COPPUS® Model CP-20

Turbo Blower / Exhauster

Sectional Drawings, Parts List, Operation, Maintenance and Instructions for Installation

Manual #100 / 5-910000-00



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COPPUS® Model CP-20

General Description:

The COPPUS CP-20 is a turbine driven fan that can be used as a blower or as an exhauster, and which can be operated on either steam or compressed air. Rated flow capacity is 11,000 CFM at 3,500 RPM. It is designed to cool or ventilate large tanks or vessels.

The design features a six bladed axial flow propeller fan of heat-treated aluminum alloy. Driving power is applied to the fan through a single row of stainless steel turbine blades mounted around the periphery of the fan. Two separate nozzles of different size are provided in the aluminum fan casing. Only one nozzle is in operation at a time, depending on the steam or compressed air pressure range available. The rotating fan is supported by two grease-sealed ball bearings. Protective screens are provided on the inlet and outlet sides of the fan.

Mounting:

Two identical mounting flanges are provided, one on the inlet and one on the outlet side of the fan. The unit can thus be mounted to a tank opening either as a blower or as an exhauster. The fan casing is marked with an arrow to indicate the direction of flow.

Adapter plates may be used for mounting the unit to a variety of different size openings. The CP-20 may be mounted and operated in any attitude. See dimension print V-100 for mounting dimensions.

Operation:

All units are factory tested, and require no run in period or adjustment prior to operation.

During installation, it is essential that the steam or airline be connected to the correct nozzle as stated on the fan casing. One nozzle is designed for inlet pressures from 40 to 80 psig, and the other for pressures from over 80 to 150 psig.

Should a low-pressure supply be connected to the high-pressure range nozzle, below rated fan speed and delivery will result. If a high- pressure supply is connected to the low-pressure range nozzle, over speeding of the unit may result.

Note that only one nozzle should be connected at a time. The maximum inlet pressure rating of the CP-20 on either steam or air is 150 psig.

Since the driving medium is exhausted into the fan airflow after expanding through the turbine blades, no exhaust connection is required.

The maximum pressure listed for each nozzle will drive the fan at its rated speed of about 3,500 RPM. The operating speed, and thus the air delivery, can be reduced if desired by throttling the inlet steam or compressed air pressure.

It is recommended when using steam to install a steam strainer with the CP-20.

Maintenance:

The CP-20, as a heavy-duty industrial blower, is virtually maintenance free. The only routine care recommended is an occasional cleaning of screens and fan blades. If used with very dirty air causes dust and dirt to build up on these surfaces. The ball bearings are grease sealed for lifetime lubrication, and require no periodic attention.

Disassembly & Assembly:

Due to the simplicity of design, and the relatively small number of parts involved, teardown and buildup of the unit can be done very easily. Refer to cross sectional assembly drawing V-99.

1. Remove nuts and bolts that hold the casing halves (1 and 2) together
2. Lift off the outlet casing (2)
3. Remove the fan bolt and clamp washer (8) at the center of the fan hub
4. Remove fan (3) and bucket ring (4) from extension of shaft (7) – fan is a slide fit on the shaft
5. Remove enclosure (5) from inlet casing (1)
6. Remove end cap (6) and slide the ball bearing (10) cap end out of the housing by pressing on the shaft extension end of the shaft – be sure to remove the key from the shaft first
7. The ball bearing (10) still in the housing can now be removed by a light even press against the inner race away from the shoulder in the housing
8. The star tolerance rings (11) located in grooves around the bearings provide a superior load-carrying surface for the ball bearings – they can be easily removed after the bearings have been pressed out
9. When reassembling, press the cap end bearing on the shaft and then into the housing. Then supporting the shaft in position against its inner race, start the fan end bearing into housing and onto the shaft being careful to keep it square to prevent binding. Press it firmly in place against the shaft shoulder then replace enclosure (5) to position bearing in the housing. Complete reassembly by reversing the procedures listed above.
10. **Note:** The fan and bucket ring constitute a one-piece balanced assembly and should not be disassembled in the field – this assembly should be returned to the factory if any repairs are required

Troubleshooting:

1. Noise or vibration in the unit
    - Bearings may be worn, and can be replaced by following the procedure under “Disassembly and Assembly”
    - Excessive buildup of dirt and grease on the fan blades may cause a rotating unbalance which can be relieved by cleaning the blades
2. Insufficient airflow
    - Low pressure supply connected to the high pressure range nozzle is the most likely cause of this condition
    - Blockage of the protective screens by dirt or debris may restrict normal airflow.

