

**NEW**  
PRODUCTS & FEATURES

**WELCH**  
by Gardner Denver

# CRVpro

*Your Robust Vacuum Pump*



**CRVpro 2,4,6,8,16,24,30**



Explosion Proof Motor cUL Listed

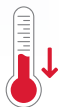
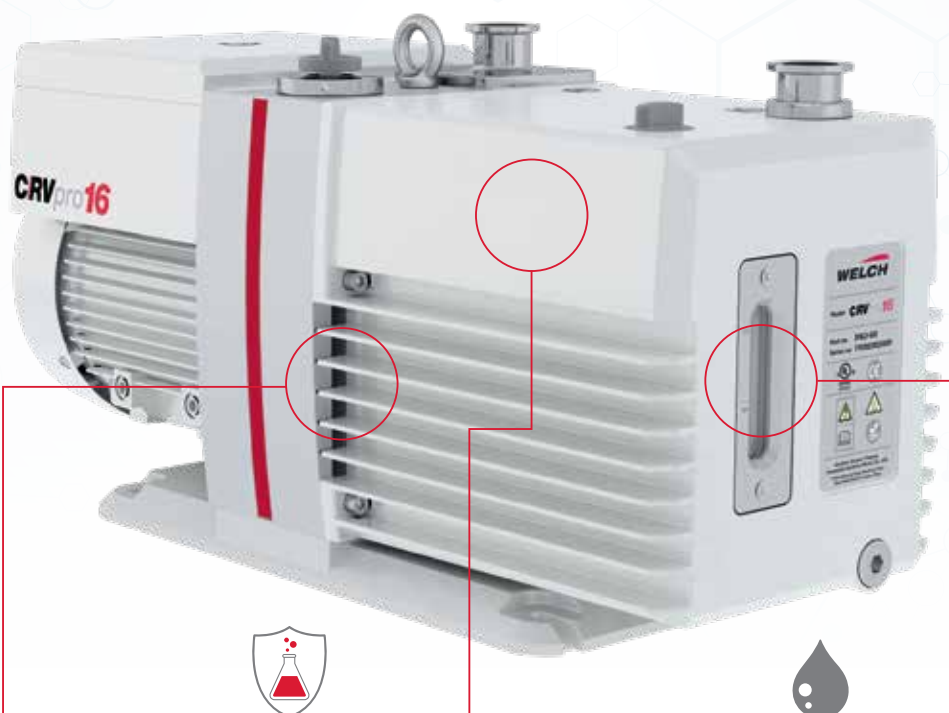
CRVpro 2

Exhaust Filter with Drainback Feature

# CRVpro

## Your Robust Vacuum Pump

Discover the evolution of two-stage rotary vane vacuum pumps. Built to last. Born to perform. And designed to simplify your work. Meet the robust vacuum pump series - CRVpro.



### COOL RUNNING

Enhanced air flow allows the pump to run 10°C cooler than standard rotary vane pumps. The lower temperature leads to reduced chemical activity within the pump and slows down rates of oil consumption.



### INTERNAL SURFACE PROTECTION

Inside surface of the oil case has a PTFE coating and the outer surface of the pumping module has a black oxide coating. Both coatings act to slow metal corrosion and, when coupled with foreline traps, extend service interval.



### LARGE OIL CAPACITY

Chemical vapors that sublime from the foreline cold trap into the pump oil are more diluted due to the larger oil capacity. This minimizes the rates of oil breakdown and reduce chemical attacks within the pump.

HIGHEST RELIABILITY

LONG PRODUCT LIFESPAN

LESS MAINTENANCE

EXTENDS SERVICE INTERVAL

## YOUR BENEFITS

### Highest reliability for stable operation and long product lifespan

- ✓ Reduced risk of chemical attacks and oil breakdown by diluting chemical vapors with a larger oil chamber
- ✓ Slowing down corrosion by cool running operation
- ✓ Provides a measure of protection from sublimed chemical vapors with coating on pump module and oil case

### Extended oil change intervals for less maintenance costs

- ✓ Less oil consumption by cool running operation
- ✓ Extended usability of oil due to high dilution effect by a larger oil chamber



#### 1 LOW NOISE LEVEL

Exceptionally quiet for undisturbed work.

#### 2 FORCED OIL LUBRICATION

Ensures moving parts are bathed in fresh oil. Equilibrates temperature, minimizes oil breakdown, and prolongs mechanical life.

