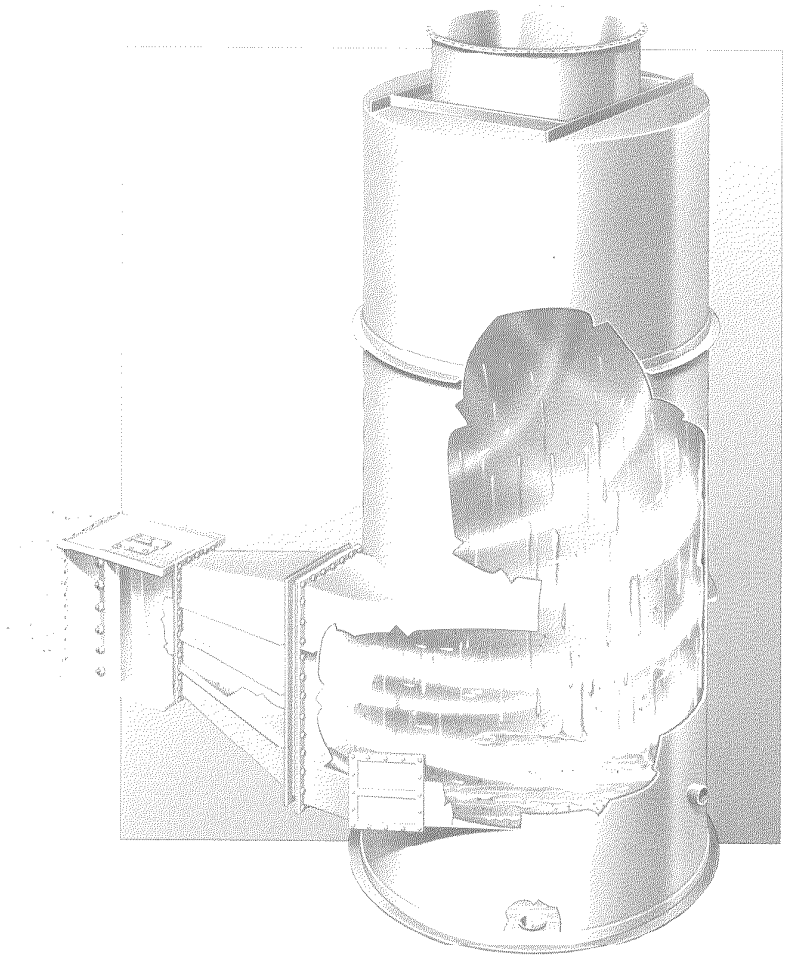


KinPactor®

Venturi-Type Wet Dust Collector

Installation, Operation and Maintenance Instructions

KINPACTOR SIZE NO. _____

KINPACTOR SERIAL NO. _____

SEPARATOR SIZE NO. _____

SEPARATOR SERIAL NO. _____

AAF
INTERNATIONAL

INTRODUCTION

The Kinpactor utilizes kinetic energy to collect dust by the principle of impaction. The contaminated gas stream is accelerated to high velocity in the venturi-shaped throat section. Water introduced just ahead of the throat is atomized by the high velocity gas stream, and dust particles collide with and are trapped by millions of small water droplets. The gas stream is decelerated (and static pressure regained) in the long diverging section behind the Kinpactor throat. Entrained water droplets are removed from the gas stream by a water eliminator.

If properly installed and operated, the Kinpactor will have a dust collection efficiency comparable to that of an electrostatic precipitator or fabric collector. Since the Kinpactor contains no moving parts, maintenance requirements are minimized. The collector will function properly as long as there is adequate water flow to and from the unit, the equipment is free of excessive build-up or wear, and the system fan is operating properly.

