

## ▶ TANK AGITATION

Fuji Ring Compressors are great for applications requiring agitation of fluids in plating tanks, rinsing tanks and cleaning tanks because they offer the following advantages:

- Clean, oil-free air without contaminants to foul or spoil the fluid.
- Low noise levels meet OSHA requirements without costly noise reduction equipment required by positive displacement Roots-type blowers.
- Low operating cost when compared to air compressors.
- Low purchase cost when compared to other types of blowers or compressors.
- Dependability of a rotating machine without wearing, rubbing or sliding components. The only moving part is a non-contacting impeller supported by two high quality ball bearings.

### PLATING TANK

Fuji blowers produce agitation that helps renew cathode films, decrease polarization, and allows the use of higher current density, permitting higher plating speeds and finer grain deposits. The air agitation's scrubbing action also minimizes the quantity of rinse water needed, thus reducing the load on water treatment facilities.

### CLEANING TANK

End solvent / solution stagnation. With a Fuji blower agitation, fresh solution is constantly brought into contact with the part, removing dirt particles and dissolving grease.

## ▶ BLOWER SIZE FOR TANK AGITATION

### PRESSURE REQUIREMENTS

$$P = 0.43 D S + 0.75$$

Where: P = Pressure (PSIG)  
D = Depth of Solution (Feet)  
S = Specific Gravity of Solution  
(see table)

### FLOW REQUIREMENTS

$$Q = AF$$

Where: Q = Flow Rate (SCFM)  
A = Tank Surface Area (ft.<sup>2</sup>)  
F = Agitation Factor  
(SCFM/ft.<sup>2</sup>, see table)

AGITATION FACTOR AND SPECIFIC GRAVITY TABLE

Solution	Agitation Factor (F) (SCFM/ft. <sup>2</sup> )	Specific Gravity (D)
Al Plating	1.0 - 1.8	1.2
Cu Plating	1.0 - 1.5	1.2
Ni Plating	1.2 - 2.0	1.2
Cleaning	1.0 - 1.5	1.1
Rinsing	0.5 - 1.5	1.0

# TANK AGITATION



FUJI ELECTRIC  
APPLICATIONS

## EXAMPLE 1

2 copper plating tanks are to be agitated. Tank dimensions are 3'w x 6'l x 4'h with a solution depth of 3.5 feet.

Step 1: Determine the pressure.

$$P = 0.43 \times 3.5 \times 1.2 + 0.75 = 2.6 \text{ PSIG}$$

Step 2: Determine the flow.

$$Q = 2 \text{ tanks} \times 3 \times 6 \times 1.5 = 54.0 \text{ SCFM}$$

Step 3: From the Blower Selection Chart below, read down from 2.5 PSIG to the flow that meets or exceeds 54.0 SCFM, then read left to the proper Fuji blower. In this case, Fuji model VFC50 will provide 60 SCFM.

Note: Use of pressure relief valve or vent valve installed in a "T" to vent excessive air is recommended. This permits cooler operation of the blower, consumes less power and extends life.

TANK AGITATION AND VENTILATION CHART

Model	Pressure PSIG (in. H <sub>2</sub> O)							
	1 (27.7)	1.5 (41.5)	2.0 (55.4)	2.5 (69.2)	3.0 (83.1)	3.5 (96.9)	4.0 (110.8)	4.5 (124.6)
VFC20	20							
VFC30	35	22						
VFC40	70	45				SCFM		
VFC50	125	100	85	60				
VFC60	175	160	140	125	100	80		
VFC70	230	205	185	165	130	100		
VFC80	360	340	320	290	275	250	210	150
VFC90	515	470	435	390	350	310	260	185

## TANK VENTILATION

Many cleaning, plating and rinsing tanks emit toxic fumes that must be removed. Fuji blowers provide air flow across the surface of the tank to transport the fumes to an exhaust system.

## BLOWER SIZE FOR TANK VENTILATION

### PRESSURE REQUIREMENTS

The typical requirement for ventilation systems is:

**Air Flow = 1 SCFM @ 1 PSIG**  
for each Foot of Tank Length

Orifices should be sized to provide an area equal to that of a 1/8" orifice, or 0.012 in.<sup>2</sup>, per foot of pipe.

## EXAMPLE 2

Using the (2) 3' x 6' long tanks in Example 2, the airflow requirement will be: 2 x 6 x 1 = 12 SCFM @ 1 PSIG. Referring to the Blower Selection Chart on page 45 at 1 PSIG, a VFC20 will provide 20 SCFM.

### CAUTION

When the blower provides more airflow than required, it should not be throttled. There may be a possibility of damaging the blower due to excessive pressure or insufficient airflow to cool it.