



# COMBUSTION AIR IN-FORCER™

Today's most advanced and cost-effective way to assure adequate combustion air for maximum performance of heating appliances

## The Problems:

**Insufficient combustion air causes:**

- ◆ Flue gas spillage, flame roll-outs, decreased efficiencies, and reduced heating equipment life.

**Conventional metal louvers often are a major cause of these problems:**

- ◆ Unregulated outdoor air supply that changes with temperatures, speed and direction of winds.
- ◆ Architecturally unsightly large outside wall openings that often require structural reinforcement.
- ◆ Mechanical room freeze ups in northern climates.
- ◆ Often not compatible with below grade or interior mechanical rooms.



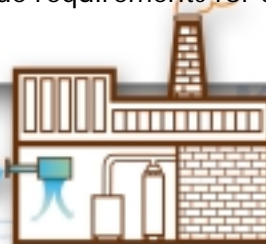
## The Solution:

Tjernlund In-Forcer combustion air intakes are packaged systems engineered to provide controlled, interlocked combustion air.

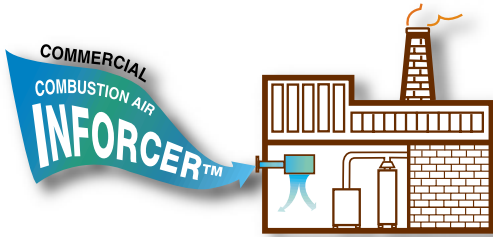
- ◆ Wall or roof opening size can be reduced by up to 80% compared to conventional metal louvers.
- ◆ In-Forcers include matching, low profile intake hoods that can be mounted on either a roof or sidewall.
- ◆ Use small diameter duct to deliver outdoor air up to 100 feet away from intake hood.
- ◆ Complies with Mechanical Code requirements for combustion air supply.



COMMERCIAL  
COMBUSTION AIR  
INFORCER™



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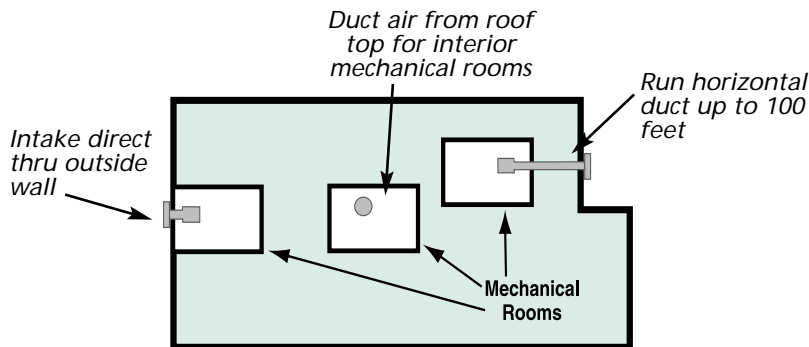
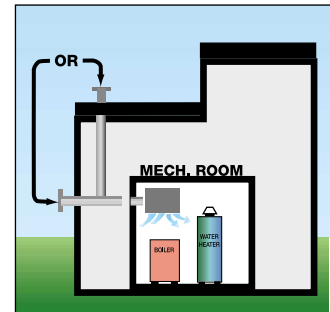


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# The original and most practical alternative to metal louvers

## Use in virtually all mechanical room locations

The IN-FORCER can be ducted up to 100 equivalent feet from the intake hood. Even isolated mechanical rooms can easily be supplied with outdoor combustion air. Cold outdoor air can be distributed through standard ducts and diffusers at ceiling level, allowing the air to be tempered as it drops to the floor, eliminating cold spots in the mechanical room. Mechanical room noise transfer to the outside is further reduced since there is no direct wall opening, typical of standard air intake louvers.



sidewall mounted hood



roof mounted hood

## Variety of applications

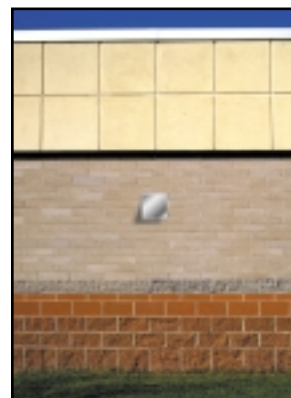
- Restaurant kitchens with negative pressure caused by exhaust fans
- Interior mechanical rooms with no direct access to an outside wall
- Conversions from electric to gas or oil heating appliances
- Confined space installations
- Below grade mechanical rooms
- Factories where processes cause backdrafting of heating equipment
- Laundries, dry cleaners, indoor pools, etc. with chemically contaminated atmosphere

## Small wall opening lowers installation cost

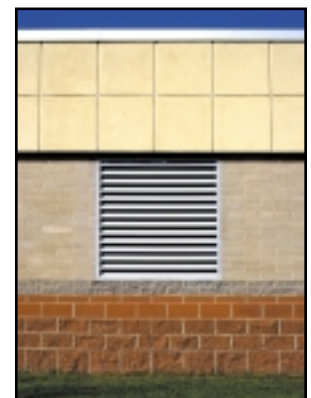
- Improves building's exterior appearance

Compared to standard louvers, wall openings can be reduced by up to 80%. This eliminates the need for extra support around the opening that can cost far more in extra construction labor and materials than the total installed cost of an IN-FORCER.

