



FRACCARO
S U N L I K E H E A T I N G

**INSTRUCTIONS MANUAL FOR
LOW-NO_x WALL-HUNG WARM AIR HEATERS
MODELS:**

IHP T 20 – 28 – 35 – 45 – 55 – 75 – 95 H
IHP T 20 – 28 – 35 – 45 – 55 – 75 – 95 C
IHP T 20 – 28 – 35 – 45 – 55 – 75 – 95 C
(FOR EXTERNAL INSTALLATION)



1312

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Dear customer,
thank you for the choice of the low NOx gas heater IHP T. This model is the product of a modern company that has been in the heating business for 50 years and is committed to constant renewal. We are confident that the product supplied is unbeatably safe and will give you lasting, highly efficient, environmentally friendly service.

We would like to remind you to comply with the instructions herein and to have only qualified personnel authorized by Fraccaro perform scheduled maintenance to keep the unit working as efficiently and safely as possible.

Note that failure to comply with the instructions herein shall make the warranty void.

1 FOREWORD

1.1 GENERAL WARNINGS

The manual is a vital, integral part of the product and must be handed over to the user.

Read the warnings contained herein as they provide important information on how to install, use and maintain the unit safely.

Keep the manual safe for future reference.

The unit must be installed in compliance with the regulations in force, following the Manufacturer's instructions, by professionally qualified personnel. By professionally qualified personnel we mean persons with specific technical competence in working with heat system components and, more specifically, Servicing Centers authorized by the Manufacturer.

Incorrect installation may result in injury to people and animals and damage to property, for which the Manufacturer is not responsible.

Once you have removed all packaging, check contents for damage.

If in any doubt, do not use the equipment, and get in touch with the supplier.

Packaging must not be left within reach of children as it is a potential source of danger.

Before commencing cleaning or maintenance work of any kind, wait for the unit to cool down, disconnect it from the power mains using the system's master switch and cut off supplies to the unit with the relevant shutoff devices fitted.

Never obstruct the intake grille protecting the fan or the heater's outlet for any reason. This can result in irreparable damage to the unit and endanger people, animals and property.

If the unit breaks down and/or malfunctions, turn it off and refrain from attempting repairs or other work yourself.

Call in professionally qualified personnel only for the job.

If products need repairing, this must be performed only by a Servicing Center authorized by the Manufacturer, using Original Spare Parts only.

Failure to comply with the above instructions may compromise the unit's safety.

It is essential to have professionally qualified personnel carry out periodic maintenance following the Manufacturer's instructions if the unit is to work properly and efficiently.

If you decide not to use the unit, all parts that may constitute a potential source of danger must be rendered harmless.

If the unit is sold or transferred to a new owner, always make sure this manual goes with the unit so that it can be consulted by the new owner and/or maintenance operative.

When replacing parts on any unit featuring accessories or kits (electrical ones included), use Original Fraccaro Accessories only.

This unit must be used solely for the purpose for which it was expressly intended.

Note that any other use is improper and hence dangerous.

The Manufacturer is relieved of any contractual or non-contractual liability for damage caused by incorrect installation or use, or by non-compliance with the instructions issued by the actual Manufacturer.

IMPORTANT NOTE:

These units must be installed in rooms with a sufficient supply of air only, except when they feature a sealed connection.

The heater's proper operation depends on the unit being installed and put into operation correctly.

Failure to comply with these rules shall make the warranty void forthwith and hence relieve the Manufacturer of any liability.

The unit must be installed and maintained in conformity with the regulations in force and in a thoroughly professional manner.

1.2 GENERAL FEATURES AND OPERATING MODES

IHP T-series heaters, which can be fuelled with methane gas or LPG (if you choose LPG, this must be specified when placing the order), meet the heating needs of medium and large industrial and commercial facilities etc.. They come in three different versions to give the installer a solution to every need:

- IHP T –H, types suitable for installation inside the environment being heated, for direct air throw.
- IHP T –C, types suitable for installation inside the environment being heated, for delivery through ducts and outlets.
- IHP T –C for outside use, types suitable for installation outdoors, designed for connection to delivery ducts and outlets.

A complete set of accessories can be supplied with the unit, making the product functional and flexible and, at the same time, easy to install.

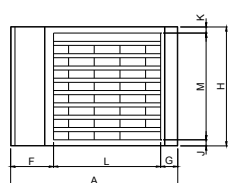
The heater is designed so that, in winter mode, its operation is slaved to a room thermostat or remote control (accessories, not standard issue). When the thermostat is appropriately set, the flame control device triggers the burner's ignition after a purge time lasting approx. 10 seconds. The air pressure switch enables the unit's switch-on if it finds the air supply for combustion is correct. The flame detection electrode is responsible for checking whether there is actually a flame or not: if there is no flame, the unit locks out (red warning light in the integrated card inside the heater – to see position (1) in fig. 1 at pag. 18). If ignition is completed correctly, a green indicator light on the lower part of the heater comes on. As soon as the exchanger reaches its operating temperature, the fan-thermostat triggers the air delivery fan's automatic start, thus initiating the room's heating. By fitting this thermostat, we have overcome the possible problem of cold air being sent into the room. Airflow direction can be altered by adjusting the angle of the horizontal and vertical louvers. Exchanger overheating is prevented by a limit thermostat, which trips when the preset temperature of 90°C is reached, cutting off the gas valve's supply. This results in fuel being cut off to the burner, hence causing the burner to shut down also.

The heater can also work in summer mode, just to cause air to circulate in the environment being served. This option is activated with the relevant summer-winter selector. When using programmable thermostat (item number 6TA0011), this selector comes ready fitted. When using the room thermostat (item number 6TA0010), however, you are required to fit an appropriate additional selector (contact Fraccaro's engineering department for the wiring diagram). To operate the unit in ventilation-only mode, you must leave the room thermostat set to OFF or to the lowest setting and turn the selector to summer.

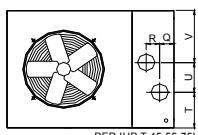
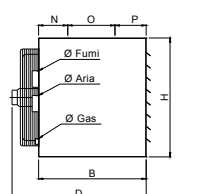
1.3 SPECIFICATIONS - TYPES IHP T 20-95 H

IHP T –H-series heaters are suitable for installation inside the environment being heated. They feature a high-capacity low-noise helical fan. Two rows of adjustable slats mean direct air throw can be directed to cover an extensive target area with considerable range.

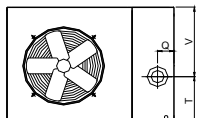
TYPE		IHP T 20H	IHP T 28H	IHP T 35H	IHP T 45H	IHP T 55H	IHP T 75H	IHP T 95H
Thermal capacity	kW	21	28	34,5	45	55	71	95
Heat output	kW	18.9	25.2	31.5	40.5	49.5	63.9	85.5
Efficiency	%	90	90	90	90	90	90	90
Number of fans		1	1	1	1	1	1	2
Air flow rate at 15°C	m³/h	1450	2050	2900	4000	4900	5800	8000
Air flow rate at 50°C		1625	2250	3250	4400	5400	6400	8800
Air thermal head	°C	40	36	32	30	30	32	32
Range	m	12	16	23	26	28	30	35
Gas flow rate at 15°C	20 mbar 25 mbar 28/37 mbar	2.22 m³/h	2.96 m³/h	3.70 m³/h	4.76 m³/h	5.82 m³/h	7.40 m³/h	10.0 m³/h
G20 (Methane)		2.46 m³/h	3.29 m³/h	4.11 m³/h	5.28 m³/h	6.43 m³/h	8.22 m³/h	11.1 m³/h
G25		1.64 kg/h	2.18 kg/h	2.73 kg/h	3.51 kg/h	4.30 kg/h	5.46 kg/h	7.40 kg/h
G30/G31								
Gas intake	Ø	1/2"					3/4"	
Flue gas exhaust outlet diameter	mm	80/125	80/125	80/125	100	130	130	130
Air inlet diameter	mm				100	130	130	130
Power supply		Single-phase 230V AC IP42						
Electric power	W	300	310	320	350	500	580	750
Weight	kg	82	82	90	105	127	145	185
Sound pressure level At 6 meters in free field	dB(A)	43	46	49	51	52	53	55



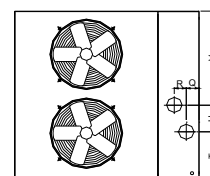
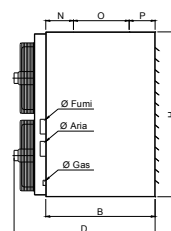
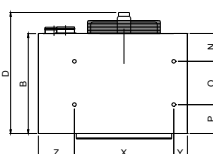
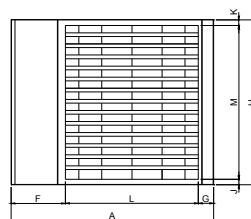
IHP T 20-75H



