

# COBRA Vacuum Pumps and Systems



# COBRA Dry Screw Vacuum Pumps & Systems

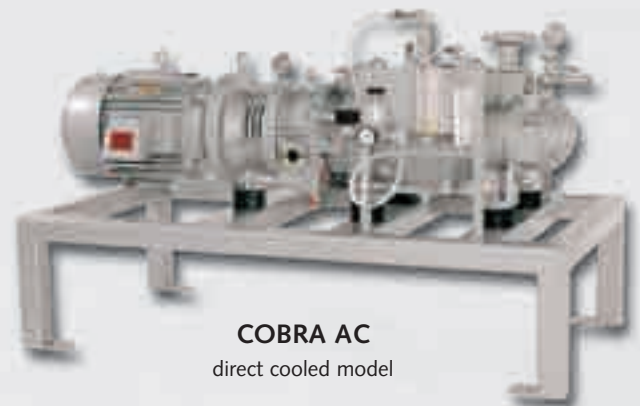
The COBRA single stage, direct driven, dry vacuum pumps, with their unique rotary screws, are designed for difficult applications in the pharmaceutical and chemical processing industries. They require no intercoolers and offer greater efficiency and easier maintenance than other types of dry vacuum pumps. COBRA NC pumps provide pressure down to 0.075 torr, and displacements up to 210 CFM, while COBRA AC pumps offer pressure down to .05 torr, and displacements up to 495 CFM. They will operate at any pressure from atmosphere down to ultimate pressure. COBRA AC pumps are direct cooled and COBRA NC pumps are available as direct cooled or with closed loop air cooling. For higher pumping speeds and lower ultimate pressures, Busch offers COBRA/booster systems along with many other custom designed vacuum systems.



**COBRA NC**  
direct cooled model



**COBRA NC**  
air cooled model

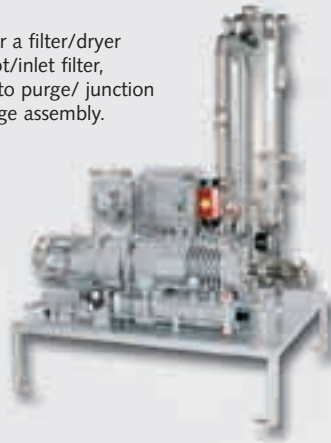


**COBRA AC**  
direct cooled model

## COBRA Advantages

- Oil-free operation - no disposal costs, easy product recovery, environmentally friendly
- Straight, short flow path for quick discharge - material cannot accumulate or condense in the pump
- Protective instrumentation
- Protective PTFE coating on internal parts
- Can accept liquid injection in special applications - for flushing or cooling
- Simple screw design - fewer parts, easier maintenance
- Single stage - no intercoolers required
- Small footprint - for less space requirements
- Noncontacting parts - for longer pump life
- Low vibration and noise levels
- Low coolant requirements
- Optional purging system - for flushing of toxic and condensable process gas

Dry screw vacuum system for a filter/dryer application with knockout pot/inlet filter, NEMA 7 non-modulating auto purge/ junction box, and a standard seal purge assembly.



Dry screw vacuum system with process isolation valve, auto purge and annunciator control panel for a reactor application.

Dry screw vacuum system with rotary lobe booster, annunciator panel, knockout pot and after-condenser for a pharmaceutical application.



Dry screw vacuum pump system with control panel featuring operator interface, muffler, knockout pot, auto purge, and solvent recovery for independent laboratory applications.



## Applications

- Drying
- Solvent recovery
- Degasification of liquid streams
- Vacuum separation
- Evacuation
- Recycling process gases
- Distillation
- Evaporation
- Other applications where no contamination from the vacuum source is permitted.