What's more, IN-FORCER'S low profile hood blends into a sidewall or roofline and is designed to keep wind and rain out. Heavy duty 5052 aluminum construction will not corrode.

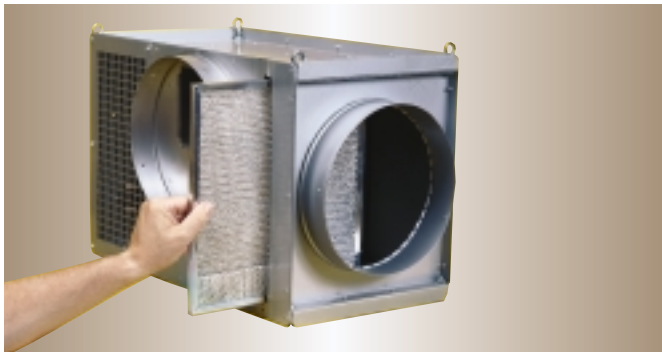


IN-FORCER requires maximum 12" opening and no extra support



Support beams are typically required on larger louvered intakes

## Easy installation and servicing



The IN-FORCER attaches with integral mounting brackets or "eye" bolts. The inlet/outlet collars are 2 1/4 inches deep for easy duct connection. The IN-FORCER features a blower that slides out for easy servicing and a washable aluminum mesh pre-filter.

## Managed air distribution assures comfort



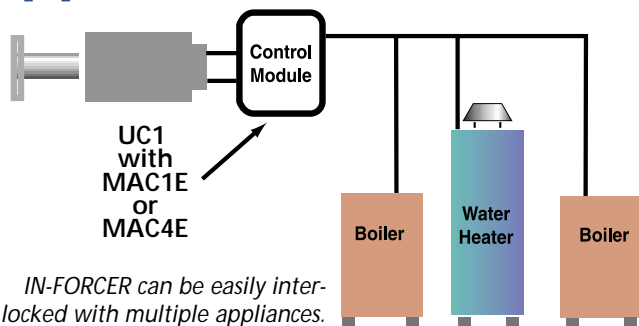
Intake air from the IN-FORCER can be easily diffused to eliminate concentrated cold air. Air can also be heated with a hot water, steam or conventional unit heater.

## Standard Safety Features

The IN-FORCER includes a high limit switch to deactivate the system in the event of a mechanical room fire and a pressure switch to detect blockage or system malfunction.



## Easy interlock options with single or multiple appliances



*IN-FORCER can be easily interlocked with multiple appliances.*

## Universal Control

### Model UC1

The UC1 Universal Control is the standardized interlock control for Tjernlund Draft/Ventilation products. The UC1 includes adjustable pre/post purge and LED status/diagnostic indicators. Provides easy interlock with any 24/115 VAC burner control circuit and also includes "dry" contact actuation option.



## Multiple Appliance Controls

### Models MAC1E, MAC4E

Used in conjunction with the UC1 Universal Control to interlock additional 24/115 VAC burners. Powered by and communicates with the UC1 through a factory wired whip. For one additional 24/115 VAC heater add the MAC1E. To interlock up to four or more additional 24/115 VAC heaters, add the MAC4E. MAC4Es can be daisy chained together for more than 5 heaters. **Important:** Total combined BTU/hr. input of all heaters must be within IN-FORCER's capacity.



## Millivolt Safety Interlock Kit

### Model WHKE

For use with UC1 Universal Control, MAC1E or MAC4E auxiliary controls. The WHKE gas pressure switch actuates the IN-FORCER through the A - B dry contacts. The Linear Limit switch disables the heater in the event of a venting malfunction. Includes JA1 thermocouple junction adapter. To interlock millivolt water heater(s) only with a UC1 controlled IN-FORCER add a WHKE for each millivolt heater. To interlock a millivolt water heater and one 24/115 VAC furnace or boiler with a UC1 controlled IN-FORCER, add a WHKE and a MAC1E.