PER IHP T 20-28-35H



PER IHP T 45-55-75H



IHP T 95H

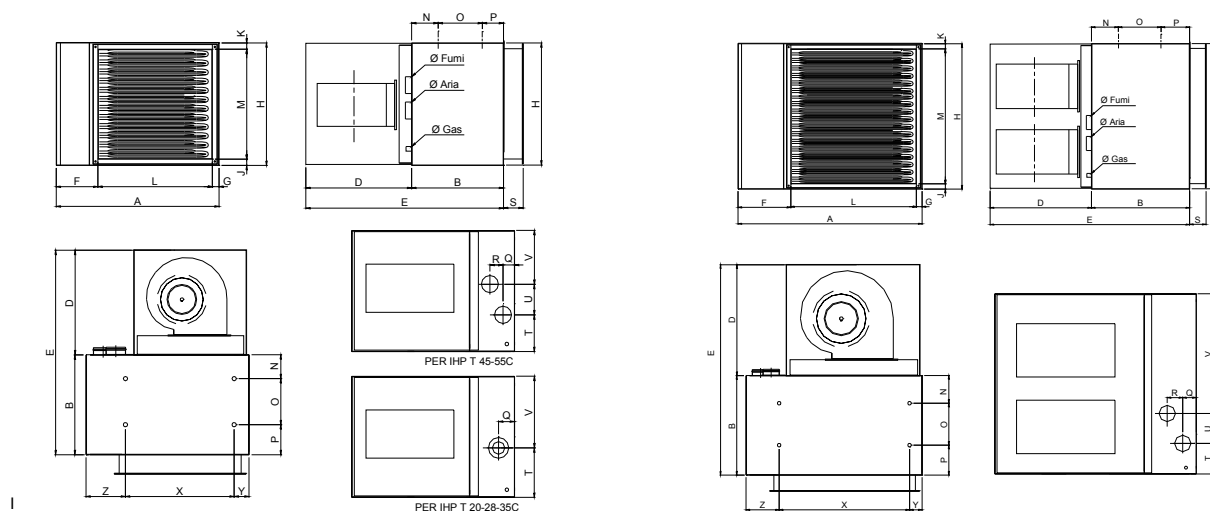
	A	B	D	F	G	H	J	K	L	M	N	O	P	Q	R	T	U	V	Z	X	Y
IHP T 20 – 28 H	1040	676.5	800	250	40	460	50	50	750	360	233.5	250	193	130	-	300	-	160	235.5	765	39.5
IHP T 35 H	1040	676.5	820	250	40	510	50	50	750	410	233.5	250	193	130	-	325	-	185	235.5	765	39.5
IHP T 45 H	1040	676.5	820	250	40	570	50	50	750	470	233.5	250	193	130	0	230	140	200	235.5	765	39.5
IHP T 55 H	1040	676.5	840	250	40	700	50	50	750	600	233.5	250	193	130	0	295	140	405	235.5	765	39.5
IHP T 75 H	1120	676.5	840	330	40	825	50	50	750	725	233.5	250	193	135	58	240	217	365	315.5	765	39.5
IHP T 95 H	1120	676.5	840	330	40	1120	50	50	750	1020	233.5	250	193	107	77	434	211	430	315.5	765	39.5

1.4 SPECIFICATIONS - TYPES IHP T 20-95 C

IHP T –C-series heaters are suitable for installation indoors.

They feature a high-capacity low-noise dual-intake centrifugal fan. This heater has a flange coupling for straightforward connection to a ducted delivery system. That way, air can be conveyed to where it is actually needed inside the environment served. A fan casing with return air intake grille is standard issue.

TYPE		IHP T 20C	IHP T 28C	IHP T 35C	IHP T 45C	IHP T 55C	IHP T 75C	IHP T 95C
Thermal capacity	kW	21	28	34,5	45	55	71	95
Heat output	kW	18.9	25.2	31.5	40.5	49.5	63.9	85.5
Efficiency	%	90	90	90	90	90	90	90
Number of fans		1	1	1	1	1	1	2
Air flow rate at 15°C	m³/h	1450	2050	2900	4000	4900	5800	8000
Air flow rate at 50°C		1625	2250	3250	4400	5400	6400	8800
Air thermal head	°C	40	36	32	30	30	32	32
Static working pressure	mm wc	10	10	10	10	10	10	10
Gas flow rate at 15°C								
G20 (Methane)	20 mbar	2.22 m³/h	2.96 m³/h	3.70 m³/h	4.76 m³/h	5.82 m³/h	7.40 m³/h	10.0 m³/h
G25	25 mbar	2.46 m³/h	3.29 m³/h	4.11 m³/h	5.28 m³/h	6.43 m³/h	8.22 m³/h	11.1 m³/h
G30/G31	28/37 mbar	1.64 kg/h	2.18 kg/h	2.73 kg/h	3.51 kg/h	4.30 kg/h	5.46 kg/h	7.40 kg/h
Gas intake	Ø	1/2"					3/4"	
Flue gas exhaust outlet diameter	mm	80/125	80/125	80/125	100	130	130	130
Air inlet diameter	mm				100	130	130	130
Power supply		Single-phase 230V AC IP42						
Electric power	W	600	600	750	1100	1470	2200	2200
Weight	Kg	97	97	105	120	147	170	215
Sound pressure level At 6 meters in free field	dB(A)	43	46	49	51	52	53	55

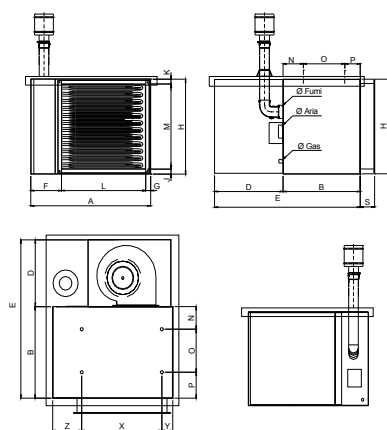


	A	B	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	Z	X	Y
IHP T 20 - 28	1040	676	449	1125	250	40	460	50	50	750	360	233	250	193	130	-	150	300	-	160	235	765	39.5
IHP T 35	1040	676	499	1175	250	40	510	50	50	750	410	233	250	193	130	-	150	325	-	185	235	765	39.5
IHP T 45	1040	676	599	1275	250	40	570	50	50	750	470	233	250	193	130	0	150	230	140	200	235	765	39.5
IHP T 55	1040	676	599	1275	250	40	700	50	50	750	600	233	250	193	130	0	150	295	140	405	235	765	39.5
IHP T 75	1120	676	599	1275	330	40	825	50	50	750	725	233	250	193	135	58	150	240	217	365	315	765	39.5
IHP T 95	1120	676	599	1275	330	40	1120	50	50	750	1020	233	250	193	107	77	150	434	211	430	315	765	39.5

1.5 SPECIFICATIONS - TYPES IHP T 20-95 C FOR OUTSIDE USE

IHP T –C-series heaters for outside use are suitable for installation outdoors. Standard-issue models come with a rainshield and sealed intake/exhaust kit and feature a high-capacity low-noise dual-intake centrifugal fan. This heater has a flange coupling for straightforward connection to a ducted delivery system, essential for passing through the outside wall of the room heated. That way, air can be conveyed to where it is actually needed inside the environment served. A fan casing with return air intake grille is standard issue.