## Optional Equipment

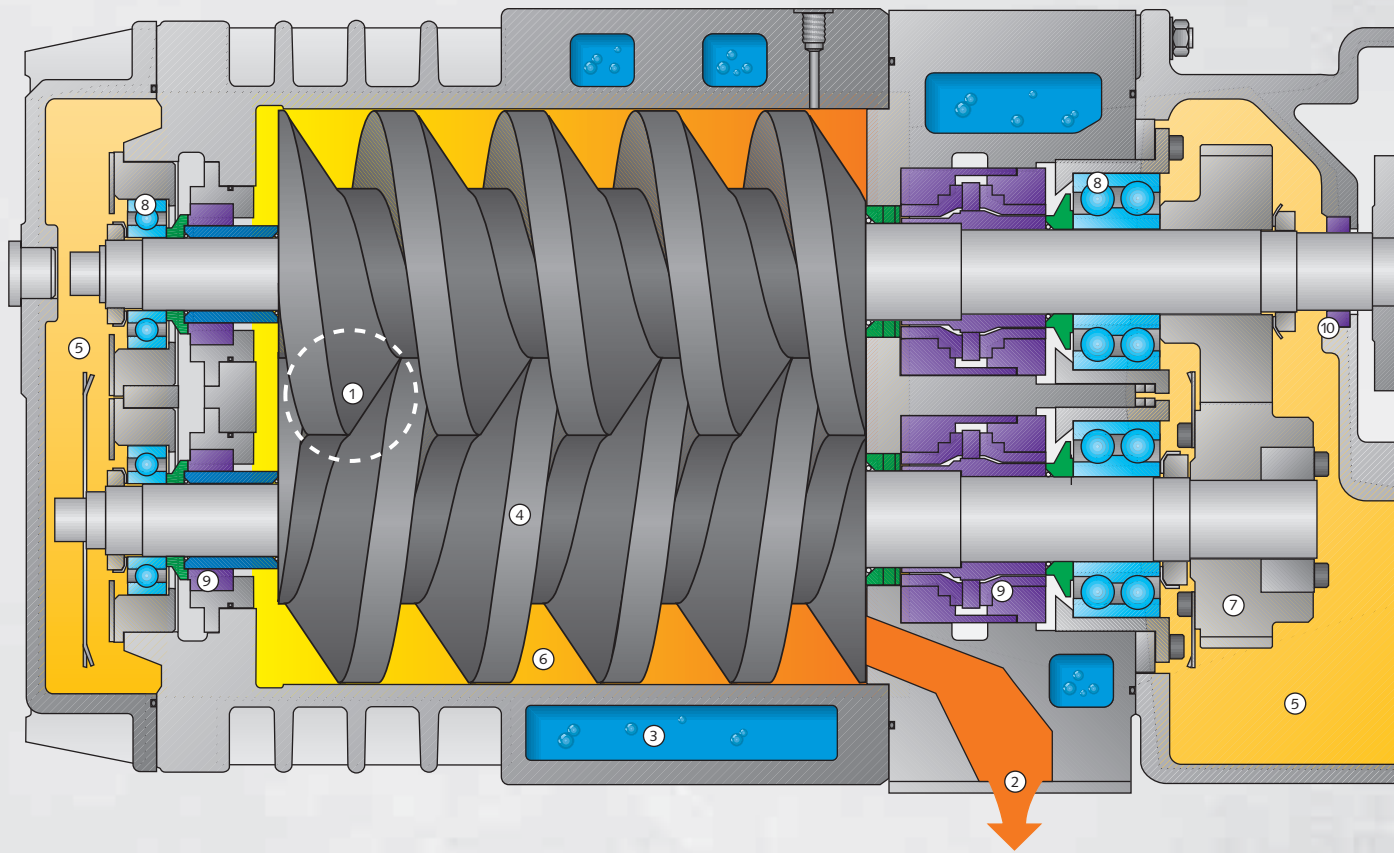
- Inlet particulate filter
- Combination knockout pot/inlet filter
- Automatic start/stop purge package
- Automatic solvent flushing package
- Pressure control system
- Junction box
- Control panel
- First out annunciator panel
- Precondenser
- Aftercondenser
- Variable frequency drives for process control
- Food grade lubricant
- Other coatings available
- Closed loop cooling systems
- Dry running gas seals

## Some Chemical Vapors Handled

Acids	Ammonia	DMF	Isocyanates
Acetic, Acrylic, & Butyric Acids	Amines	Glycols	Ketones
Alcohols	Anhydrides	HCl, HBr, HF	Monomers
Alkanes	Benzene, Toluene, & Xylene	Halogenated Hydrocarbons	Phenol
Alkenes	Chlorine	Heptane	Styrene
		Hydrogen Cyanide	Thionyl Chloride



## Model NC

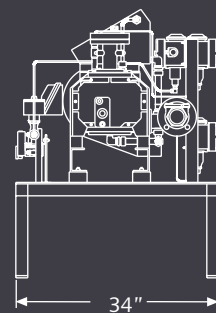
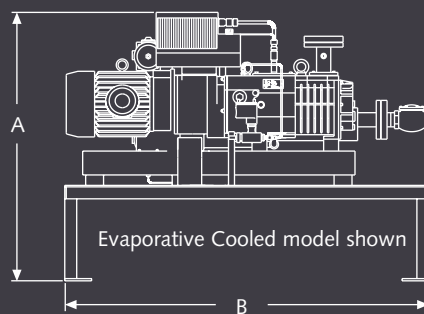


### Standard Specifications

COBRA Model		NC0070	NC0160	NC0250
Free air displacement	CFM	58	135	210
Nominal pumping speed	ACFM	50	115	180
Maximum sound level	dBA	75	82	82
Ultimate pressure	Torr	.075	.075	.075
Motor size	HP	5	7.5	15
Motor rotational speed	RPM	3600	3600	3600
Oil sump capacity	Qts.	2	2	2
Water usage rate*	GPM	1	1	1
Inlet connection	ANSI	1 <sup>1</sup> / <sub>2</sub> "	2"	2"
Outlet connection	NPT	1 <sup>1</sup> / <sub>4</sub> "	2"	2"
Approx. weight w/ motor & base	Lbs.	1000	1400	1600

For higher capacities and lower ultimate pressures consult factory (or see back page). \*Applies to direct cooled models only.