#### 3 ANTI-SUCK BACK VALVE

Prevents oil from being sucked into application in the event of a power failure.

#### 4 GAS BALLAST WITH INERT GAS OPTION

Minimizes entrained chemicals in pump oil. Protects pump from condensable liquids from application such as water, acetyl nitrile, etc.

#### 5 cUL AND CE CERTIFICATION

Compliance with local regulations and safety directives for safety operation.

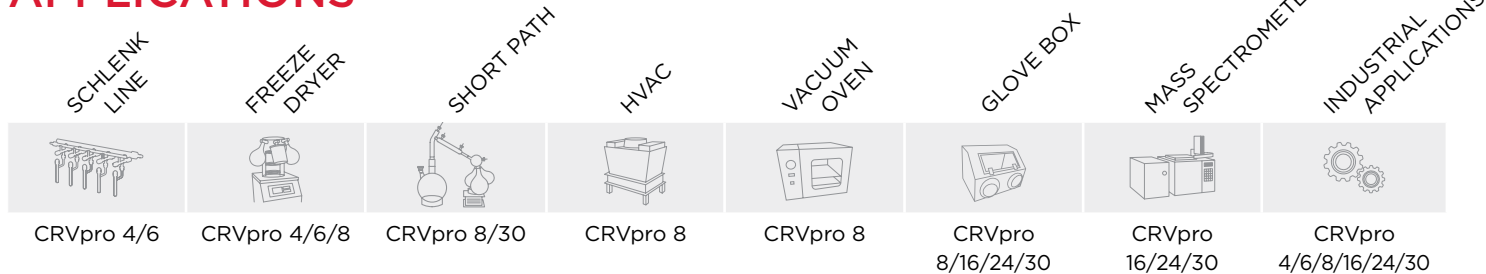
#### 6 SIZED TO FIT YOUR APPLICATION

Modern and compact design to fit different applications and performance requirements.

#### DUAL VOLTAGE MOTOR

- 7 Dual voltage motors meet IP54 standard. Motors of CRVpro 2,4,6,8 are switchable from 115V to 240V for global use excluding 100V and 200V pump versions. Each pump includes power cord suitable for country use.

# APPLICATIONS



# TECHNICAL DATA

PARAMETER	UNIT	CRVpro 2	CRVpro 4	CRVpro 6	CRVpro 8	CRVpro 16	CRVpro 24	CRVpro 30
<b>Free air displacement</b>								
- @ 50 Hz	m <sup>3</sup> /h (l/min)	2.5 (41.7)	4 (67)	6 (100)	8 (133)	18.3 (305)	26.2 (436)	33.1 (551)
- @ 60 Hz	CFM (l/min)	1.8 (50)	2.8 (78)	4.2 (118)	5.6 (158)	12.8 (363)	18.3 (519)	22.1 (627)
<b>Ultimate pressure</b>								
- Without gas ballast partial	mbar (Torr)	3x10 <sup>-4</sup> (2x10 <sup>-4</sup> )	5x10 <sup>-4</sup> (4x10 <sup>-4</sup> )			3x10 <sup>-4</sup> (2x10 <sup>-4</sup> )		
- Without gas ballast total	mbar (Torr)	3x10 <sup>-3</sup> (2x10 <sup>-3</sup> )	2x10 <sup>-3</sup> (1.5x10 <sup>-3</sup> )			3x10 <sup>-3</sup> (2x10 <sup>-3</sup> )		
- With gas ballast total	mbar (Torr)	9x10 <sup>-2</sup> (7x10 <sup>-2</sup> )	7x10 <sup>-2</sup> (5x10 <sup>-2</sup> )			6x10 <sup>-3</sup> (5x10 <sup>-3</sup> )		
Connection flanges	NW	16	16			25		
Hose connection, inlet <sup>1</sup>	ID Tubing	7/16" (11 mm)	5/8" - 3/4" (16-19 mm)			3/4" (19 mm)		
Ambient temperature	°C	10-40						
Noise level (50 Hz)	dB (A)	≤50	50			55		
Oil capacity	ml	450	1150		1000	2400	2200	2100
Motor speed	rpm 50/60 Hz	1450/1740				1450/1750		
Motor power	kW 50/60 Hz	0.27/0.3	0.37/0.4			0.7/0.85		
Weight	kg (lbs.)	15 (33)	21 (46.3)	22 (48.5)	22.5 (49.6)	37 (81.6)	38.5 (84.9)	39.5 (87)
Dimensions L x W x H	mm (inch)	380x138x235 (15.1/5.4/9.2)	463/157/230 (18.2/6.1/9.1) <sup>2</sup>			569/206/289 (22.4/8.1/11.4)		

Note 1: Requires a hose barb adapter, included in pump versions with suffix -01. Note 2: Dimensions listed are when handle is removed. Handles are included in all CRVpro pumps.