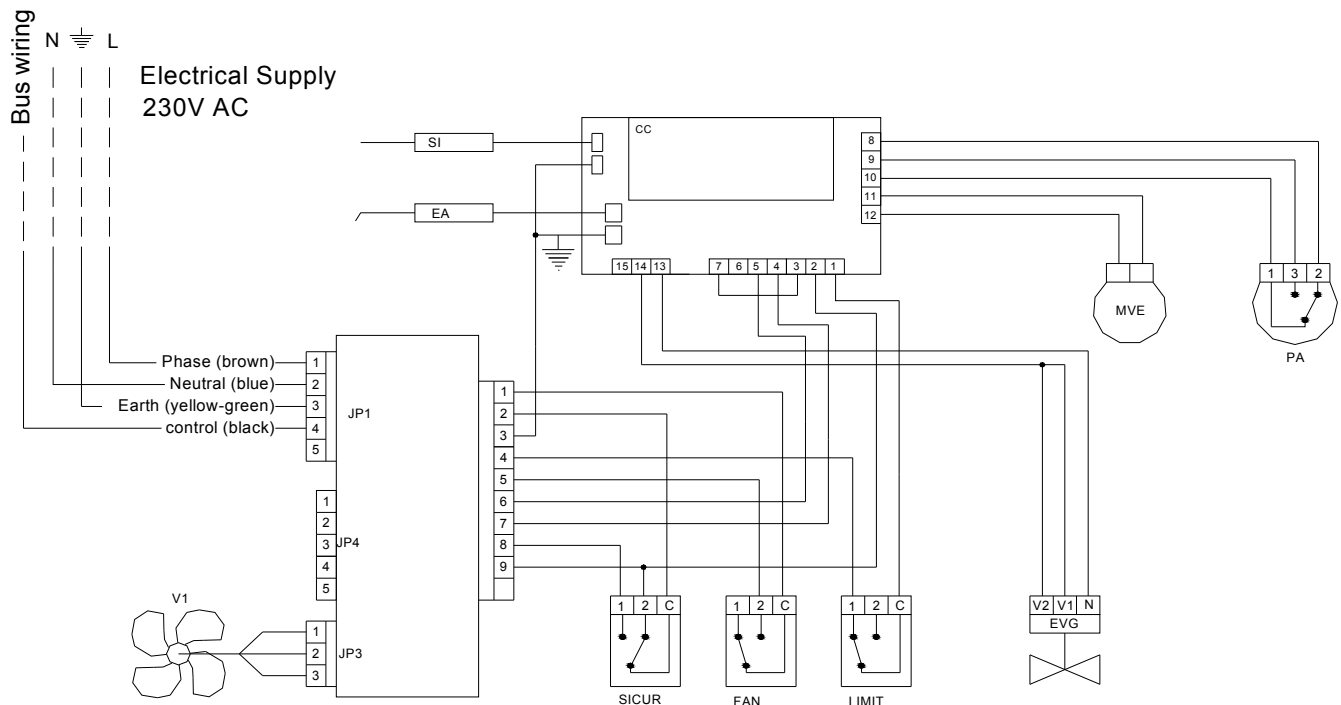
TYPE		IHP T 20C	IHP T 28C	IHP T 35C	IHP T 45C	IHP T 55C	IHP T 75C	IHP T 95C
Thermal capacity	kW	21	28	34.5	45	55	71	95
Heat power	kW	18.9	25.2	31.5	40.5	49.5	63.9	85.5
Efficiency	%	90	90	90	90	90	90	90
Number of fans		1	1	1	1	1	1	2
Air flow rate at 15°C	m³/h	1450	2050	2900	4000	4900	5800	8000
Air flow rate at 50°C		1625	2250	3250	4400	5400	6400	8800
Air thermal head	°C	40	36	32	30	30	32	32
Static working pressure	mm wc	10	10	10	10	10	10	10
Gas flow rate at 15°C	20 mbar 25 mbar 28/37 mbar	2.22 m³/h	2.96 m³/h	3.70 m³/h	4.76 m³/h	5.82 m³/h	7.40 m³/h	10.0 m³/h
G20 (Methane)		2.46 m³/h	3.29 m³/h	4.11 m³/h	5.28 m³/h	6.43 m³/h	8.22 m³/h	11.1 m³/h
G25		1.64 kg/h	2.18 kg/h	2.73 kg/h	3.51 kg/h	4.30 kg/h	5.46 kg/h	7.40 kg/h
G30/G31								
Gas intake	Ø	1/2"					3/4"	
Flue gas exhaust outlet diameter	mm	80/125	80/125	80/125	100	130	130	130
Air inlet diameter	mm				100	130	130	130
Power supply		Single-phase 230V AC IP44						
Electric power	W	600	600	750	1100	1470	2200	2200
Weight	kg	97	97	105	120	147	170	215
Sound pressure level At 6 meters in free field	dB(A)	43	46	49	51	52	53	55



IHP T 20-95C FOR OUTSIDE USE

	A	B	D	F	G	H	J	K	L	M	N	O	P	Z	X	Y
IHP T 20 - 28	1040	676	800	250	40	500	50	100	750	360	233	250	193	235	765	39.5
IHP T 35	1040	676	820	250	40	550	50	100	750	410	233	250	193	235	765	39.5
IHP T 45	1040	676	820	250	40	610	50	100	750	470	233	250	193	235	765	39.5
IHP T 55	1040	676	840	250	40	740	50	100	750	600	233	250	193	235	765	39.5
IHP T 75	1120	676	840	330	40	865	50	100	750	725	233	250	193	315	765	39.5
IHP T 95	1120	676	840	330	40	1170	50	100	750	1020	233	250	193	315	765	39.5

1.6 WIRING DIAGRAM IHP T 20-28-35-45-55-75-95 H



In the model IHP T 95 the cooling fans (V1) are two.

Note:

1 Press the button only once to reset the equipment (do not keep the button pressed for more than 5 seconds).

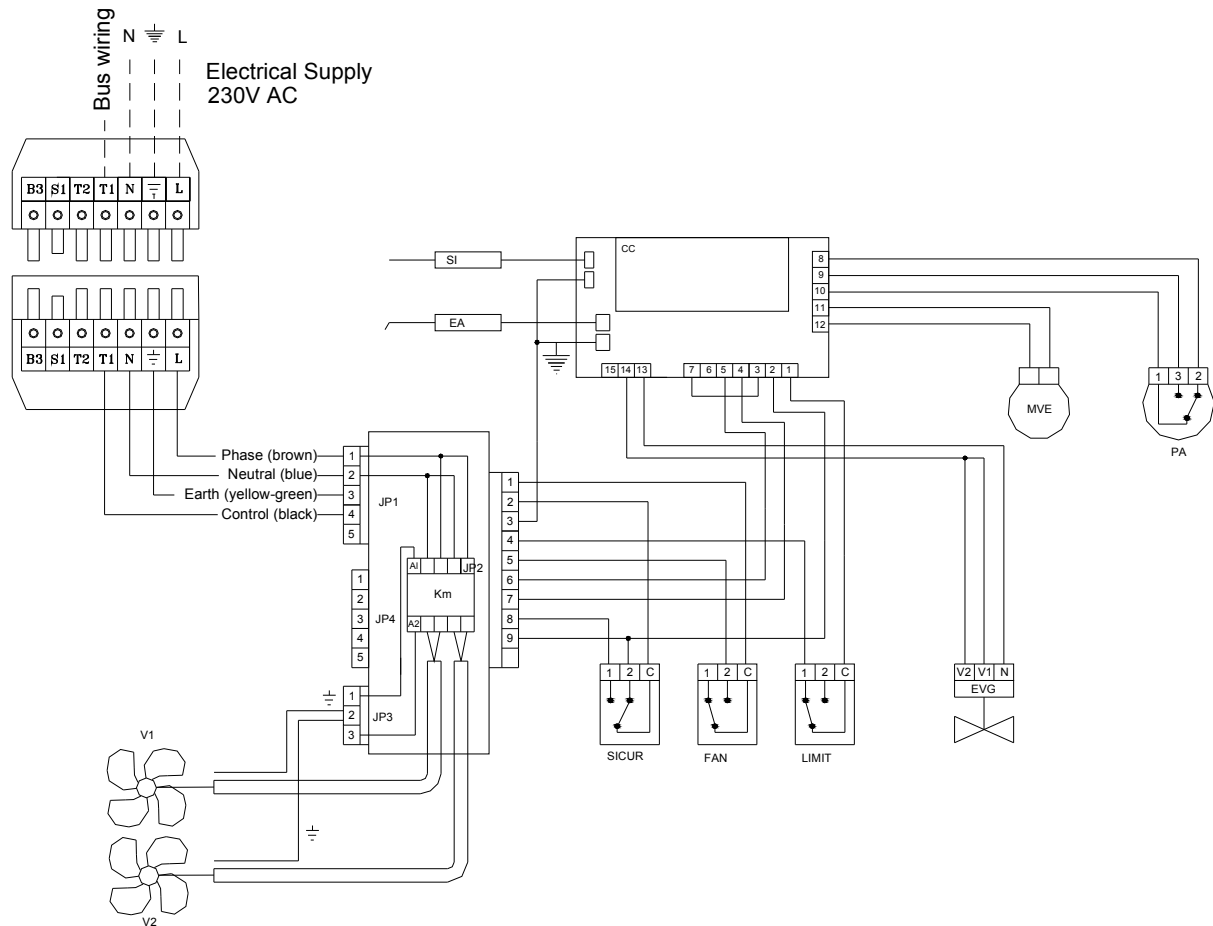
Legenda:

EGV = Gas solenoid valve
SI = Ionization probe
EA = Ignition electrode
CC = Flame control unit
RFP = Electronic board

V1 = Air delivery fan
FAN = FAN thermostat
SICUR = Manual reset safety thermostat
LIMIT = Limit or control thermostat
PA = Burner air pressure-switch

MVE = Flue gas exhaust fan
Reset = Burner reset
E/I = Cooling/heating selector
TA = Room thermostat

1.9 WIRING DIAGRAM IHP T 95 C and C FOR EXTERNAL INSTALLATION



Note:

1 Press the button only once to reset the equipment (do not keep the button pressed for more than 5 seconds).

Legenda:

MVE = Flue gas exhaust fan
EGV = Gas solenoid valve
SI = Ionization probe
EA = Ignition electrode
CC = Control board

V1, V2 = Fan
FAN = FAN thermostat
SICUR = Manual reset safety thermostat
LIMIT = Limit or control thermostat
PA = Burner air pressure-switch

Reset = Burner reset
RFP = Electronic board
Km = Power relay

1.13 ORBIS CLIMA MLI ROOM THERMOSTAT (code 6TA0010)

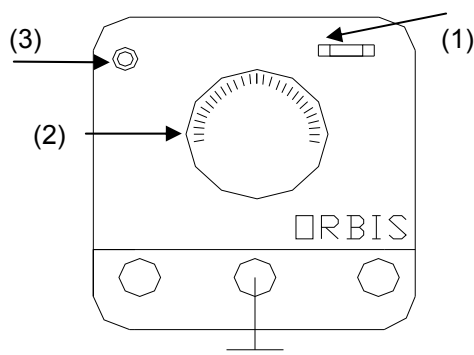
You will find the ORBIS CLIMA MLI room thermostat on the FRACCARO price list, item number 6TA0010. This accessory is essential for operating IHP T-series heaters. Alternatively, you can opt to use the VEMER ECO W programmable thermostat to control the heaters instead.

It has the following features:

- 1) Heater ON/OFF switch
- 2) Thermostatic room temperature control.
- 3) Heater equipment reset.

Caution: You must be careful to keep to the wiring diagram given herein in sections 1.6.1, 1.7.1, 1.8.1: make sure you respect Phase/Neutral polarity or the heater and remote control will be damaged.

FRONTAL VIEW Thermostat TFP1



Specifications:

Power supply: 230 V \pm 10%, 50 Hz
 Adjustment range: 6..30 °C
 Temperature range: 0°C .. +50°C
 IP rating: IP 20
 Colour: Ice-white
 External dimensions: 75 x 75 x H34 mm
 Weight: 95g



WARNING! The room thermostat or programmable thermostat (described in the following section) must be positioned approx. 1.5m above the floor, away from draughts and where it is not exposed to direct sunlight or heat sources (e.g. lights or warm air generated by the actual unit,...). Where possible, do not mount it on external walls. In this way, you will not have the problem of the unit starting and stopping when you don't want it to.

1.14 PROGRAMMABLE THERMOSTAT VEMER ECO X (code 6TA0011)

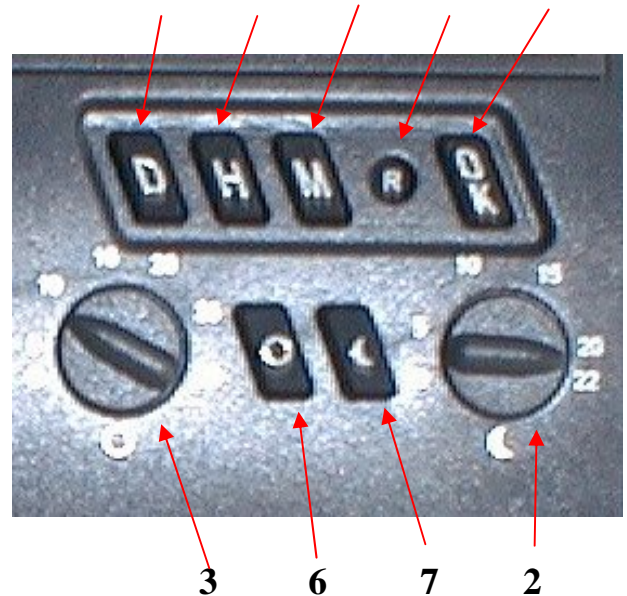
The control panel, our code 6TA0011, has these functions: programmable weekly thermostat, selector summer/winter/off and reset. The bus signal technology permits the control of the working of more heaters, until 12 pcs.

The bus signal is a bus of communication between the control panel and the heater: the different signal moving in the cable permits to transfer the different information of working of the heater.



Functions of the control panel:

- Selector I / 0 / II (to see (1) in the figure) permits the working of the heater in these conditions:
 - a. **I** : Heating (Winter conditions).
 - b. **0** : Off.
 - c. **II** : Ventilation (Summer conditions).
- Reset of the heater (to see (2) in the figure).
- Programmable weekly thermostat (to see (3) in the figure).



LEGENDA:

1. Batteries housing
2. Night temperature regulation - Economy (6-20°C)
3. Diary temperature regulation - Comfort (6-35°C)
4. Display
5. Cover for access to the functions.
6. Selector function Diary temperature regulation

7. Selector function Night temperature regulation
8. Days regulation
9. Hours regulation
10. Minutes regulation
11. Reset
12. Confirmation Button

NOTE: In order to program of the weekly thermostat to see the technical datasheet n° 6660146 12/2002 (inside the package of the thermostat).

1.15 FUELS THAT CAN BE USED

IHP T heaters run on one of the following fuels:

- G20 – METHANE (20 mbar)
- G25 (29 mbar)
- G30 – BUTANE (29 mbar)
- G31 – PROPANE (37 mbar)

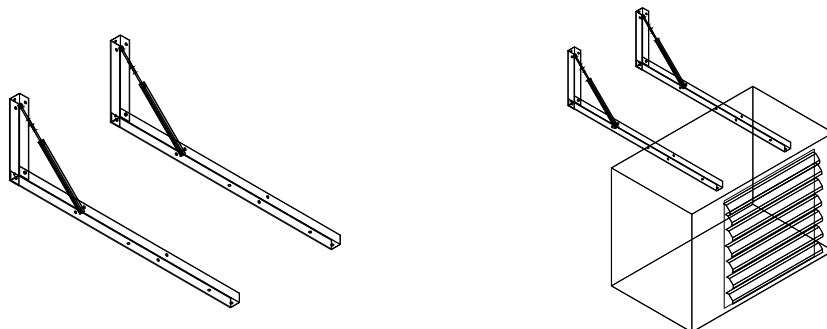
Heaters are factory set for operation with one of the above-mentioned fuels.

To convert from one type of gas to another, contact one of the authorized customer service centers, who have a special kit for the job.

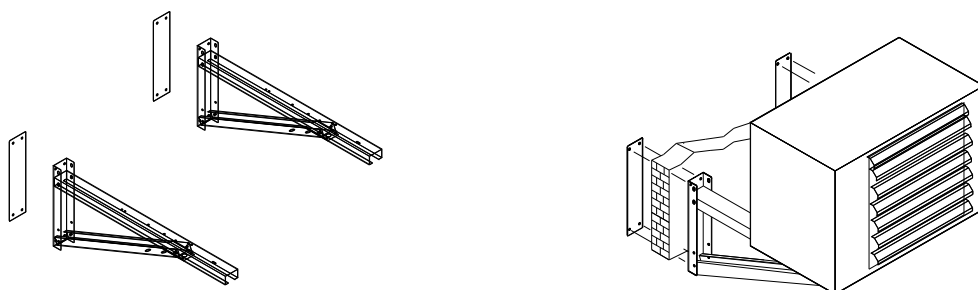
1.16 HEATER MOUNTING BRACKETS

Four different kinds of brackets are available for IHP T-series heaters:

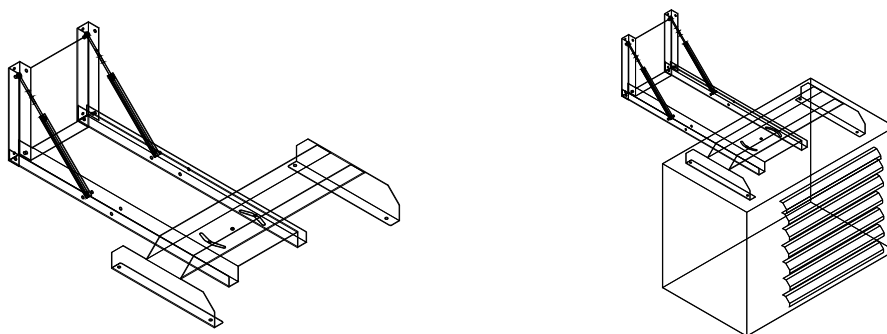
- Fixed brackets for IHP T 20-55 H heaters (suspended heater) item number 6ST0025