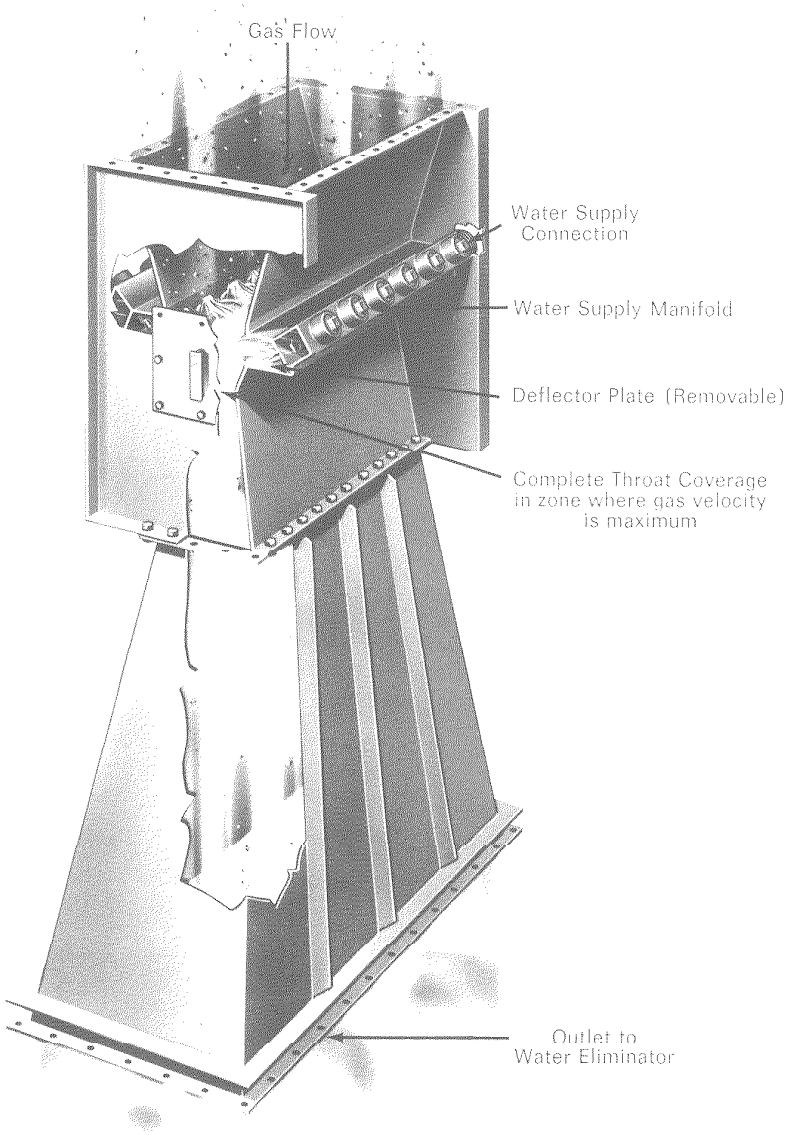


FIG. 1 — Cut-Away View of AAF Kinpactor

INSTALLATION

The throat section and diverging section are normally shipped as separate assemblies and must be connected at the installation site. Bolt the two sections together tightly, using the hardware and gasketing which has been provided.

The Kinpactor may be installed horizontally (Figure 2) or vertically. The vertical installation requires the use of a flooded elbow to prevent duct wall erosion. The Kinpactor must be supported independently regardless of which arrangement is used. Do not attempt to support the weight of the Kinpactor from the water eliminator inlet. The inlet duct connection and the connection between the Kinpactor and water eliminator should be well-gasketed.

Water Supply: Size 8 and larger Kinpactors are equipped with two water supply fittings. (Smaller sizes have a single fitting.) The required water supply rate is a design characteristic of each individual installation, and typically ranges from 6 to 12 gpm per 1000 cubic feet (saturated) of gas handled. Water pressure at the supply fitting should be 40 psig unless otherwise specified.

Water Eliminator: The Kinpactor is normally furnished with a cyclonic separator (Figures 2 and 4). The separator should be installed on a suitable base and leveled before foundation bolts are secured. The separator elevation **must** be sufficient to allow installation of properly trapped drain lines, as discussed in the following section.

Drain Piping: Proper drain piping from the water eliminator is essential. Inadequate piping or poorly designed traps will result in water entrainment.

Cyclonic separators are equipped with one bottom drain and one overflow drain connection. External drain piping should always be the same diameter as the drain connections, or larger.

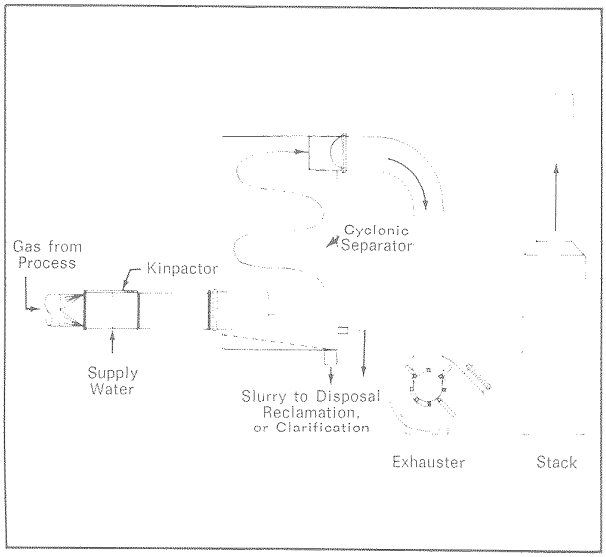


FIG. 2 — Typical Arrangement with Cyclonic Separator

Since the exhauster is normally located on the downstream side of the separator, the separator will be under a negative pressure approximately equal to that at the fan inlet. Proper drain flow requires both a water leg and a water seal.

Check valves are sometimes used in the emergency drain in order to avoid locating the trap below separator base elevation. Check valves will only be effective if located below the drain connection at a vertical distance equal or greater than the fan suction.

The drain lines from the wetted elbow (if used) must be trapped. Do not attempt to connect the drain lines from the elbow and separator. Traps should be filled with water before initial start-up.

Exhauster Connection: A flexible connection should be used between the exhauster and Kinpactor system to prevent vibration transmission to the air cleaning equipment.

