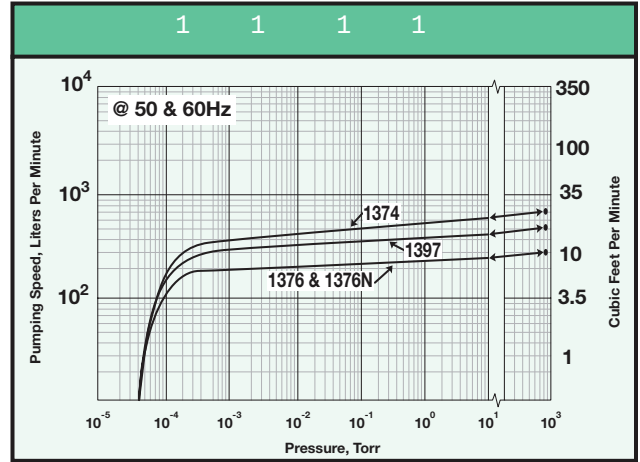
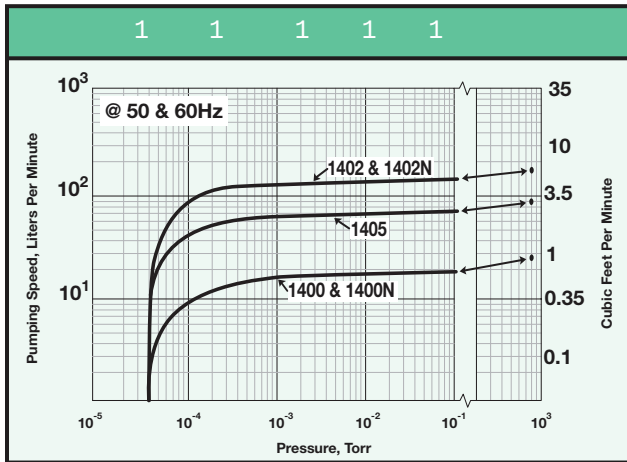
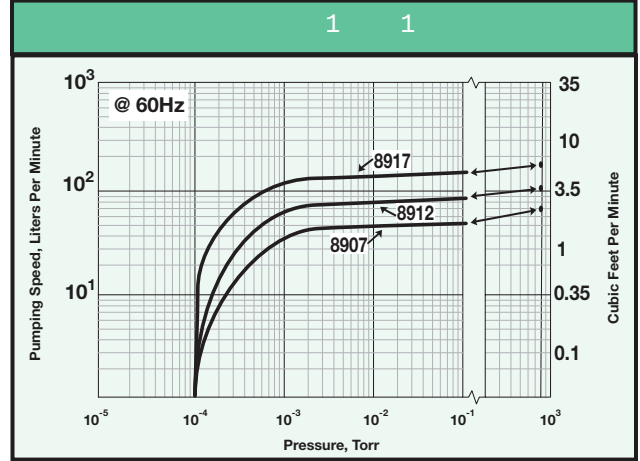
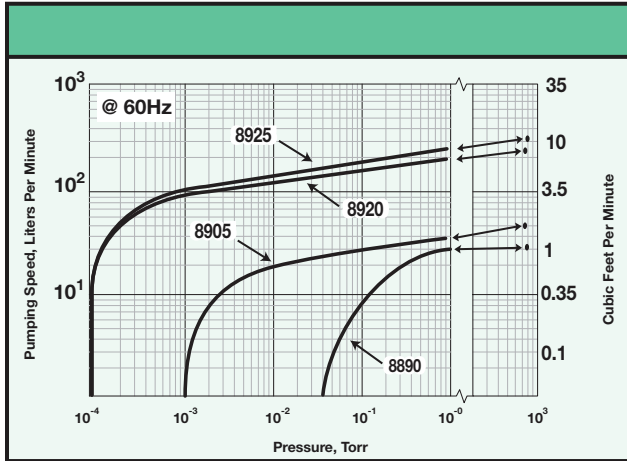
Pump Model	Kit No.	Description
1400N	1400K 09 1400K 10	Minor repair kit Chemstar 1400N Major repair kit Chemstar 1400N
1402N	1402K 09 1402K 10	Minor repair kit Chemstar 1402N Major repair kit Chemstar 1402N
1376N	1376K 09 1376K 10	Minor repair kit Chemstar 1376N Major repair kit Chemstar 1376N

