



# TJERNLUND COMMERCIAL IN-FORCER™ MODEL PAI-4/6/7 SPECIFICATIONS

## DESCRIPTION

The IN-FORCER commercial combustion air intake systems are designed and Listed for use with atmospheric or induced combustion gas and oil heating equipment. The IN-FORCER functions as the source of combustion air, eliminating the need for louvered openings. Duct up to 100 equivalent feet through a sidewall or roof from Intake Hood. The IN-FORCER assures intake air is supplied by monitoring the air flow with a Fan Proving Switch. The main burner will be interrupted if a malfunction occurs. Complies with IMC and NFPA combustion air requirements.

## ELECTRICAL SPECIFICATIONS & DIMENSIONS

**PAI-4 Motor:** 115/1/60, 3300 RPM, 166 watts, 1.51 FLA, Thermal Prot.

**PAI-6 Motor:** 115/1/60, 1725 RPM, 1/3 HP, 5.8 Amps, Thermal Prot.

**PAI-7 Motor:** 115/208/230/1/60, 1725 RPM, 1 HP, 12.6/6.3/6.2 Amps, Thermal Prot.

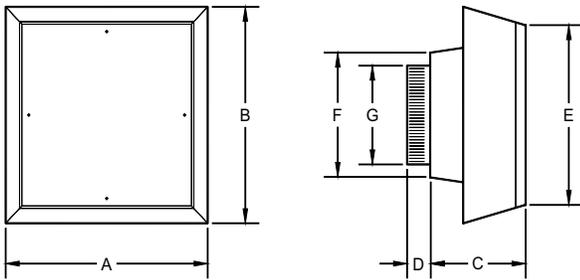
**Single Appliance Interlock:** We recommend the use of the Model UC1 Universal Control (Use UC1-1HP for model PAI-7 wired for 115 VAC) when interlocking with a single appliance. The UC1 is suitable for 24 or 115 VAC appliance interlocks or “dry contact” actuation and features Pre / Post-Purge options, LED diagnostics and Fan Prover status checking. The UC1 is standard on Tjernlund’s HS-Series Power Venters or it can be added when using a Draft Inducer. The UC1 can control both the IN-FORCER and Venter/Inducer if the combined motor load is under 1 H.P. If wiring the PAI-7 motor for 208-230 VAC in conjunction with the UC1, a 115 VAC coil, DPST motor contactor rated for 1 H.P. is required. If UC1 control is not used, a 24 or 115 VAC relay (based on appliance control circuit voltage) suitable to handle the PAI motor load may be used to activate the IN-FORCER motor. IN-FORCER can be directly wired into 115 VAC appliance control circuits as long as contacts of the circuit can handle the additional load of IN-FORCER motor.

**Multiple Appliance Interlocks:** Requires use of UC1 Universal Control (Use UC1-1HP for model PAI-7 wired for 115 VAC) and MAC1E for two appliances. UC1 (Use UC1-1HP for model PAI-7 wired for 115 VAC) and MAC4E are required for up to five appliances. MAC4Es can be daisy chained together for more than 5 appliances. Each millivolt appliance requires a WHKE millivolt interlock kit. If wiring the PAI-7 motor for 208-230 VAC in conjunction with the UC1, a 115 VAC coil, DPST motor contactor rated for 1 H.P. is required.

**Fan Proving Switch:** If using the UC1 or UC1-1HP Universal Control, 5 VDC board supplied power is switched through the Fan Prover. If not using the UC1 Universal Control, do not exceed 3 FLA or 1/10 HP through proving switch contacts or an isolation relay will have to be added.

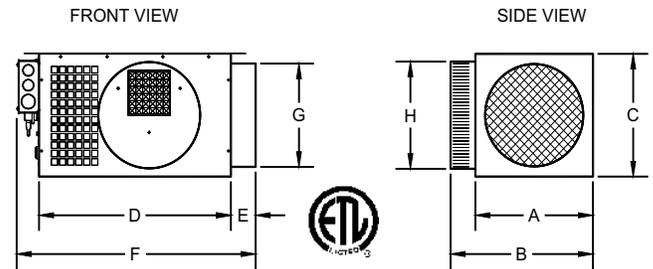
**High Limit:** Manual reset N/C contacts, open at  $160^{\circ} \pm 8^{\circ} \text{ F}$ , 14 FLA @120 VAC. The high limit switch will deactivate the IN-FORCER if temperature adjacent to high limit reaches the set point. Reset button is located on inside of cabinet on electrical box side of IN-FORCER.

### INTAKE HOOD DIMENSIONS



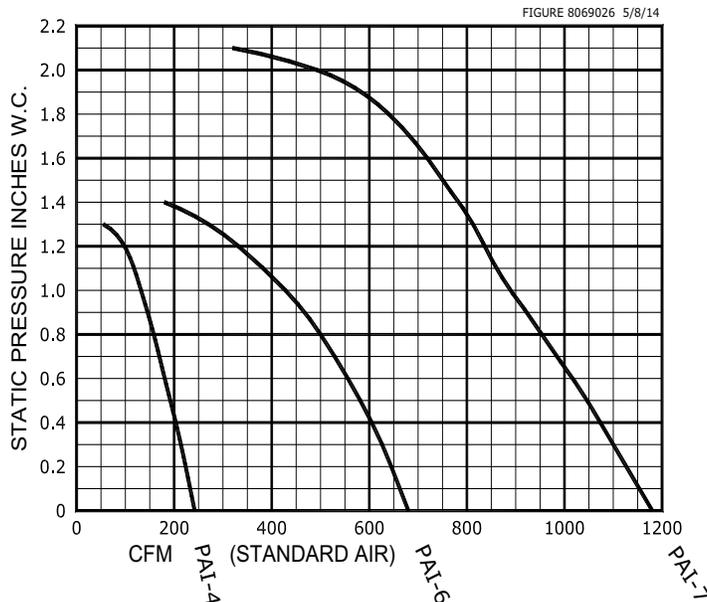
	A	B	C	D	E	F	G
PAI-4	17 1/2"	17 1/2"	8 1/2"	2 1/4"	14 1/2"	10"	8" DIA
PAI-6	23 1/2"	23 1/2"	8 1/4"	2 1/4"	20 1/4"	16 5/8"	10" DIA
PAI-7	29 1/2"	29 1/2"	8 3/8"	2 1/4"	26 1/8"	22 3/8"	12" DIA