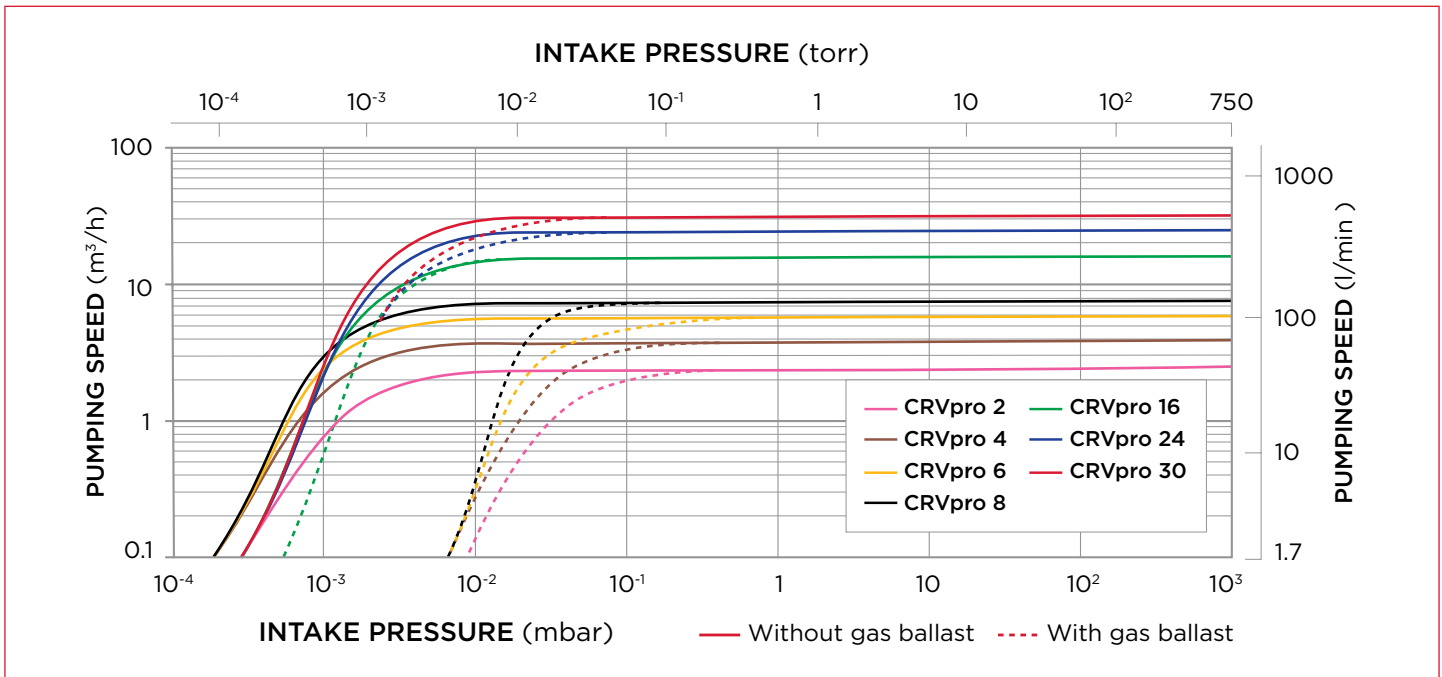
# ORDERING INFORMATION

Every pump is supplied with Welch vacuum pump oil, two centering rings, and two clamps. Ready for use after oil filling.