Direct-Drive Vacuum Pumps



Pump Model	Kit No.	Description
8890	8890K 02	Minor repair kit 8890
8905	8905K 02 8905K 03	Minor repair kit 8905 Shaft seal repair kit 8905
8907 8912 8917	8917K 04 8917K 05	Minor repair kit 8907 8912 8917 Shaft seal repair kit 8917
8920	8915K 02	Minor repair kit 8920
8925	8925K 02	Minor repair kit 8925

Pumping Speed Curves



Cat. No.	Page No.	Cat. No.	Page No.	Cat. No.	Page No.	Cat. No.	Page No.	Cat. No.	Page No.
1374	5	1405W-01	4, 9	2017C-05	14	2567K-04	29	726023	29
1374B-01	5	1407K-11	5, 28	2021B-01	14	2580B-01	11	726024	29
1374C-02	5	1407K-15	5, 28	2021C-02	14	2580C-02	11	726025	29
1374M-01	5	1407K-20	5, 28	2021C-05	14	2580C-05	11	726026	29
1376	4	1407K-25	5, 28	2022B-01	14	2581B-24	11	8111B-01	11
1376B-01	4, 21	1412B	13	2022C-02	14	2581B-50	13	8111C-02	11
1376B-46	20	1412C	13	2022C-05	14	2581C-24	11	8115B-01	10
1376C-02	4	1412D	13	2022K-01	30	2581C-25	11	8115C-02	10
1376K-05	30	1412E	13	2024B-01	10	2581C-50	13	8115C-05	10
1376K-06	30	1415B	13	2024C-02	10	2581C-56	13	8120B-01	18
1376K-09	30	1415C	13	2030B-01	14	2581K-03	29	8140B-01	18
1376K-10	30	1416B	25	2030C-02	14	2581K-04	29	8140B-30	18
1376M-01	4	1416C	25	2030C-05	14	2585B-01	11	8170B-01	18
1376N	6	1416C-01	25	2031B-01	15	2585B-50	13	8170B-30	18
1376N-01	6	1416D	7	2031C-02	15	2585C-02	11	8890A	2
1376N-49	6	1416E-01	7	2031C-05	15	2585C-50	13	8890A-70	8
1376N-53	6	1416E-02	7	2085B-01	10	2585K-01	29	8890C-02	2
1393F	22	1416H	25	2085C-02	10	2585K-02	29	8890C-72	8
1393G	22	1416H-01	25	2090B-01	10	2585K-03	29	8890K-02	30
1393H	22	1417	25	2090C-02	10	2585K-04	29	8905A	2
1393J	22	1417A	25	2420B-01	17	302201	23	8905B-24	2,8
1393K	22	1417A-01	25	2420C-02	17	302202	23	8905C-02	2
1393L	22	1417B	25	2430B-01	17	302203	23	8905K-02	30
1393N	23	1417B-01	25	2430C-02	17	304801	23	8905K-03	30
1393P	23	1417G	25	2430C-02	17	304802	23	8907A	2
1393X	22	1417H	25	2460B-01	17	304803	23	8907B-24	2
1397	4	1417H-01	25	2460C-02	17	305320	23	8907C-02	2
1397B-01	4, 21	1417L	25	2478B-01	17	305340	23	8912A	2
1397B-46	20	1417P-10	25	2478C-02	17	305350	23	8912B-24	2
1397C-02	4	1417P-20	25	2500K-04	29	305360	23	8912C-02	2
1397K-07	30	1417P-7	25	2511B-01	12	305380	23	8915K-02	30
1397K-08	30	1417R	25	2511B-75	13,16	331020-10	23	8917A	2
1397M-01	4	1417Y-05	7	2511C-02	12	331020-5	23	8917A-80	3, 8
1399	5	141801	28	2511C-05	12	331030-5	23	8917B-24	2, 19,21
1399B-01	5	1420E-01	7, 27	2511C-75	13,16	331040-10	23	8917C-02	2
1399C-02	5	1420E-02	7, 27	2511C-76	13	331040-5	23	8917C-80	3, 8
1399K-03	30	1420H-01	7, 27	2515B-75	13,16	331050-10	23	8917K-04	30
1399K-04	30	1420H-02	7, 27	2515C-75	13,16	331050-25	23	8917K-05	30
1399N-01	5, 9	1420H-12	7, 27	2515C-76	13	331050-5	23	8917W	8
1400	4, 9	1420H-14	7, 27	2522B-01	12	331060-10	2		