### COBRA Dimensions

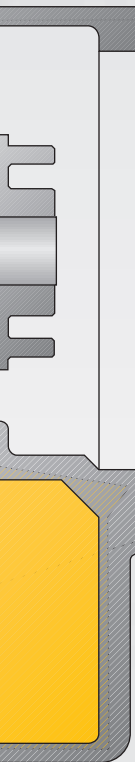


### Direct Cooled

NC0070

NC0160

NC0250



## COBRA Operating Principle

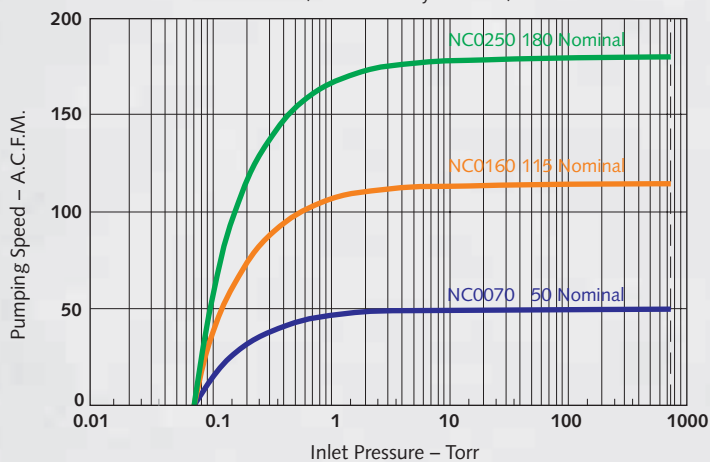
Entering gases are trapped between flights of the screws and moved axially down a short straight path to the exhaust where they are discharged.

- |                 |                 |
|-----------------|-----------------|
| 1. Inlet        | 6. Gas Path     |
| 2. Exhaust      | 7. Timing Gears |
| 3. Water Jacket | 8. Bearings     |
| 4. Screw        | 9. Shaft Seals  |
| 5. Oil          | 10. Oil Seal    |

## Standard Equipment

- NEMA C-Face motor, explosion-proof Class 1, Group C and D, Div. 1, Service Factor 1.15
- Seal gas pressure and flow switches
- Cooling water flow control system
- Cooling water temperature switch and gauge
- Exhaust gas temperature switch
- Exhaust silencer
- Exhaust check valve
- Stainless steel inlet flange and muffler
- Protective PTFE coating

**Performance Data** (based on 60 cycle motor)



### Standard Models

	A	B	Evaporative Cooled Models	A	B
	43 <sup>3</sup> / <sub>8</sub> "	61"	NC0070	43 <sup>3</sup> / <sub>4</sub> "	61"
	43 <sup>7</sup> / <sub>8</sub> "	61"	NC0160	45 <sup>1</sup> / <sub>2</sub> "	61"
	43 <sup>7</sup> / <sub>8</sub> "	65"	NC0250	45 <sup>1</sup> / <sub>2</sub> "	65"



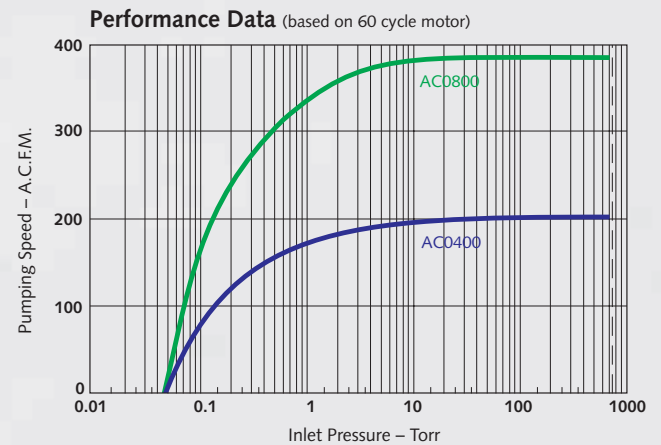


## COBRA Model AC – Chemical Duty Vacuum Pumps

The COBRA AC model is a dry screw, single stage, direct driven pump with the same advantages as the COBRA NC model, but is available in larger sizes. The COBRA AC has labyrinth and lip seals.



**COBRA AC**  
direct cooled model



### Standard Specifications

COBRA Model		AC0400	AC0800
Free air displacement	CFM	262	495
Nominal pumping speed	ACFM	200	385
Maximum sound level*	dBa	82	85
Ultimate pressure	Torr	.05	.05
Motor Size	HP	20	40
Motor rotational speed	RPM	3600	3600
Oil capacity	Qts	3.2	3.7
Water usage rate	Gal/min	2	3.2
Inlet connection	ANSI	2"	3"
Discharge connection	NPT	2"	3"
Weight with motor & base	Lbs.	1700	2400
Dimensions (L x W x H)	Inches	66x35x37	74x47x45 <sup>5</sup> / <sub>8</sub>

Consult factory for blower/pump systems with higher capacities and lower ultimate pressures. \*With optional exhaust silencer.

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