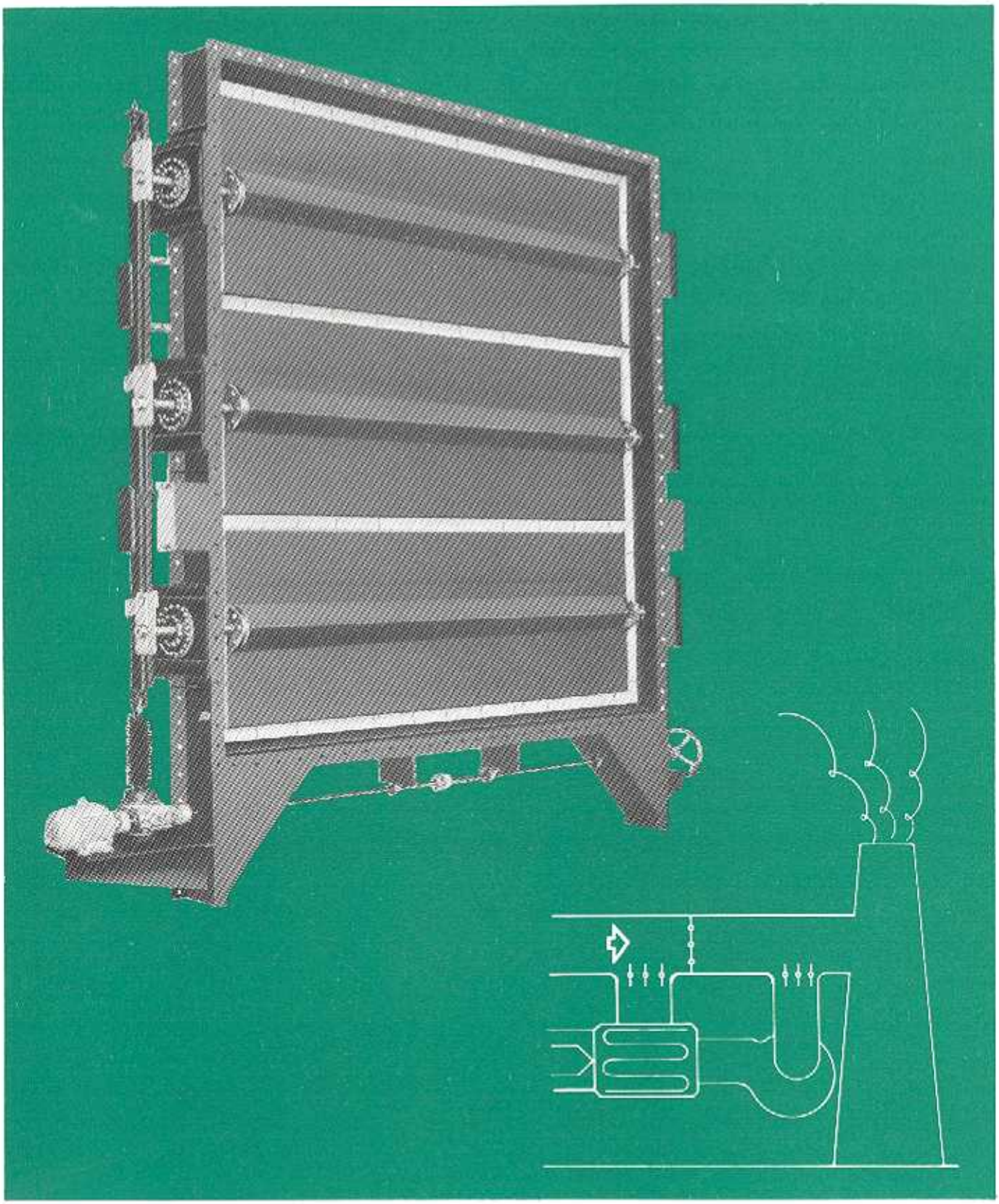
FOURESS

LOUVRE DAMPERS

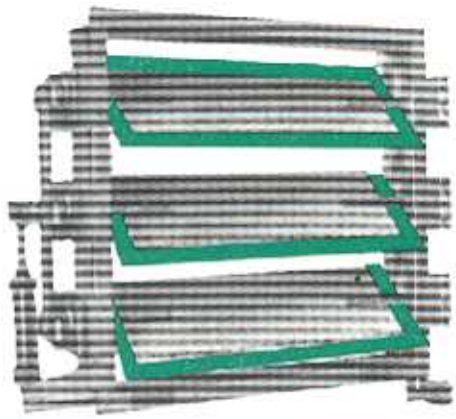


LOUVRE DAMPER

INTRODUCTION

GENERAL

FOURESS : Louvre dampers are designed to provide a guaranteed sealing efficiency of 99.9%, or better, on cross-sectional area. They incorporate various flexible metallic sealing systems made of austenitic stainless steel or high nickel alloys. Units can be supplied for both circular and rectangular ducts of all sizes for temperatures and defferential pressures upto, and in excess of, 650°C and 2000 mm H_2O respectively.