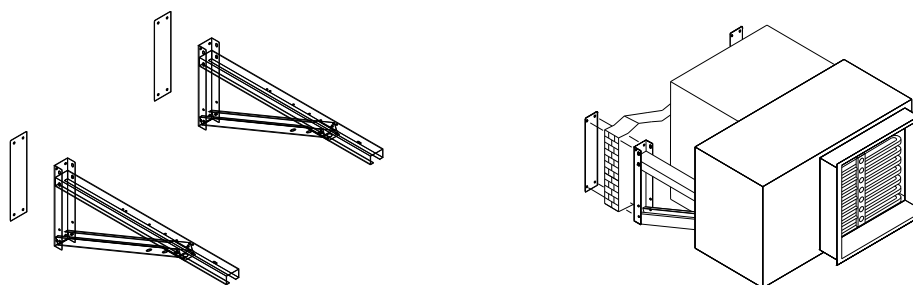
- Fixed brackets for IHP T 75-95 H heaters (shelf-mounted heater) item number 6ST0026



- Swivel bracket for IHP T 20-55 H heaters (suspended heater) item number 6ST0035



- Fixed brackets for IHP T 20-95 C and C heaters for outside use (shelf-mounted heater) item number 6ST0027



2 USER

2.1 USER WARNINGS

- The manual is a vital, integral part of the product and must be handed over to the user.
- Read the warnings contained herein as they provide important information on how to install, use and maintain the unit safely.
- Keep the manual safe for future reference.
- **Never obstruct the intake grille protecting the fan or the heater's outlet for any reason. This can result in irreparable damage to the unit and endanger people, animals and property.**
- If the unit breaks down and/or malfunctions, turn it off and refrain from attempting repairs or other work yourself.
- Call in professionally qualified personnel only for the job.
- If products need repairing, this must be performed only by a Servicing Center authorized by the Manufacturer, using Original Spare Parts only.
- Failure to comply with the above instructions may compromise the unit's safety.
- It is essential to have professionally qualified personnel carry out periodic maintenance following the Manufacturer's instructions if the unit is to work properly and efficiently.
- If you decide not to use the unit, all parts that may constitute a potential source of danger must be rendered harmless.
- If the unit is sold or transferred to a new owner, always make sure this manual goes with the unit so that it can be consulted by the new owner and/or maintenance operative.
- When replacing parts on any unit featuring accessories or kits (electrical ones included), use Original Fraccaro Accessories only.
- This unit must be used solely for the purpose for which it was expressly intended.
- Note that any other use is improper and hence dangerous.
- The Manufacturer is relieved of any contractual or non-contractual liability for damage caused by incorrect installation or use, or by non-compliance with the instructions issued by the actual Manufacturer.

2.2 CLEANING

To keep the unit in proper working order to assure a lengthy service life, we recommend performing the following cleaning operations at regular intervals:

- clean the unit's casing using a soft cloth and cleaning products where necessary - the kind that will not damage the metal's paintwork.
- clean the filters: if you are using the unit on a ducted system featuring filters, they must be checked without fail at regular intervals. If any of the filters are excessively dirty, airflow will be reduced, resulting in the exchanger overheating, which may cause the safety thermostat to trip.

2.3 MAINTENANCE

For safe, efficient use of the unit, it is essential a number of routine maintenance operations be carried out at regular intervals. Said operations fall within the competence of authorized FRACCARO customer service centers only, and almost all are required at yearly intervals. The authorized FRACCARO customer service center has the technical qualifications and skills to perform maintenance work on our units, and can also procure original spare parts for the job.

2.4 PUTTING INTO OPERATION: WINTER MODE

1. Set the room thermostat to the maximum value (the room thermostat must be installed following the wiring diagram given herein).
2. Open the gas cock to allow regular gas flow to the valve.
3. Power up the unit using the master switch.
4. During this stage, combustion chamber purging starts, followed by the spark and the gas valve opening for ignition.
5. Once the burner starts, the flame detector automatically turns off the ignition spark. If there is air in the gas supply system, the burner does not light and the unit locks out. If this happens, press the reset button, wait approx. 30 seconds and repeat the procedure until normal ignition takes place. Once the burner has been lit for a few minutes, the air fan starts, triggered by the fan-thermostat.
6. Set the room thermostat to the desired temperature. When the room reaches this temperature, the burner stops and, after a few minutes, the air fan stops, too. When room temperature drops below the value set with the room thermostat, the cycle is repeated automatically.

2.5 PUTTING INTO OPERATION: SUMMER MODE (VENTILATION ONLY)

1. Close the gas shutoff cock.
2. Switch the summer-winter switch (not supplied with 6TA0010 room thermostat, fitted with built-in 6TA0011 programmable thermostat) to the summer setting. The summer-winter switch must be installed following the wiring diagram given herein.
3. Leave the room thermostat's switch set to OFF or to the lowest setting.

2.6 OFF MODE

- For **short off periods** (overnight, for instance), set the room thermostat to the minimum value.
- For **lengthy off periods** (seasonal, for instance), set the master switch to OFF and close the gas cock.

WARNING!!

Only disconnect the unit's power once the air fan has stopped: the fan keeps running for a few minutes after the burner is shut down.

Failure to do so will cause the exchanger to overheat (which damages it) owing to heat inertia, and the manually reset safety thermostat may trip.

2.7 INDICATOR LIGHTS AND SAFETY DEVICES

IHP T-series heaters feature two kinds of indicator lights:

- fault alarm warning lights (no presence of flame) – to see (1) in fig. 1

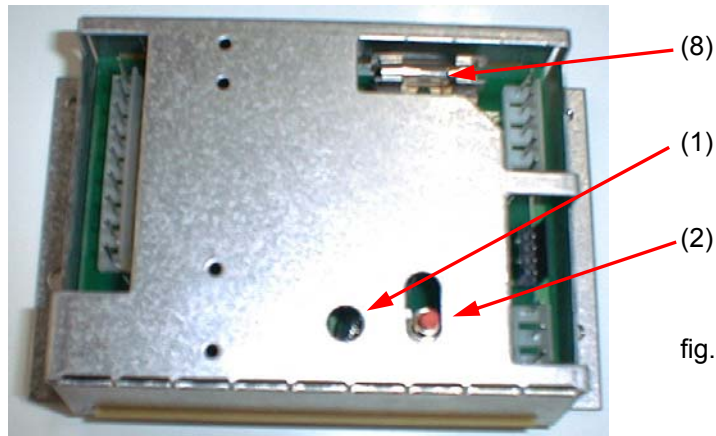


fig. 1

The heater features the following safety devices:

- a manual-reset safety thermostat, which trips when air temperature reaches 100°C. It can be reset with the relevant button (see (4) in fig.2).
- an air pressure switch for controlling the combustion circuit (see (3) in fig.2).
- a flame control device (see (7) in fig.2). The unit can be reset either via the electronic board on the heater (see (2) in fig.1) or via the thermostat or programmable thermostat.
- 6,3A fuse protecting the power line (see (8) in fig.1).
- a fan-thermostat for triggering the air delivery fan's operation (see (5) in fig.2)
- limit thermostat (see (6) in fig.2).