DESCRIPTION
115V / 60Hz; 1 phase motor with line cord US-plug (115V NEMA 5-15), hose barb adapter (NW16 5/8"), flange adapter NW16 to NW25.
115V / 60Hz; 1 phase motor with line cord US-plug (115V NEMA 5-15); 3/4" Flare fitting for refrigeration connection.
115V / 60Hz; 1 phase motor with line cord US-plug (115V NEMA 5-15); hose barb adapter (NW 25 3/4").
220-240V / 50Hz; 230V / 60Hz; 1 phase motor with line cord EU-plug (CEE 7/4), line cord <b>US-plug</b> (230V NEMA 6-15), hose barb adapter (NW25 3/4").
220-240 V / 50 Hz; 230 V / 60 Hz, 1 phase motor with line cord EU-plug (CEE 7/4), line cord <b>UK-plug</b> (BS1363), line cord US-plug (Nema-5).
220-240V/50 Hz, 230V/60Hz with CN Plug (AS/NZS 3112).
230/460V, 3-Ph
208-230/460V 60 Hz or 190/380V, 3-Ph
<b>NEW</b> Pump with Explosion Proof Motor. 110-120V/208-240V, 60 Hz, 1 phase, cUL listed.
<b>NEW</b> Pump with Explosion Proof Motor. 110-220V, 50 Hz, 1 phase.
Seal kit. Includes all seals which should be changed when performing maintenance.
Service kit. Includes seals and high wear parts such as vanes that may need to be changed when performing maintenance.
Side fitting to connect insert dry gas via 3.5mm ID flexible tubing

Note 1: CRVpro 2,4,5,6,8 are switch selectable between 115V 60 Hz and 230 50/60 Hz operation; CRVpro 16, 24, and 30 models are not switch selectable; they are dedicated to either 115V 60 Hz or 230V 50/60 Hz. Motors include overload protection.

# PERFORMANCE



## NEW CRVpro GAS BALLAST SYSTEM

System allows inert dry gas or outside air to be injected with a M5(f) inlet port. Gas ballast reduces condensable vapors in the oil case by introducing a small amount of air into the compression area in the second stage of the pump. This reduces condensed vapor from mixing with pump oil (which extends service intervals by maintaining oil integrity) while slightly degrading ultimate vacuum. Some applications benefit from inert dry gas instead of air.

**Port enables use of dry inert gas for gas ballast**

CRVpro 2 <sup>1</sup>	CRVpro 4 <sup>1</sup>	CRVpro 6 <sup>1</sup>	CRVpro 8 <sup>1</sup>	CRVpro 16 <sup>1</sup>	CRVpro 24 <sup>1</sup>	CRVpro 30 <sup>1</sup>
3021-01	3041-01	3061-01	3081-01	-	-	-
-	-	3161-02	3081-02	-	-	-
3021-00	-	-	-	3161-01	3241-01	3301-01
3022-01	3042-01	3062-01	3082-01	3162-01	3242-01	3302-01
3022-00	3042-00	3062-00	3082-00	3162-00	3242-00	3302-00
3023-00	3043-00	3063-00	3083-00	3163-00	3243-00	3303-00
-	3047-01 <sup>2</sup>	-	3087-01 <sup>2</sup>	3167-01 <sup>2</sup>	-	-
-	-	-	-	-	-	3307-01 <sup>2</sup>
-	3046E-01 <sup>2,3</sup>	-	3086E-01 <sup>2,3</sup>	3166E-01 <sup>2,3</sup>	-	-
-	3049E-01 <sup>2,3</sup>	-	3089E-01 <sup>2,3</sup>	-	-	-
S3346-99	S3077-99	S3078-99	S3079-99	S3193-99	S3194-99	S3195-99
S3344-99	S3080-99			S3192-99		
S3256-99						

Note 2: Always use a certified electrician for proper installation of pumps with three phase or explosion proof pumps motors. Conduit wiring required. No cord, plug, or switch included. Three Phase, CE, cUL on motors only. Note 3: Explosion proof motor rating is Class 1, Groups C&D; Class 2, Groups F&G.

# ACCESSORIES

## PREMIUM VACUUM PUMP OIL



8995P-15

A triple-distilled hydrocarbon oil using severely hydrotreated base stock is designed to resist breakdown at higher RPMs and operating temperatures of direct-drive vacuum pumps. This hydrotreating virtually eliminates aromatics and sulfur to give good resistance to sludge and varnish formation over time in corrosive environments. The absence of inhibitors and additives reduces the contamination risks when oil interacts with a user's chemistry. Premium oil enables direct-drive vacuum pumps to maintain the highest vacuum performance over time. The oil is light yellow.

