

Fig. 2. 400 HP 750 r.p.m. horizontal type NR-motor

When used at a very dusty place, it may happen that dust accumulates inside of the cooling pipes after a long while to reduce the cooling effect. It is necessary to give a periodical cleaning to avoid it, which can be done simply in the similar manner as in the case of chimney cleaning from the coupling side. Dust thrown out to the external fan side can be removed by opening an exhaust outlet provided at the bottom of the external fan cover.

Being of the totally enclosed type, these motors are naturally of the dust-proof, but they have the qualities of water-proof, acid proof and gas proof as well. If necessary, they can be attached with a pressure-resisting and explosion proof slip ring cover.

The Company has built great many motors of both wound rotor type and squirrel cage rotor type, in both horizontal and vertical design and ranging over various horse-power capacity. Table 1 shows the maximum capacities of the Type NR motor. However, even capacities exceeding those given in the list can also be manufactured upon special request.

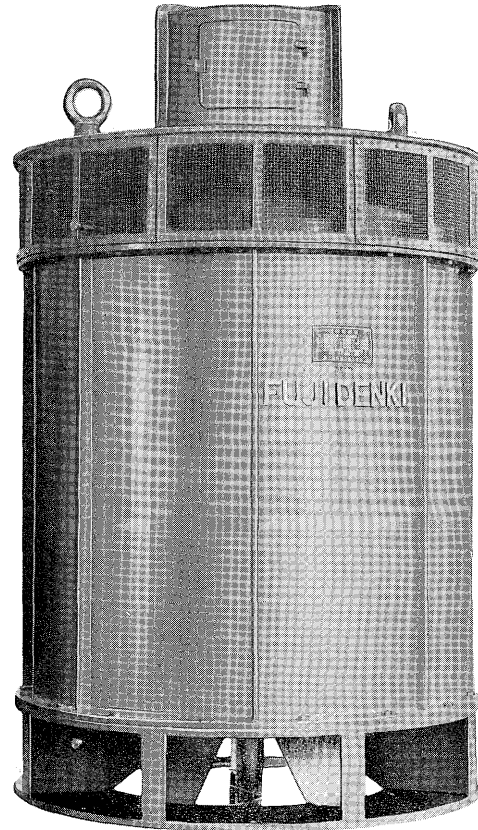


Fig. 3. 200 kW 750 r.p.m. vertical type NR-motor

Rotor type	Frequency (c/s)	Output (HP)				
		2/4 P	6 P	8 P	10 P	12 P
Squirrel cage rotor	50	1,300	1,100	900	650	520
	60	1,560	1,320	1,080	780	620
Slip-ring rotor	50	1,200	1,000	800	600	470
	60	1,440	1,200	960	720	560

Table 1. Maximum output table of standard NR-motors

SMALL ELECTROSTATIC FILTER, TYPE KSA-31

Recently all of a sudden the attention of various circles has been centered to the utilization of filters. Fuji Electric Mfg. Co. have built this time small electrostatic filters, Type KSA-31, which have proved very satisfactory, the introduction of the same being made below.

I. WHAT IS THE SMALL ELECTROSTATIC FILTER?

So-called electrostatic precipitation is known from the old times and its basic idea is to apply direct

current of high voltage to corona wires suspended between parallel-spaced collecting electrodes. Then active corona discharges take place around the corona wires and the space is filled with gas-ions and electrons: If dust-laden air is passed through this space, fine dust particles are instantly charged, attracted by the collecting electrodes and precipitated to the latter.

The merits of electrostatic precipitation are as follows:

1) Irrespective of the size and the property of fine particles, it offers an exceedingly high separating

capacity at the minimum loss of ventilation effect.

2) In practical applications, there is no limitation as to the nature and the pressure of gas employed and the character of the fine particles.

3) The disposition of the materials collected is comparatively easy.

4) The expense involved in cleaning gas and maintenance is exceedingly low.

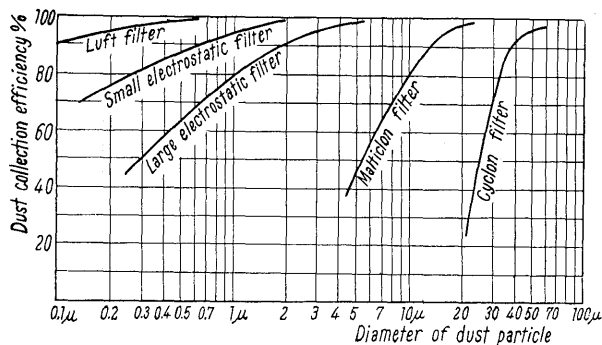


Fig. 1. Cleaning efficiency curve of various filters

The kinds and efficiencies of conventional filters are as shown in Fig. 1 and evidently it can be said that Small Electrostatic Filter ranks in efficiency between the Luft filter and the ordinary Cottrel type.

