

**Welch®**  
**Laboratory Vacuum Catalog**  
**2005-2006**

**Compact Direct-Drive High Vacuum Pumps**  
**Catalog Pages 22 & 23**

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## Welch® Vacuum Pumps

Lightweight, Compact, High Performance Pumps

Suited For:

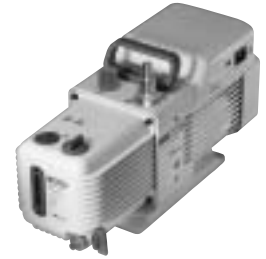
- General Vacuum Work
- Laboratory Applications
- OEM Instrumentation
- Replacement Pumps for Instruments and Equipment



8890A  
(see note 3)



8905A



8907A/8912A/8917A

## Specifications

### TWO-STAGE VACUUM PUMPS<sup>1</sup>

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 <sup>3</sup> /hr (L/min) @ 50Hz	1.6(26)	2.6(43)	3.7(61)	5.4(90)	8.6(144)	10.9(182)
Ultimate Pressure, Torr (mbar) <sup>1</sup>	1 x 10 <sup>-1</sup> (0.133)	2 x 10 <sup>-3</sup> (0.0027)	1x10 <sup>-4</sup> (0.00013)	1x10 <sup>-4</sup> (0.00013)	1x10 <sup>-4</sup> (0.00013)	3 x 10 <sup>-4</sup> (0.0004)
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 <sup>2</sup> (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 <sup>3</sup>	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<sup>4, 5, 6.</sup>

Catalog Number						
Wired for 115V, 60Hz, 1 Ph with N. American 115V Plug	8890A <sup>7,8.</sup>	8905A	8907A	8912A	8917A	8920A
Wired for 230V, 50Hz, 1 Ph with Cont. Euro. (Schuko) Plug	8890C-02 <sup>7,8.</sup>	8905C-02	8907C-02	8912C-02	8917C-02	8920C-02
Wired for 230V, 60Hz <sup>2</sup> with N. American 230V Plug	-----	-----	-----	8912C-01	8917C-01	8920C-01
Expl. Proof Motor 115V, 60Hz	-----	-----	-----	-----	8917W	-----

### Notes:

1. 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.
2. UNIBARB™: Convenient inlet barb connection accepts two sets of tubing ID (see page 28).
3. Model 8890 includes 1417 filter, it is not included with any other model.
4. All single phase motors have overload protection
5. 115V, 60Hz models are CSA approved.

# Drive Vacuum Pumps



8920A



8925A

## SPECIAL APPLICATION SYSTEMS

8925	Rotovap Pump <sup>8</sup>	Freeze Dryer Pump <sup>9</sup>
11.3(320)	1.1(31)	6.1(173)
16(267)	1.6(26)	8.6(144)
4 x 10 <sup>-4</sup> (0.00053)	1x10 <sup>-1</sup> (0.133)	1x10 <sup>-4</sup> (0.00013)
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 <sup>10</sup>
8925C-02	8890C-72	8917C-80
8925C-01	-----	-----
8925W	-----	-----

## 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

(See page 31 for a complete list of filters)



### 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.	CFM
8890 (GEM)	1416B	3
8905	1416H	3
8907, 8912, 8917, 8920, 8925	1416C	9

(See page 31 for a complete list of filters)



### 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. See pgs. 32 & 33.

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

(See page 32 for Trap Selection Table)



### 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. Rotovap/Vacuum manifold pump – see pages 7 and 10.

9. Freeze Dryer Pump – see page 11.

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