- Low vapor pressure
- Designated for high RPM direct drive vacuum pumps
- No additives or inhibitors to react with user chemistry
- Recommended for Welch direct-drive vacuum pumps

### ORDERING INFORMATION

Size	Liter	Gallon	5 Gallon
CAT. No.	8995P-11	8995P-15	8995P-20

## INLET ACCESSORIES



320016



1420H-14



1420H-20



705179

DESCRIPTION	ORDER NO.	
	CRVpro 2,4,6,8	CRVpro 16,24,30
Inlet condenser: AKS16 for CRVpro2,4,6,8. AKS25 for CRVpro16,24,30	320016	320018
Replacement condenser for 320016 and oil mist filter 700010	800160	
Cold trap, requires 7/16" ID gum rubber hose	1420H-14	-
Acid neutralization trap	1420H-21 (CRVpro 2,4 only) 1420H-20 (CRVpro 6,8 only)	
Cold trap, welded DN 25 KF (adapter 701401 needed for CRVpro 4,6,8)	705121	
Fine vacuum adsorption trap: NW16 for CRVpro2,4,6,8. NW25 for CRVpro16,24,30	705179	705180

## HOSE AND CONNECTIONS



331040-5



302202



303101



710764

DESCRIPTION	ORDER NO.	
	CRVpro 2,4,6,8	CRVpro 16,24,30
ID red gum rubber hose, 5ft.	331040-5	331060-5
ID red gum rubber hose, 10ft.	331040-10	331060-10
Chemical resistant metal hose, 1m	710764	710765
Hinge clamp	302201	302202
Centering ring	303101	304802

## OUTLET ACCESSORIES

**NEW**



1417E

### NEW WELCH EXHAUST FILTER WITH COALESCED OIL DRAINBACK FEATURE

- Coalesced oil drains back into pump oil case to reduce oil consumption and enables a clean work space
- Exhaust can be directed into existing fume hood
- Reduces pump noise
- Filters to 0.3 micron particle size
- See table below for sizes, connections, and Welch Pump compatibility
- 1417E has NW16 connections. 1417F has NW25 connections



320015

DESCRIPTION	ORDER NO.	
	CRVpro 2,4,6,8	CRVpro 16,24,30
Welch exhaust filter with oil return	1417E	1417F
Replacement element for 1417E and 1417F Exhaust Filters	1417R	1417H-01
AKD Oil Mist separator	320015	-
Cartridge for Oil Mist Filter, for type OME 10/16, OME 10/25 (and AKD)	800160	-
Directional exhaust, metal	1417C	1417D
Replacement element for 1417C and 1417D	1417G	1417H

## APPLICATION KITS AND ADAPTER



701401



330031



330044



700048

DESCRIPTION	ORDER NO.	
	CRVpro 2,4,6,8	CRVpro 16,24,30
Adaptor NW 16 to NW25, for intake or exhaust	701401*	-
Freeze dryer adapter kit with ball valve	330031	-
Vacuum concentrator adapter kit	330044	-
Ball Valve. 700047 has NW16 connections. 700048 has NW25 connections.	700047	700048

\*Included in CRVpro 2,4,6,8 models with -01 suffix.

## GENERAL CONTACT

### EMEA

**Gardner Denver Thomas GmbH**  
Am Vogelherd 20  
98693 Ilmenau  
Germany

Tel: +49 3677 604 1000  
Fax: +49 3677 604131  
welch.emea@gardnerdenver.com

### AMERICAS

**Gardner Denver Thomas, Inc.**  
1601 Freehanville Drive  
Suite 550  
Mt. Prospect, IL 60056  
USA

Tel: +1 847 676 8800  
Fax: +1 847 6778606  
welch.na@gardnerdenver.com

### ASIA PACIFIC

**Gardner Denver Welch**  
Room 2206, Qiangsheng Mansion  
No. 145 Pujian Road  
200127 Shanghai  
China

Tel: +86 21 51860238  
Fax: +86 21 50396221  
welch.as@gardnerdenver.com

### GLOBAL HEADQUARTERS

**Gardner Denver Thomas GmbH**  
Livry-Gargan-Str. 10  
82256 Fürstfeldbruck  
Germany

Tel: +49 8141 2280 1000  
Fax: +49 8141 8892136  
welchvacuum@gardnerdenver.com

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