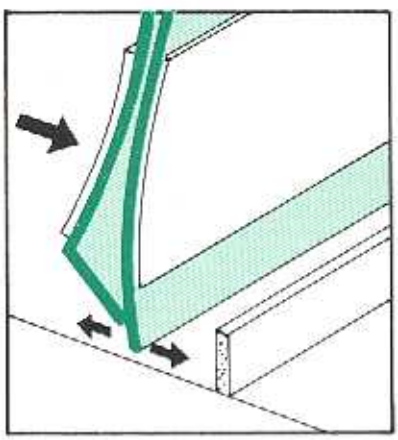
FEATURES

SEALING SYSTEM

FOURESS Louvre Isolators are provided with the leaf spring type sealing system made up of stainless steel AISI 316 or inconel 625 seals based on end application. The sealing system consists of a thin metal leaf strip (1) Predeflected by a bias spring (2) The seal strip is pressed against the landing surface (3) Either in the frame or on the adjacent blade, forming a flat, 20 mm wide, sealing surface.
The operational deflection of the sealing element is 17 mm and it can tolerate upto 12 mm misalignment without any decrease in sealing efficiency. In the open position the seal is prevented from fluttering by a support plate (4) Against which the seal strip is held by the bias spring.

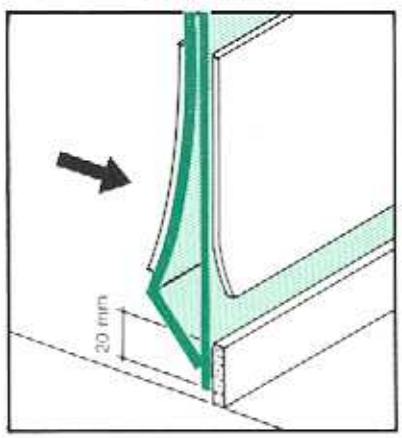
DUPLEX MUTI LOUVRE

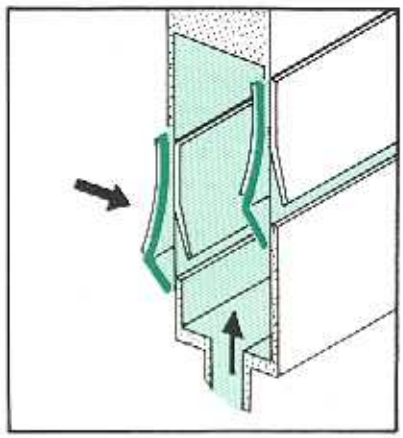
Fouress multi louvre can also be provided with double row of sealing system on a single blade. To provide 100% tightness in the interspace a peripheral air barrier is created by a small fan ensuring any gas leakage is positively banned.



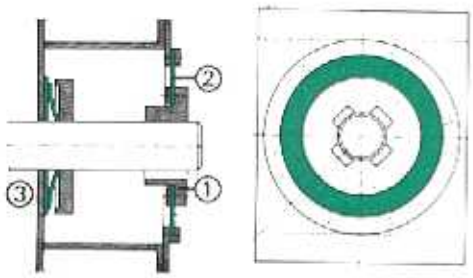
LEAF SPRING SEAL

SIMPLEX





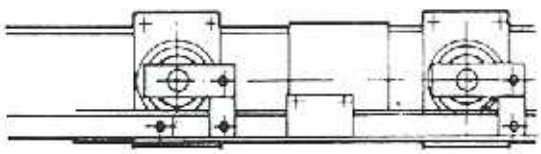
DUPLEX



INSULATED FRAME

A major problem with the traditional multi-louvre design, when installed in internally lined ducts, is distortion caused by the temperature difference between the outside of the duct and the frame, or, if the insulation is continued inside the damper, the landing surface. In the FOURESS design the internal frame can move relative to the external one and still maintain the high sealing efficiency.

A variation of this design is available for an existing duct or chimney which cannot be cut, or have a section removed, and where the units is to be installed piece small.



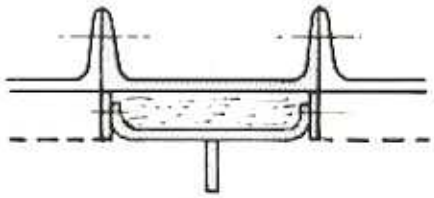
HIGH TEMPERATURE BEARINGS

This specially designed gun metal bearing

1) Is self aligning as it is connected to the bracket by a flexible stainless steel diaphragm

2) The large free surface, in combination with the small volume of the diaphragm, and the low temperature conductivity of the material, makes the diaphragm a temperature barrier between the bracket and bearing.