Repair & Spare Parts:

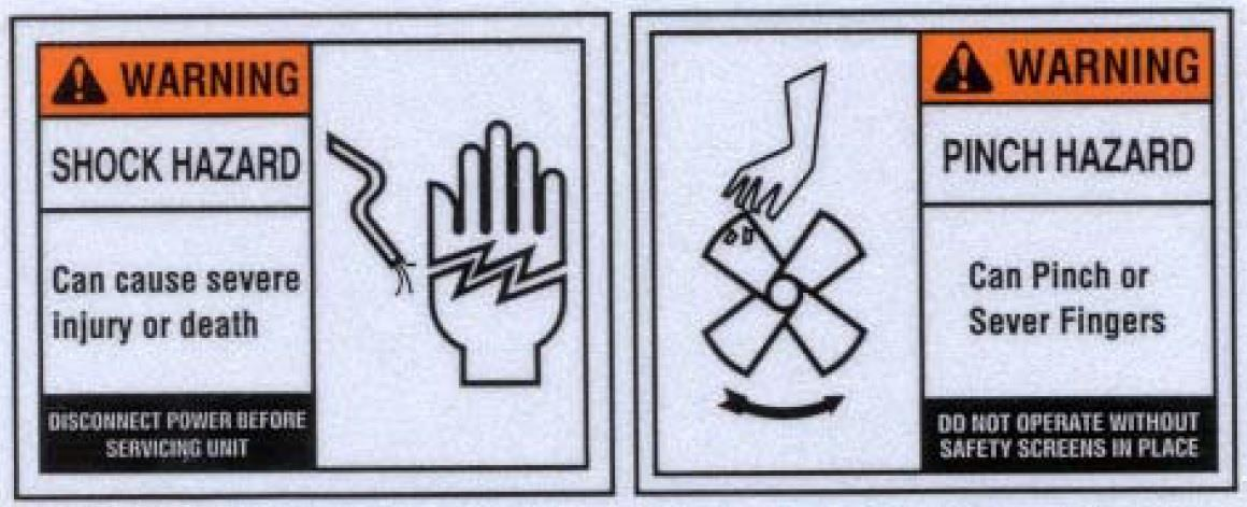
Refer to cross-section V-99 for catalog numbers and description of parts used in blower. When ordering parts, give model, section print number, and description and catalog number. Hardware items that do not have a COPPUS catalog number can usually be purchased locally.

Order parts from your local representative or from our factory:

Curtiss-Wright Fleet Solutions
482A Stewart Street
Atlantic Beach, FL 32233
coppus@curtisswright.com

Recommended Spare Parts:

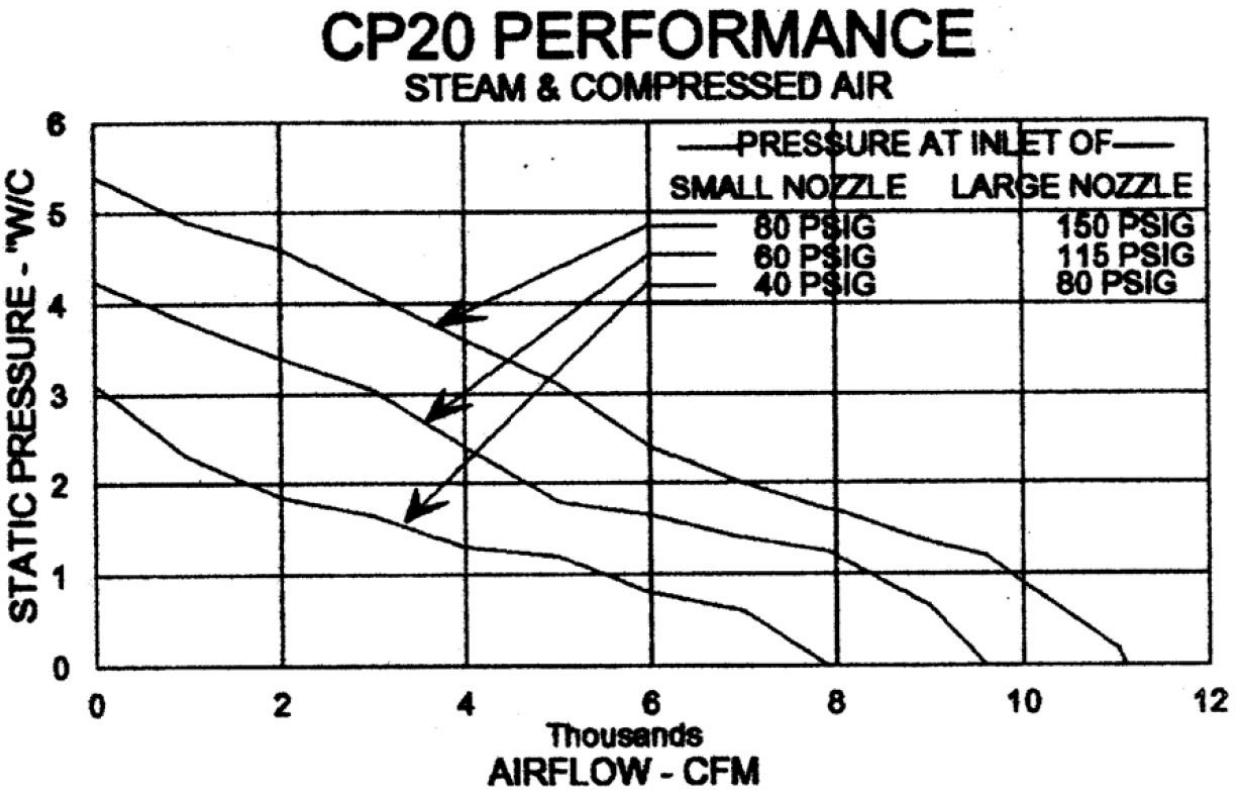
- 2 Ball Bearings (Reference #10) – COPPUS P/N 4-011004-06



