

# Vacuum Oven | Light Vacuum Drying



Model 2581



Model 2042/2047



Model MPC 601 T

**Specifications & Ordering - p. 28, 32, 44**

- **Fast drying for vacuum oven samples**
- **Oil-free - no oil changes, no oil mess**
- **Compact, lightweight, portable**

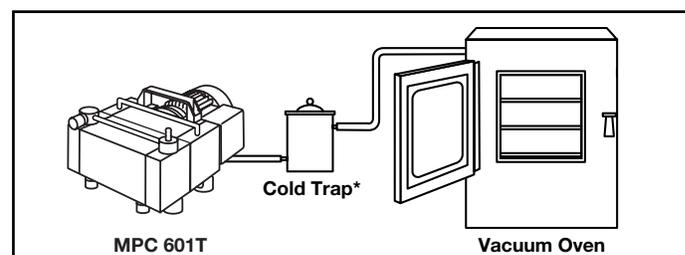
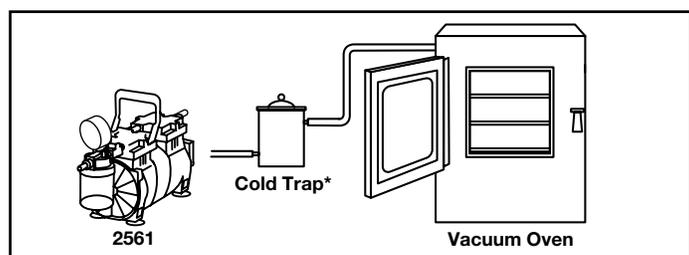
Vacuum ovens are commonly used for drying samples where one wants to dry sample at lowest possible temperature to avoid deterioration of the sample. Beyond sample drying, vacuum ovens are used for applications such as curing epoxies, baking-out, degassing liquids, moisture determination, aging tests, and heat treating. Vacuum pump selection depends on the oven volume, the chemistry of the vapors removed from oven, vacuum level needed for process, and the mass of those vapors removed.

For many procedures using vacuum ovens, an oil-free, standard duty, Wob-I® piston vacuum pump or a chemical duty diaphragm vacuum pump offer a sufficient vacuum level to do the job. These are compact, lightweight, and portable pumps. Because the pumps are oil-free, there is no oil contamination of samples, no exhaust smoke, no oil leaks, and best of all, no oil changes. Normally a liquid trap is located in front of the pump to avoid any vapor that condenses within the vacuum line from being drawn into pump. Supplemental inlet cold traps are recommended for high water vapor loads.

**Models 2561, 2581** These standard duty Wob-I piston vacuum pumps pack a lot of performance in a small size for use when removing moisture from samples or the vapor load is 99% water. The pumps include a liquid trap at the inlet, vacuum adjustment and dial vacuum gauge. Both models will reach a vacuum level of 29.8 in. Hg (6.7 mbar/5 torr). Flow on model 2561 is 65 lpm @60Hz and model 2581 is 100lpm@60Hz.

**Models 2042, 2047 DRYFAST** Two-stage oil-free chemical duty diaphragm vacuum pump are rugged, low maintenance oil-free pump that have two PTFE heads, perfluorelastomer valves, and fluoroplastic wetted surfaces that make it suitable for the aggressive chemical vapors evolved. Model 2042 reaches a ultimate vacuum level of 29.85 in. Hg (1.5 mbar/2 torr) and Model 2047 of 28.5 in Hg (47 mbar/35 torr).

**Models MPC 301 Z, 302 Z, 601 T and 901 Z** These oil-less chemical duty diaphragm vacuum pump are rugged, low maintenance oil-free pump PTFE heads, PEEK valves, and fluoroplastic wetted surfaces for handling aggressive chemical vapors. Two-stage pump models MPC 301 Z and MPC 901 Z can reach ultimate vacuum pressure to 8 mbar (6 torr or 29.7 in. Hg), Model MPC 302 Z can reach 5 mbar (3.8 torr or 29.8 in. Hg), Model MPC 601 T to 2 mbar (1.5 torr or 29.9 in. Hg). Available with optional vacuum regulators and catchpots. See page 69 & 75 for details.