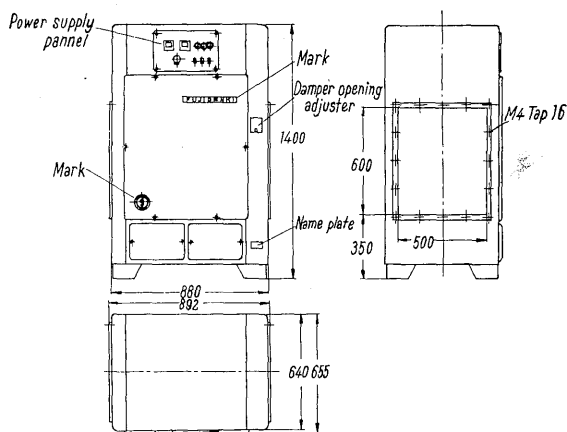


Fig. 2. Outline of type KSA-31

Brief specifications of the filter are as follows:
Type: KSA-31 cabinet type for indoor use with horizontal gas-flow plates system.

Air to be cleaned, Dust-laden: $32 \text{ m}^3/\text{min}$. at normal temperature.

Dust: Below $3 \text{ gr}/\text{m}^3$ and up to $0.5 \text{ } \mu$.

Collecting rate: $98 \pm 2\%$ at $32 \text{ m}^3/\text{min}$.

$96 \pm 2\%$ at $40 \text{ m}^3/\text{min}$.

Ventilation loss: 5-8 mmAq.

Electric supply: A-C 100 V 50/60 cycle.

Direct current: 12,000 V 20 mA.

Power consumption: 240 W approx.

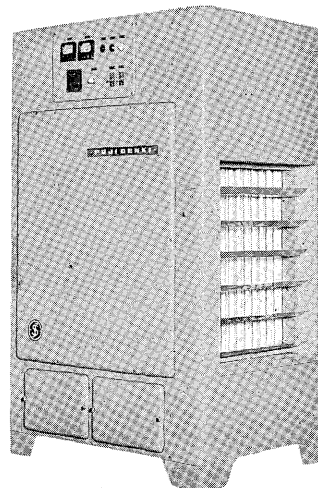


Fig. 3. Small electrostatic filter, type KSA-31

II. CONSTRUCTION AND FUNCTION

The type KSA-31 consists of following parts.

- 1) Dust collecting unit: Each unit functions in such a way that the dust in air is electrically charged and made to adhere to the collecting electrodes under the influence of a strong electric field generated. Two units are placed in series along the air flow; front one collects dust actively, while the rear disposes the remaining particles perfectly.
- 2) Air adjusting net: This is constructed of a perforated plate with many holes which adjusts the flow of the air entering the dust collecting compartment and maintains its uniform speed.
- 3) Knocking device: This is a device to produce a knocking effect to shake off the dust adhering to the collecting electrodes and is mounted on both sides of high voltage unit and the collecting electrodes.
- 4) Dust box: This is to receive the dust shaken off from the collecting electrodes and is so constructed as to be drawn out periodically remove.
- 5) Electric supply box: This contains a generating apparatus of high D-C voltage which supplies D-C voltage to the dust collecting unit and also protecting device.

III. PRINCIPAL APPLICATIONS

This filter makes it feasible to collect even the finest dust and is exceedingly efficient particularly when the dust density is great. Principal applications of it are as follows:

- 1) In factories handling cement, gypsum, flour and the like, it will collect the portion of the dust which is flying away in the air.

2) It is efficient particularly as in the case of pigments when dust particles are so fine that it is impossible to handle with other types of filter.

3) It can be advantageously employed in places such as can-making factories and grinding rooms where the amount of flying dust is comparatively large.

3) The relationship between the amount of ventilated air and cleaning efficiency is as indicated in Fig. 4 and it is advised that the apparatus be advantageously operated according to the purpose of use.

4) A fan is not included in this apparatus but is available on request.

IV. DIRECTION FOR USE

- 1) Operation: After confirming voltage adjustment notch is set on "1". turn supply switch to "On" position and gradually bring up to higher notches. If ammeter reading oscillates within the marked range, it indicates that the filter is operating in a fine condition.
- 2) Knocking: When the amount of dust is considerably great and the long continuous operation of the apparatus is required, the knocking switch is fixed on "On" position all the time, but otherwise, this switch operation will be made periodically twice or three times per day for about ten minutes.

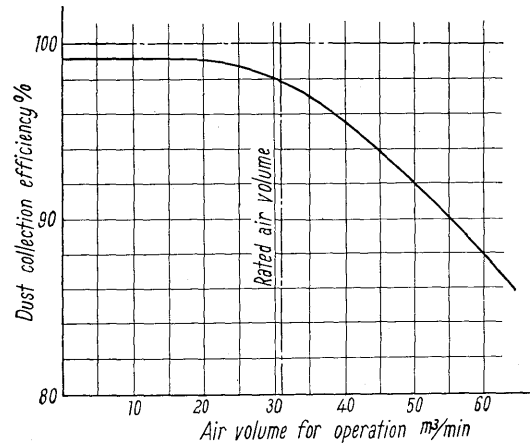


Fig. 4. Cleaning efficiency curve of type KSA-31