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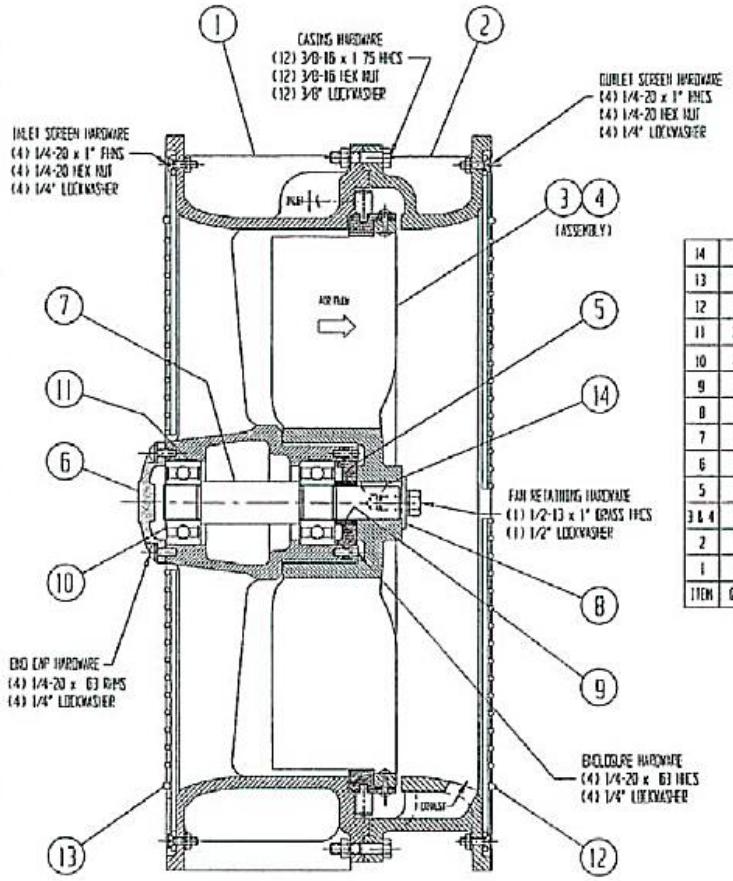
Steam and Air Consumption

Steam or Air Pressure (PSIG)	Steam Consumption (LBS. / HR.)	Air Consumption (SCFM)
Using Small Nozzle		
150	640	220
115	510	178
80	380	128
Using Large Nozzle		
80	740	250
60	590	194
40	440	142



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COPPUS TURBINE DRIVEN TANK VENTILATOR
MODEL CP-20



ITEM	QTY	PART NUMBER	DESCRIPTION
14	1	4-016000-07	SHAFT KEY (MORTON HP 706)
13	1	5-209301-05	INLET SAFETY SCREEN
12	1	5-209301-01	OUTLET SAFETY SCREEN
11	2	4-017200-01	TOLERANCE RING
10	2	4-011001-06	BALL BEARING
9	1	5-410093-00	SHAFT SLEEVE
8	1	5-410122-00	CLAMP WASHER
7	1	5-410267-00	SHAFT
6	1	6-410102-00	END CAP
5	1	6-410266-00	ENCLOSURE
3 & 4	1	2-102548-03	FAN & BLOWER RING ASSEMBLY
2	1	6-101012-00	OUTLET CASING
1	1	2-101631-00	INLET CASING