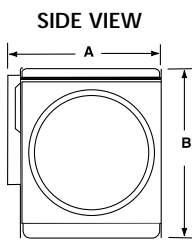
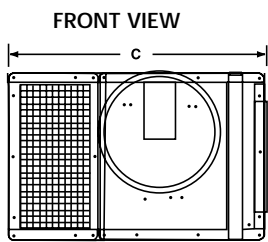


## IN-FORCER MODEL APPLICATION CHART

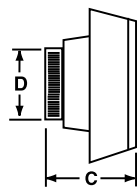
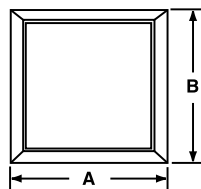
MODEL	BTU/HR INPUT	GAS ATMOSPHERIC		GAS POWER BURNER WITH BAROMETRIC		OIL FLAME RETENTION WITH BAROMETRIC		GAS POWER BURNER WITHOUT BAROMETRIC				
		MAX DUCT LENGTH IN EQUIV. FEET	RIGID DUCT DIAMETER IN INCHES	MAX DUCT LENGTH IN EQUIV. FEET	RIGID DUCT DIAMETER IN INCHES	MAX DUCT LENGTH IN EQUIV. FEET	RIGID DUCT DIAMETER IN INCHES	MAX DUCT LENGTH IN EQUIV. FEET	RIGID DUCT DIAMETER IN INCHES			
PAI-3	150,000	100	6	100	6	100	6	100	6			
	200,000	100	6	100	6	100	6	100	6			
	250,000	100	6	100	6	100	6	100	6			
	275,000	100	8	100	6	100	6	100	6			
PAI-4	300,000	100	8	100	6	100	6	100	6			
	350,000	100	8	100	6	100	6	100	6			
	400,000	100	8	100	8	100	6	100	6			
PAI-5	450,000	52	10	100	8	100	6	100	6			
	500,000	100	10	100	8	100	8	98	6			
	550,000	100	10	100	8	100	8	100	8			
	600,000	100	10	100	10	100	8	100	8			
	650,000	100	10	100	10	100	8	100	8			
PAI-6	700,000	100	10	100	10	100	8	100	8			
	775,000	100	10	100	10	95	10	100	8			
	850,000	100	10	100	10	100	10	100	10			
	900,000	100	10	100	10	100	10	100	10			
	950,000	100	10	100	10	100	10	100	10			
	1,000,000	100	10	100	10	100	10	100	10			
	1,100,000	100	10	100	10	100	10	100	10			
PAI-7	1,200,000	100	10	100	10	100	10	100	10			
	1,300,000	95	10	100	10	100	10	100	10			
	1,400,000	100	12	100	10	100	10	100	10			
	1,500,000	100	12	100	10	100	10	100	10			
	1,600,000	100	12	100	10	100	10	100	10			
	1,700,000	100	12	100	10	100	10	100	10			
	1,800,000	100	12	100	12	100	10	100	10			
	1,900,000	100	12	100	12	100	10	100	10			
	2,000,000	100	12	100	12	100	10	100	10			
	2,100,000	98	12	100	12	100	10	100	10			
	2,200,000	Not Applicable		100	12	100	10	100	10	100	10	
	2,300,000			100	12	100	10	100	10	100	10	
	2,400,000			100	12	100	12	100	12	100	10	
	2,500,000			100	12	100	12	100	12	100	10	
2,600,000	100			12	100	12	100	12	100	12		
2,700,000	100			12	100	12	100	12	100	12		
2,800,000	100			12	100	12	100	12	100	12		
2,900,000	98			12	100	12	100	12	100	12		
3,000,000	Not Applicable			100	12	100	12	100	12	100	12	
3,100,000				100	12	100	12	100	12	100	12	
3,200,000			100	12	100	12	100	12	100	12		
3,300,000			100	12	100	12	100	12	100	12		
3,400,000			100	12	100	12	100	12	100	12		
3,500,000			100	12	100	12	100	12	100	12		
3,600,000			100	12	100	12	100	12	100	12		
3,700,000			100	12	100	12	100	12	100	12		

Multiple IN-FORCERS may be installed for capacities larger than shown on chart. Tjernlund UB-Series Universal Blowers are available for larger capacity applications.

### DIMENSIONS (in inches)



	UNIT SIZE			DIA. IN/OUT
	A	B	C	
PAI-3	12	9-1/2	20	6
PAI-4	12	9-1/2	20	8
PAI-5	13-3/4	15-1/4	24-1/4	10
PAI-6	13-3/4	15-1/4	24-1/4	10
PAI-7	16-5/8	18	32	12



	HOODS			
	A	B	C	D
PAI-3	14	14	8-1/4	6
PAI-4	17-1/2	17-1/2	10-3/4	8
PAI-5	24-1/2	24-1/2	10-1/2	10
PAI-6	24-1/2	24-1/2	10-1/2	10
PAI-7	31	31	11	12

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### UB-Series Fans Also Available



For automatic, variable speed combustion air or for larger capacity heating systems use the UB-Series Universal Blower and CPC-Series Constant Pressure Controller.

UB-Series Blowers are rated for 575°F. and are suitable for combustion air or exhausting flue gas. Capacities up to 6,000 CFM.



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