3) The shaft seal consists of a flat disc, fitting tightly over the shaft, which is pressed against the isolator's frame by a flexible metallic cone and steel collar. This gives a positive metal to metal seal between the shaft and frame without inhibiting the self alignment capabilities of the bearings or causing excessive friction torque, as can happen with traditional packed glands.



LINKAGE SYSTEM

Simplex Linkage System

LOSS MOTION LINKAGE

With the FOURESS sliding linkage the shafts are connected to each other in such a manner so as to nullify the effects of differential expansion. Thus the risk of a loss in sealing efficiency due to blade rotation is avoided and seizure of the linkage due to expansion of the frame relative of the blades is prevented.

CONTROL AND ISOLATION

FOURESS louvre dampers can be supplied with parallel or opposed action blades. The nature of the sealing system that both arrangements give the same high sealing efficiency and no penalty need be incurred where control and isolation are required in one unit.

ACTUATION

Units can be supplied with electric, pneumatic, hydraulic or manual drive, depending on conditions and size. These may operate the unit from one or both sides.

FOURESS reserves the right to introduce changes in design or specification should we consider them necessary in the interest of improved performance.

The fields of applications for FOURESS Isolators extends to many industries and activities, including :

Cement	Nuclear	Power Generation
Chemical	Offshore Oil	Refuse Incineration
District Heating	Oil Refining	Steel- making
Metal Processing	Perto-Chemicals	Total Energy Systems

FOURESS Isolators are being used for the isolation of :

Precipitators	By-pass stacks	Waste Heat Boilers
SOx Scrubbers	Auxiliary Fans	LD Converters
Boilers	Fired Heaters	Sinter Strands
Air Preheaters	Lime Kilns	Cement Kilns
Reheaters	Induced Draught Fans	Spray Dryers
Chimneys	Pulverised Fuel Mills	Secondary Fume Systems
Gas Turbines	Gas Recirculation Fans	Copper Smelters
		CO Boilers

USERS OF FOURESS GAS-TIGHT ISOLATORS INCLUDE:

(A) **POWER PLANTS :** Port Kelang (Malaysia); MSEB (Koradi, Nashik, Bhusaval, Parli); MPEB Korba, Sarni, Amarkantak); GEB (Ukai, Wanakbori); TNEB (Ennore, Tuticorin); APSEB (Kothagudam); OSEB (Talcher); NTPC (Badarpur, Farakka, Ramagundam, Singrauli), UPSEB (Panki); Renusagar Power Corporation Ltd., (U.P) BSEB (Patratu, Barauni), HSEB (Faridabad, Panipat).

(B) **DESULPHURISATION PLANT :** Tata Electric Company, Trombay

(C) **CEMENT PLANTS :** Shanah Cements (UAE); Pedang Portland Cements (Indonesia); ACC (Gagal, Kistna, Porbandar, Sevalia, Wadi, Chanda); Andhra Cement Company Ltd., (Durgapuram); CCI (Manikgarh, Neemuh, Tandur, Yerraguntla); Gujarat Ambuja Cements; Kesoram Cements; L & T (Awarpur); Madras Cements Ltd; Mysore Cements Ltd; Priyadarshini Cements; Rajashree Cements; Modi Cements; Saurashtra Cements; Vasavadatta Cements; Mangalam Cements; TISCO Cements; Dhar Cements; Vikram Cements; Raymond Cements; Texmaco (Yerraguntla) Jaypee, Rewa.

(D) **REFINERY & PETROCHEMICALS:** Gujarat Refinery; Gauhati refinery; Mathura Refinery; Barauni Refinery; Cochin Refineries; Bongaigaon Refinery; Haldia Refinery (IOCL); Madras Refinery; HPCL (Vizag), BPCL (Bombay); Tamil Nadu Petroproducts Ltd. Reliance Petrochemicals Ltd. (Hazira) Cochin Refineries.

(E) **GAS TURBINE :** ONGC (Hazira, Uran); BPCL (Mahul); FCI (Talcher); APSEB (Vijeswaram), AECO (Valva); HPCL (VIZAG); GEB(Utran); Samtal (Ghaziabad)

(F) **NUCLEAR :** IGCAR (Kalpakkam); KCR (Khammam).

(G) **PAPER :** National Newsprint & Paper Mills (Nepa Nagar); Ballarpur Industries Ltd., Orient Paper Mills (Amlai), Century Paper Mills.

(H) **FERTILIZER :** Shriram Fertilizers & Chemicals Ltd. (Kota); HFCL (Barauni), Zuari Agro Chemicals Ltd. (Goa); SPIC (Tuticorin).

(I) **STEEL :** SAIL (Rourkela Steel Plant, Bhilai Steel Plant, Bokaro Steel Plant).

FOURESS
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E-Mail : fsbgp@blr.vsnl.net.in **Web Site :** www.fouressengg.com

ISO 9001

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