**Model**  
2070/2071 Chemstar Dry



**Model**  
CRVpro 4/6/8



**Model**  
DuoSeal 1400/1402/1405

**Specifications & Ordering - p. 48, 52, 54**

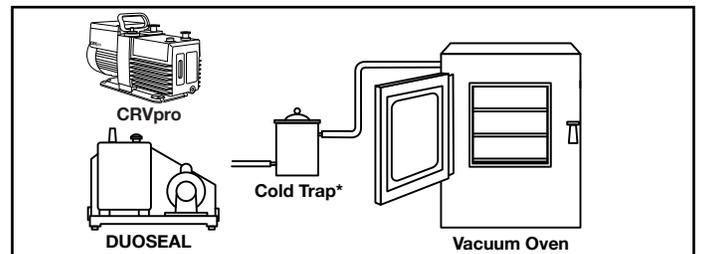
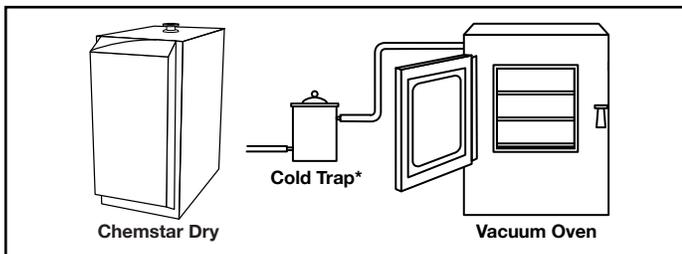
- High vacuum
- High flow
- Oil-free option available

Some applications for vacuum ovens require sample drying, bake-out, curing, etc. require ultimate vacuum pressure below 0.1 torr (0.13 mbar). In these situations, the key factor in vacuum pump selection is the ultimate vacuum level achievable by the pumps. Welch offers solutions for this high vacuum level in oil-free and oil-sealed pumping technologies. Budget requirements play a key role in deciding what type of pumping technology to select.

**Models 2070, 2071** Oil-free ChemStar® Dry vacuum system integrates a proprietary vacuum blower backed with a patented PTFE diaphragm pump. Software optimizes proprietary vacuum blower/PTFE diaphragm operation to allow plug and play operation. Vacuum to 0.050 torr (0.07 mbar) depending on model. In-line cold trap is recommended when pumping chemical vapors (see pages 69).

**Model CRVpro 4, 6, 8.** CRVpro direct-drive rotary vane pumps are built for reliability to provide stable operation and long product lifespan with proper maintenance. The pumps are cool running due to enhanced air flow leading to pump running 10°C cooler than standard direct drive vane pumps. The lower temperature leads to reduced chemical activity within the pump and slows down rates of oil consumption. CRVpro vacuum pumps are available in several sizes to match with your vacuum oven volume. These rugged vacuum pumps can achieve an ultimate vacuum pressure  $5 \times 10^{-4}$  mbar ( $4 \times 10^{-4}$  torr). In-line cold trap is recommended when pumping chemical vapors (see pages 69).

**Models 1400, 1405, 1402** DuoSeal® belt-drive vacuum pumps are well-known for their durability and ruggedness. The large oil capacity of the DuoSeal pump effectively dilutes contaminants for longer maintenance intervals and pump life. Chemical reactions affecting the pump oil are lessened by low pump operating temperature, a result of slow pump rotation, reduced friction, and large oil capacity. In-line cold trap is recommended when pumping chemical vapors (see pages 69).



## Model Selector | Vacuum Ovens

| Oven Volume ft <sup>3</sup> | Oil-Free Vacuum 1.5 to 3.5 torr |                  | Oil-Seal Deep Vacuum $2 \times 10^{-3}$ torr |                        |
|-----------------------------|---------------------------------|------------------|--|------------------------|
|                             | Aqueous Vapours                 | Chemical Vapours | Single stage direct drive                    | Two stage direct drive |
| 0.6 - 1.5                   | 2561C-50                        | DryFast 2042     | CRVpro 4                                     | 1400                   |
| 2.5 - 4.5                   | 2561C-50                        | DryFast 2047     | CRVpro 6                                     | 1402                   |
| 4.5 - 9.0                   | 2581C-50                        | DryFast 2054     | CRVpro 8                                     | 1402                   |