TABLE 1

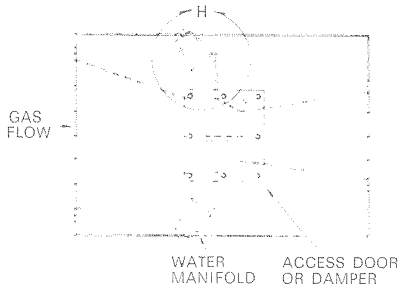
Drain Slope In Feet Per 100 Feet of Run For Various Flow Rates

Pipe Size (Inches)	50 GPM	100 GPM	150 GPM	170 GPM	225 GPM	300 GPM	400 GPM	500 GPM	600 GPM
5	1.6	7.0							
6	0.57	2.3	5.3	7.0					
8		9.5	1.2	1.5	2.5	4.5	7.9	12.0	
10			0.35	0.45	0.77	1.4	3.1	3.9	6.5
12					0.30	0.60	1.15	1.8	3.1

OPERATION AND MAINTENANCE

Kinpactor operation and maintenance is greatly simplified by the absence of moving parts. Little operating difficulty should be anticipated as long as there is adequate water flow to and from the unit.

Supply water may be fresh (city or well water) or recirculated from a settling tank or pond. Recirculating systems are most commonly used because of the volumes involved, but the expense of such a system may not be justified for smaller Kinpactors. The supply line solenoid valve (fresh-water system) or recirculating pump should be electrically interlocked with the exhauster motor so that water is supplied to the unit when the fan is started and shut off when the fan is stopped.



The Kinpactor and separator should be inspected periodically for excessive wear or material buildup. The Kinpactor water injection system is of simple, rugged construction, but injector nozzles are subject to plugging when a recirculating water system is used. The injectors can be equipped with manual reamers for quick, easy cleaning (Figure 3). An increased reading at the water manifold pressure gauge indicates solids build-up in the injector nozzle assemblies. To clean the injectors, push the manual reamer forward, with a clockwise twist, until the plunger extends through the nozzle opening. Reaming frequency will depend on the concentration and type of solids in the supply water.

The injected water impinges on removable splash plates (Detail "H", Fig. 3). To remove worn or eroded splash plates, unbolt the plates from the outside and remove through the end access door of the Kinpactor.

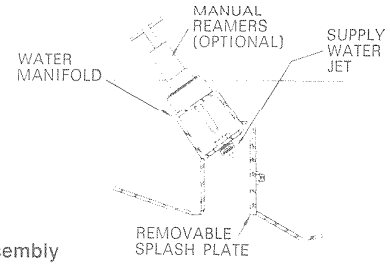


FIG. 3 — Detail H
Water Supply Assembly

Note: Some Kinpactors are equipped with manually adjustable throat dampers (slide-gate type) to block off a portion of the Kinpactor throat. Such dampers are field adjusted to suit operating requirements of the individual installation. After the correct setting has been established, the damper must be tightly secured and not repositioned indiscriminately. At constant fan speed, a change in damper setting will change the exhaust air volume and may overload the fan motor.

Cyclonic Separator: The Cyclonic Separator uses the principle of centrifugal force to separate the dust laden water droplets from the entering gas stream. The gas stream coming from the Kinpactor enters the Cyclonic Separator tangentially causing a cyclone-type motion of the gas stream. The heavier dust laden water droplets are slung to the perimeter of the separator and eliminated through the bottom drain.

An access door is provided on the inlet so that periodic inspection of the separator for possible abrasion, drain line pluggage, etc. can be performed. There are no moving parts to replace or maintain.

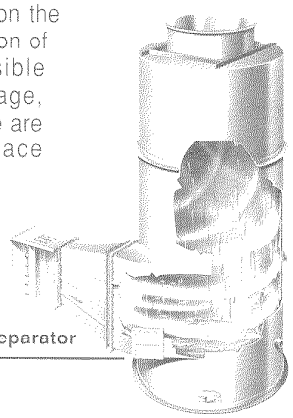


FIG. 4 — Cyclonic Separator

TROUBLE-SHOOTING

Any difficulties which may be encountered in Kinpactor operation can normally be traced to one or more of the following situations:

Reduction in air flow is caused by:

1. Material accumulation in hoods or ducts because of sticky dust or low conveying velocity
2. Addition of exhaust points to system
3. Excessive water supply to the Kinpactor
4. Material build-up in the water eliminator
5. Excessive exhauster wheel wear
6. Reduced exhauster speed due to slipping V-belts (where applicable)
7. Partially obstructed Kinpactor throat

Reduction in collection efficiency is caused by:

1. Insufficient water supply
2. Clogged or obstructed water injection nozzles
3. Corrosion or erosion of Kinpactor
4. Reduction in air flow (see above)

Excessive material build-up in separator is caused by:

1. Insufficient water supply
2. Abnormally sticky or tacky dust

Water entrainment is caused by:

1. Improperly designed drain traps
2. Clogged drain lines
3. Reduction in air flow (less than 65% of rating)
4. Excessive air flow
5. Excessive water supply to the Kinpactor
6. Material accumulation in the eliminator