### IN-FORCER COMBUSTION AIR INTAKE DIMENSIONS



	A	B	C	D	E	F	G	H
PAI-4	9 1/2"	11 3/4"	9 1/2"	15 1/2"	2 1/4"	19 1/2"	8" DIA	8" DIA
PAI-6	12 1/2"	13 5/8"	15 1/4"	23"	1 1/2"	24"	10" DIA	10" DIA
PAI-7	15 1/4"	17 1/4"	17 7/8"	30"	1 1/2"	30 3/4"	12" DIA	12" DIA

### COMMERCIAL IN-FORCER PERFORMANCE CURVES



### SAMPLE SPECIFICATION

Furnish \_\_\_\_\_ fan powered combustion air intake system(s). System shall incorporate fan proving switch safety interlock and high ambient temperature cut-off in the event of mechanical room fire. Combustion air intake system shall include wall / roof mountable intake hood. Intake hood should be made of corrosion proof 5052 aluminum.

### IN-FORCER WEIGHT (LBS)

COMPONENT	ACTUAL WEIGHT	SHIP WEIGHT
PAI-4 Combustion Air Intake System	26	32
PAI-6 Combustion Air Intake System	61	61
PAI-7 Combustion Air Intake System	95	95
PAI-4 Intake Hood	15	27
PAI-6 Intake Hood	16	50
PAI-7 Intake Hood	20	70

Ship weights are based on UPS oversized rates.

## IN-FORCER APPLICATION AND SELECTION TABLE

Verify that the total BTU/hr input of the heating appliance(s) falls within the range specified below. Check maximum duct length and appropriate duct diameter with the IN-FORCER Selection Table below.

IN-FORCER MODEL	GAS ATMOSPHERIC BTU/HR	GAS POWER BURNER WITH BAROMETRIC BTU/HR	FAN ASSISTED OR GAS POWER BURNER BTU/HR	OIL FLAME RETENTION WITH BAROMETRIC BTU/HR
PAI-4	UP TO 450,000	UP TO 600,000	UP TO 850,000	UP TO 775,000
PAI-6	UP TO 1,300,000	UP TO 1,700,000	UP TO 2,500,000	UP TO 2,300,000
PAI-7	UP TO 2,100,000	UP TO 2,900,000	UP TO 3,700,000	UP TO 3,700,000

### IN-FORCER SELECTION TABLE

MAX. DUCT LENGTH IN EQUIV. FEET indicates how much duct may be used at the given diameter based on the four types of heating equipment. All duct before and after the IN-FORCER must be added. To calculate equivalent duct length, add the straight duct plus 10' for every 90° elbow and 5' for each 45° elbow. Values in the chart assume rigid metal duct. Consult flex duct manufacturer for derating percentage if using flex duct. The resistance for any combination of ducts and diffusers cannot exceed the maximum equivalent duct length shown in selection table.

If interlocking IN-FORCER with more than one appliance of the same type, add the BTU/HR. input of each appliance to determine IN-FORCER model and maximum equivalent duct length and diameter. If interlocking IN-FORCER with different types of equipment consult Tjernlund Technical Customer Service @ 1-800-255-4208 for further information.

MODEL	BTU/HR INPUT	GAS ATMOSPHERIC		GAS POWER BURNER WITH BAROMETRIC		OIL FLAME RETENTION WITH BAROMETRIC		GAS POWER BURNER		
		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 OBSOLETE ORDER PAI-4	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	
	450,000	52	10	100	8	100	6	100	6	
PAI-5 OBSOLETE ORDER PAI-6	500,000	100	10	100	8	100	8	98	6	PAI-4
	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	
	700,000	100	10	100	10	100	8	100	8	
PAI-6	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	
	1,200,000	100	10	100	10	100	10	100	10	
1,300,000	95	10	100	10	100	10	100	10		
PAI-7	1,400,000	100	12	100	10	100	10	100	10	PAI-6
	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			100	12	100	10	100	10	
	2,300,000			100	12	100	10	100	10	
	2,400,000			100	12	100	12	100	10	
	2,500,000			100	12	100	12	100	10	
	2,600,000			100	12	100	12	100	12	
2,700,000			100	12	100	12	100	12		
2,800,000			100	12	100	12	100	12		
2,900,000			98	12	100	12	100	12		
3,000,000					100	12	100	12		
3,100,000					100	12	100	12		
3,200,000					100	12	100	12		
3,300,000					100	12	100	12		
3,400,000					100	12	100	12		
3,500,000					100	12	100	12		
3,600,000					100	12	100	12		
3,700,000					100	12	100	12		