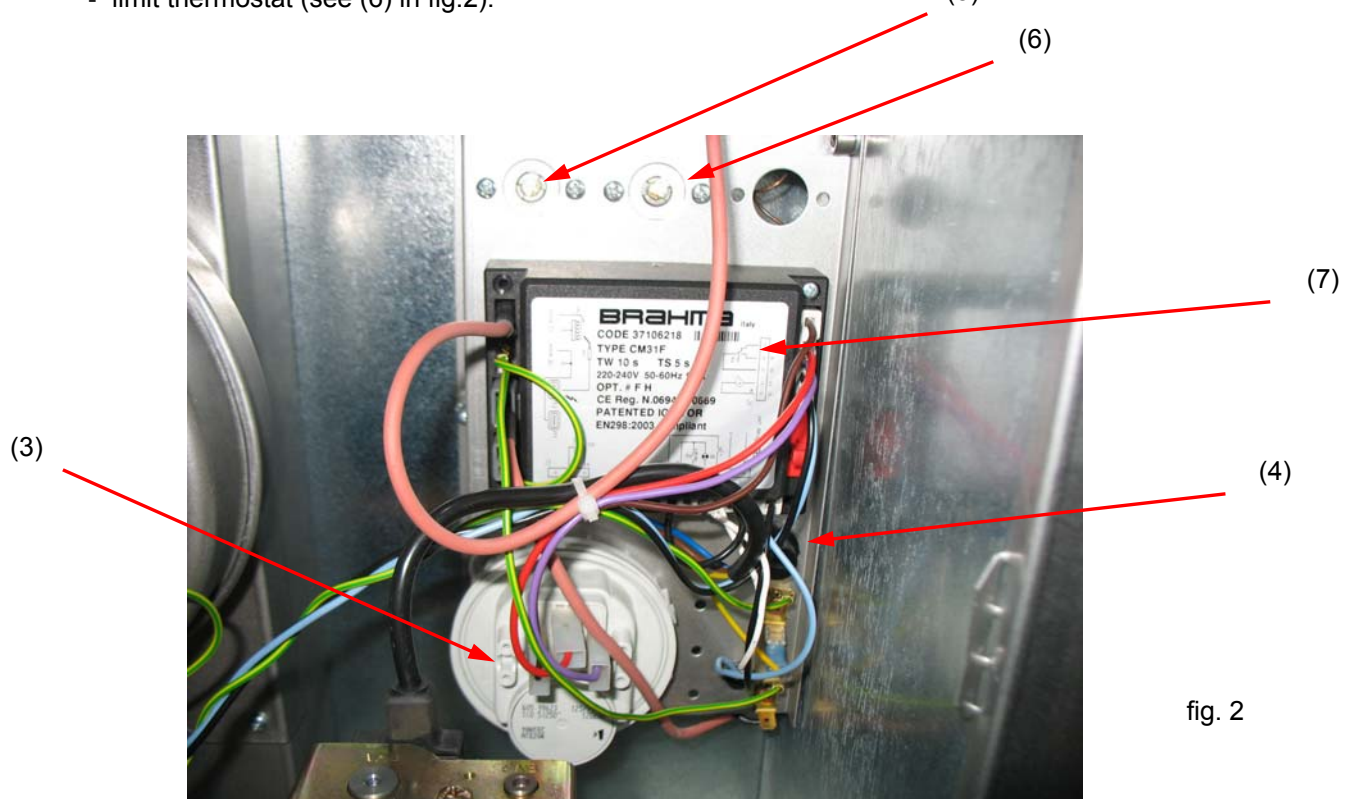


fig. 2

3 INSTALLER

3.1 INSTALLATION WARNINGS

- The manual is a vital, integral part of the product and must be handed over to the user.
- Read the warnings contained herein as they provide important information on how to install, use and maintain the unit safely.
- The unit must be installed in compliance with the regulations in force, following the Manufacturer's instructions, by professionally qualified personnel. By professionally qualified personnel we mean persons with specific technical competence in working with heat system components and, more specifically, Servicing Centers authorized by the Manufacturer.
- Incorrect installation may result in injury to people and animals and damage to property, for which the Manufacturer is not responsible.
- Once you have removed all packaging, check contents for damage.
- If in any doubt, do not use the equipment, and get in touch with the supplier.
- Packaging must not be left within reach of children as it is a potential source of danger.
- **Never obstruct the intake grille protecting the fan or the heater's outlet for any reason. This can result in irreparable damage to the unit and endanger people, animals and property.**

When replacing parts on any unit featuring accessories or kits (electrical ones included), use Original Fraccaro Accessories only.

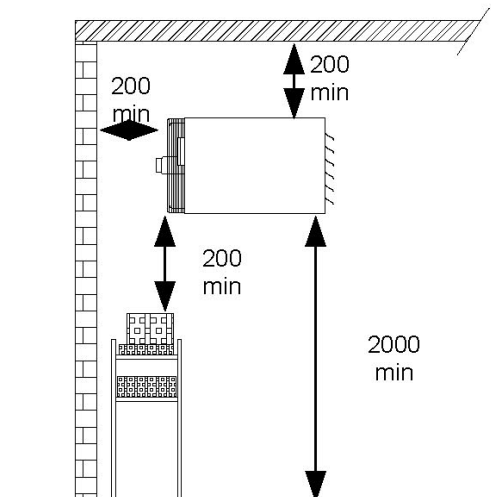
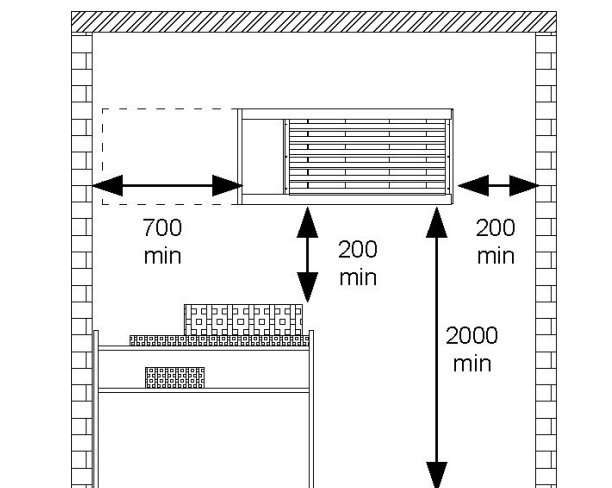
- This unit must be used solely for the purpose for which it was expressly intended.
- Note that any other use is improper and hence dangerous.
- The Manufacturer is relieved of any contractual or non-contractual liability for damage caused by incorrect installation or use, or by non-compliance with the instructions issued by the actual Manufacturer.

3.2 INSTALLATION DISTANCES

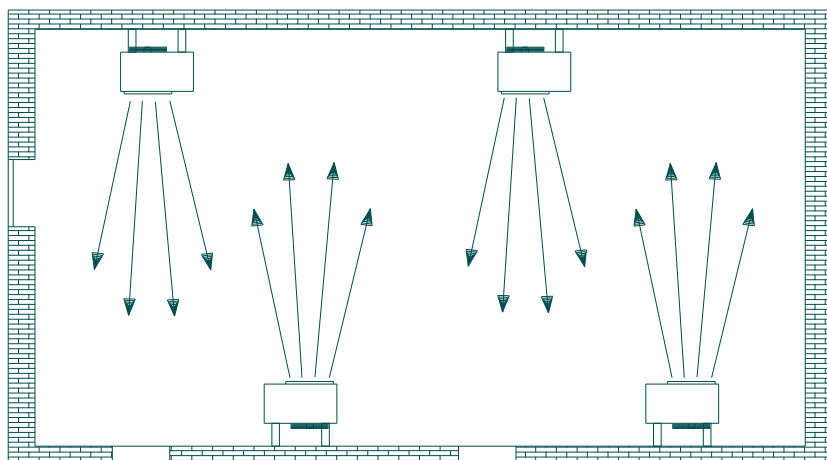
To Grant the correct and safety working of the product, you must respect the following distances:

- Provide a minimum distance of 200mm behind the heater, on the fan side.
- Provide the space necessary to open the burner door.
- The heater has to be installed at a minimum distance of 200mm from the ceiling and 200mm from the floor.
- No object has to be located less than 200mm from the heater.

Please, see the following pictures:

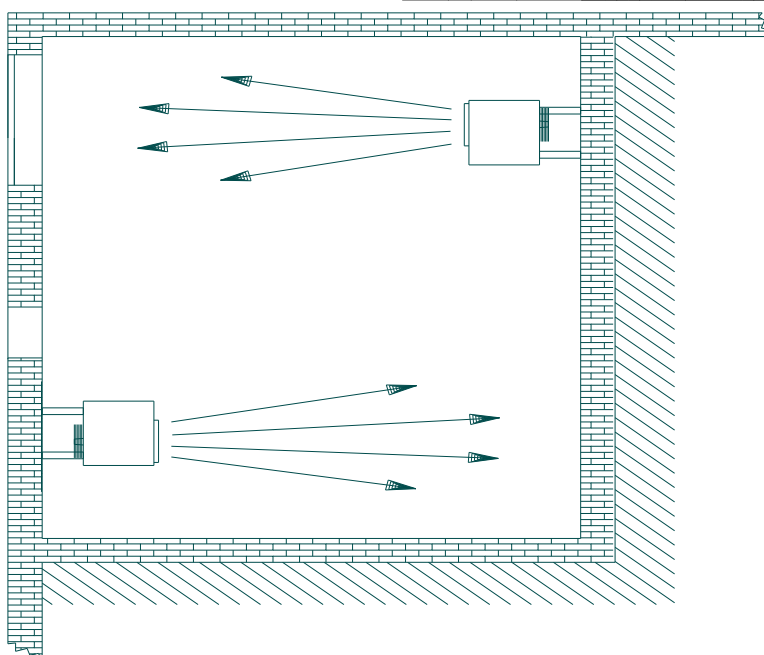
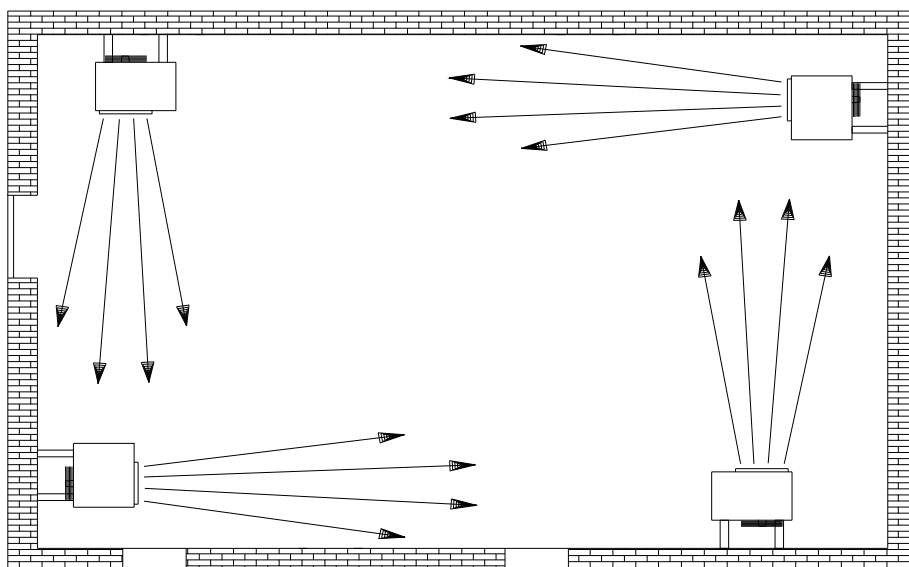


3.3 LAYOUT WITH SEVERAL HEATERS IN THE SAME ROOM



In rooms with a **number of heaters** installed, it is always best to arrange them so that their respective flows go in opposite directions.

To prevent currents of warm air in the **middle** of the room, flow can be distributed **along the walls** using this setup.



If there is an **interior door** or **entrance door**, it is important the heater's warm air be directed towards this potential opening, thus creating a **heat barrier**.

3.3 BRACKET MOUNTING

Installation procedures for all bracket types provided for the IHP T-series heaters are described below.

3.3.1 STANDARD FIXED BRACKET FOR IHP T 20-55H

The heater's wall mounting must be carried out by professionally qualified personnel authorized by FRACCARO only, namely FRACCARO Servicing Centers.

To perform installation correctly, we strongly advise you to comply with the following instructions:

- ✓ Choose which wall you want to install the heater on.
- ✓ Determine what procedure for fastening the bracket to the wall best suits the consistency of the wall in question. Only use the anchor screws supplied if you believe they are suitable for safe installation. If the standard-issue screw anchors are unsuitable, use other, stronger kinds deemed fit for the task. If screw anchors are not sufficient for your particular case, we recommend using two thick steel counterplates to be placed on the other side of the wall. They should be fastened to the two elements making up the two individual bracket units by means of a threaded bar.
- ✓ Drill the required holes in the chosen wall as illustrated in fig. 4.

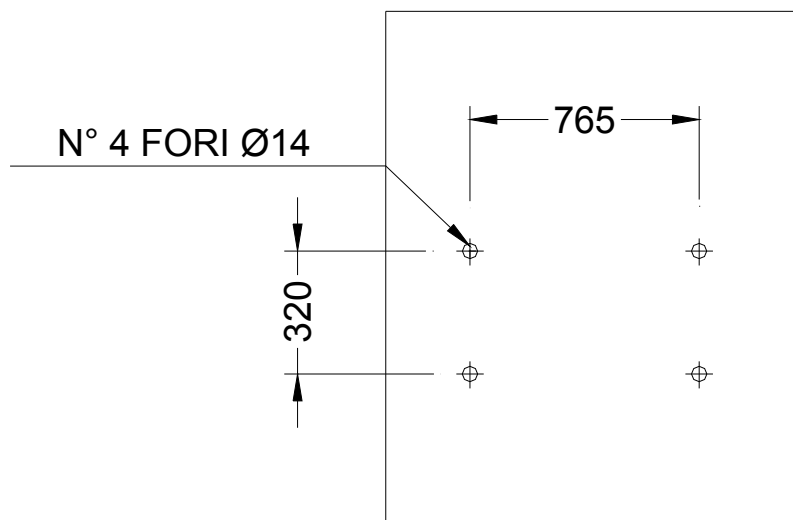


fig. 4

- ✓ Assemble the brackets' various component elements using the screws supplied as illustrated in fig. 5.
- ✓ Fasten the two individual units making up the bracket to the wall to assure the heater a secure support.
- ✓ Lift the warm-air heater with appropriate hoisting means, taking care not to endanger people, animals or property in any way.
- ✓ Position the heater under the previously attached brackets safely.
- ✓ Secure the heater to the brackets, making sure the four M8x30 screws are tightened on the brass-coated inserts on the heater's upper face.
- ✓ Level the heater correctly by adjusting the brackets' tightening-compensating devices.

Fig. 5 illustrates the brackets' assembly and how to secure the heater correctly to said brackets.

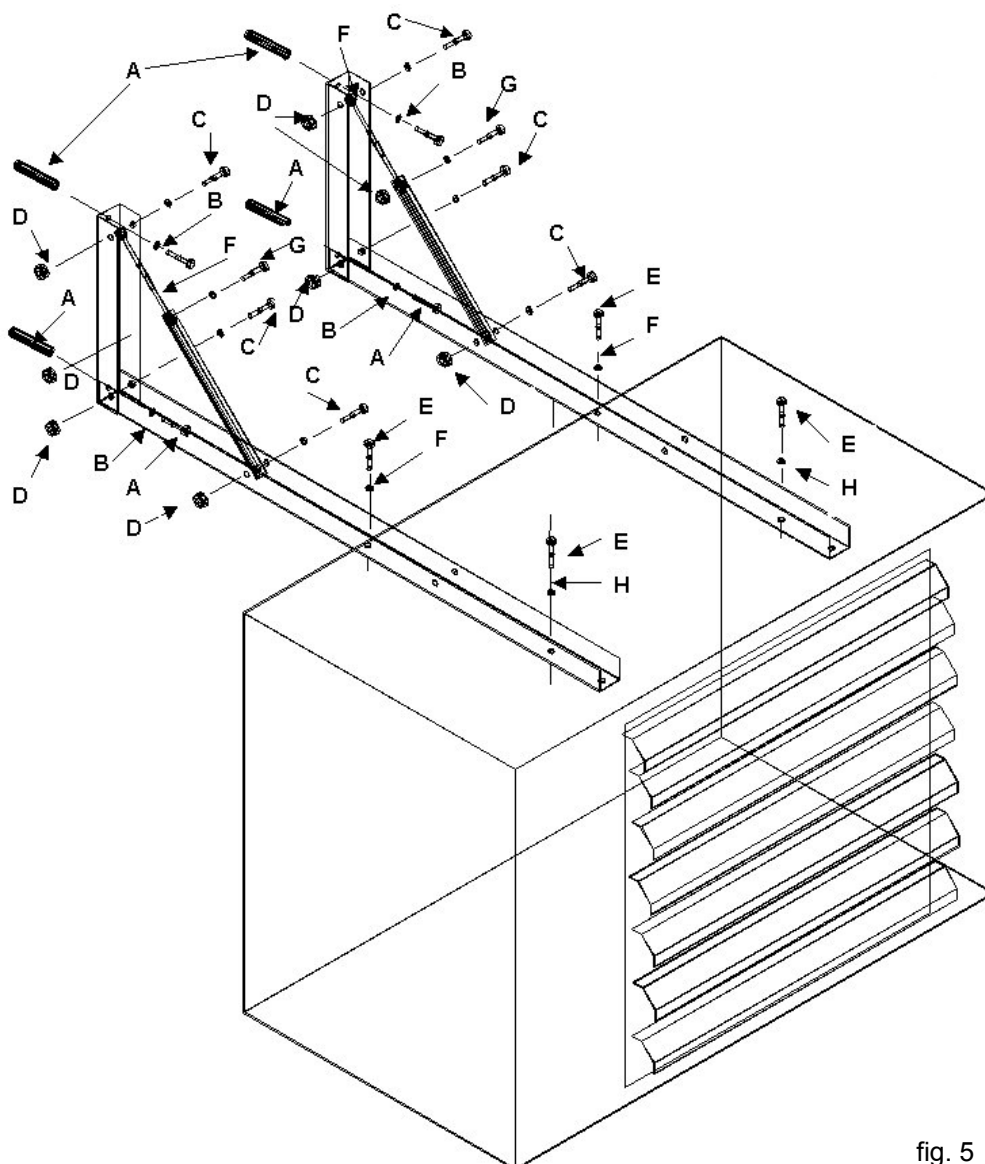


fig. 5

FASTENING ELEMENTS SUPPLIED:

- A:** FISCHER SLM 8 wall screw-anchor with respective M8 - Ø14 screw (Code 9VI7308) (Tot. 4 pcs)
- B:** M8 oversize plain washer, galvanized UNI 6593 (Code 9VI5205) (Tot. 4 pcs)
- C:** M10x70 8.8 hexagon head screw, half-threaded, galvanized UNI 5737 (Code 9VI1284) (Tot. 6 pcs)
- D:** M10 UNI 7473 self-locking nut with respective M10 galvanized plain washer (Code 9VI5207) (Tot. 6 pcs)
- E:** M8x30 4.8 hexagon head screw, galvanized UNI 5739 (Cod.9VI1060) (Tot. 4 pcs)
- F:** 8MA double-eyed screw coupling, galvanized, 110 mm long (Code 9TE0508) (Tot. 2 pcs)
- G:** M10x30 4.8 hexagon head screw, galvanized UNI 5739 (Code 9VI1076) (Tot. 2 pcs)
- H:** D9x24x2 oversize plain washer, galvanized (Code 9VI5228) (Tot. 4 pcs)

3.3.2 STANDARD FIXED BRACKET FOR IHP T 75-95H

The heater's wall mounting must be carried out by professionally qualified personnel authorized by FRACCARO only, namely FRACCARO Servicing Centers.

To perform installation correctly, we strongly advise you to comply with the following instructions:

- ✓ Choose which wall you want to install the heater on.
- ✓ Check the consistency of the wall in question to determine how to perform installation.

Drill the required holes in the chosen wall as illustrated in fig.6.

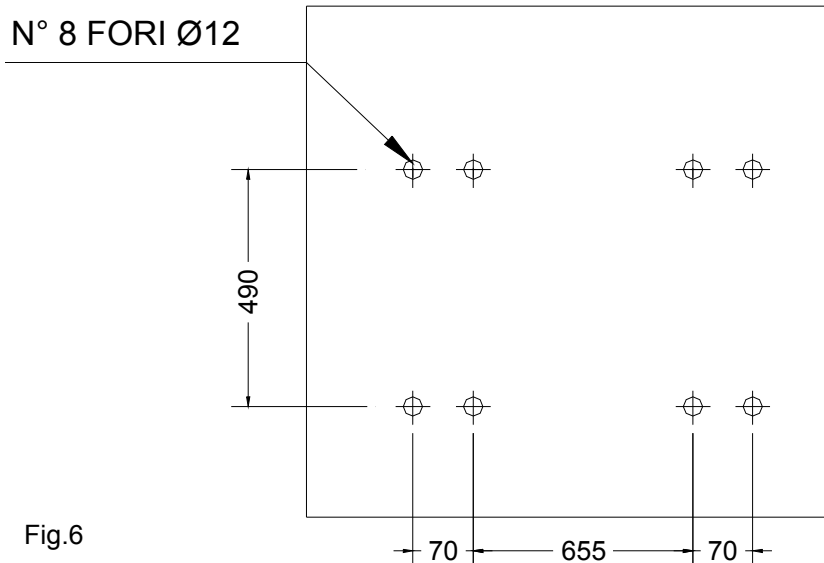


Fig.6

- ✓ Cut the two Ø10 L=1000mm threaded bars supplied into 8 parts to a length equivalent to the wall's thickness plus 50 mm.
- ✓ Secure the vertical profiles making up the bracket to the wall. Do this by positioning the counterplates on the other side of the wall and tightening the M10 bolts supplied to bring the profiles and counterplates together with the aid of the bar lengths.

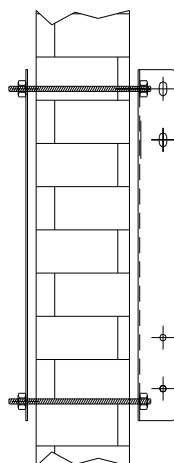


Fig.7

- ✓ Use the relevant screws and bolts (see fig.8) to join the horizontal profile and sloping profile together. Next, fasten the assembly to the vertical profiles previously fastened to the wall, using the lower pair of holes. (see fig.8).

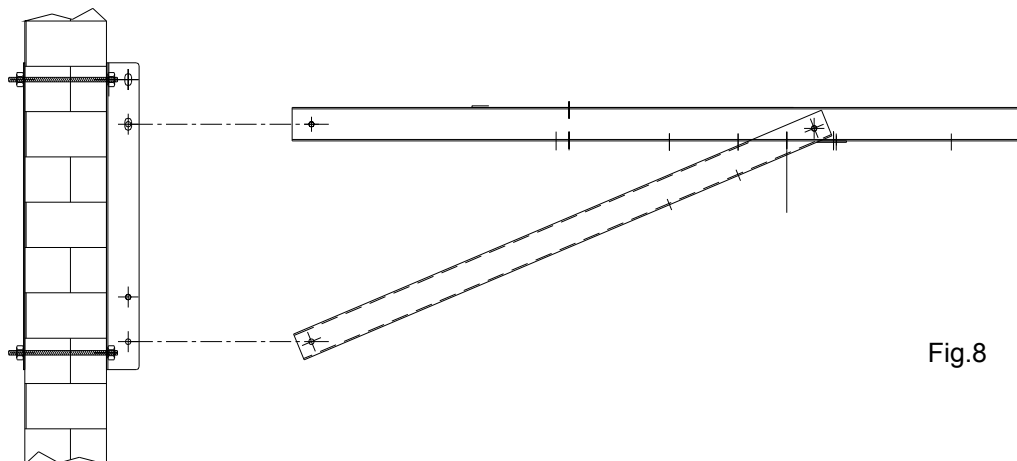


Fig.8

- ✓ Lift the warm-air heater with appropriate hoisting means, taking care not to endanger people, animals or property in any way.
- ✓ Position the heater on top of the previously attached brackets safely.
- ✓ Secure the heater to the brackets, making sure you tighten the screws with the relevant washers and bolts.
- ✓ Level the heater by adjusting the angle of the horizontal profile. The slot in the vertical profile the horizontal profile is fastened to makes this operation possible.

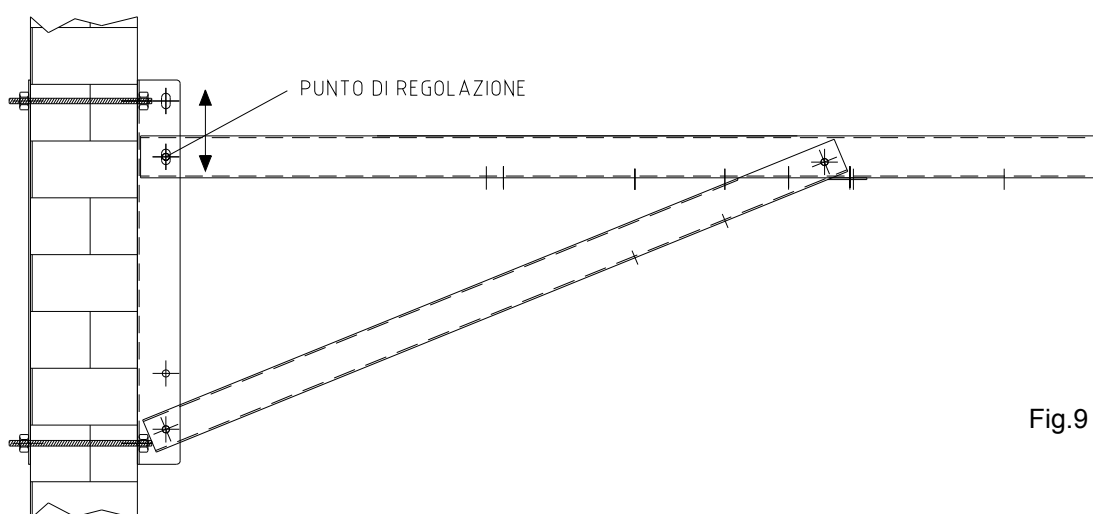


Fig.9

Fig. 10 illustrates the brackets' assembly and how to secure the heater correctly to said brackets.

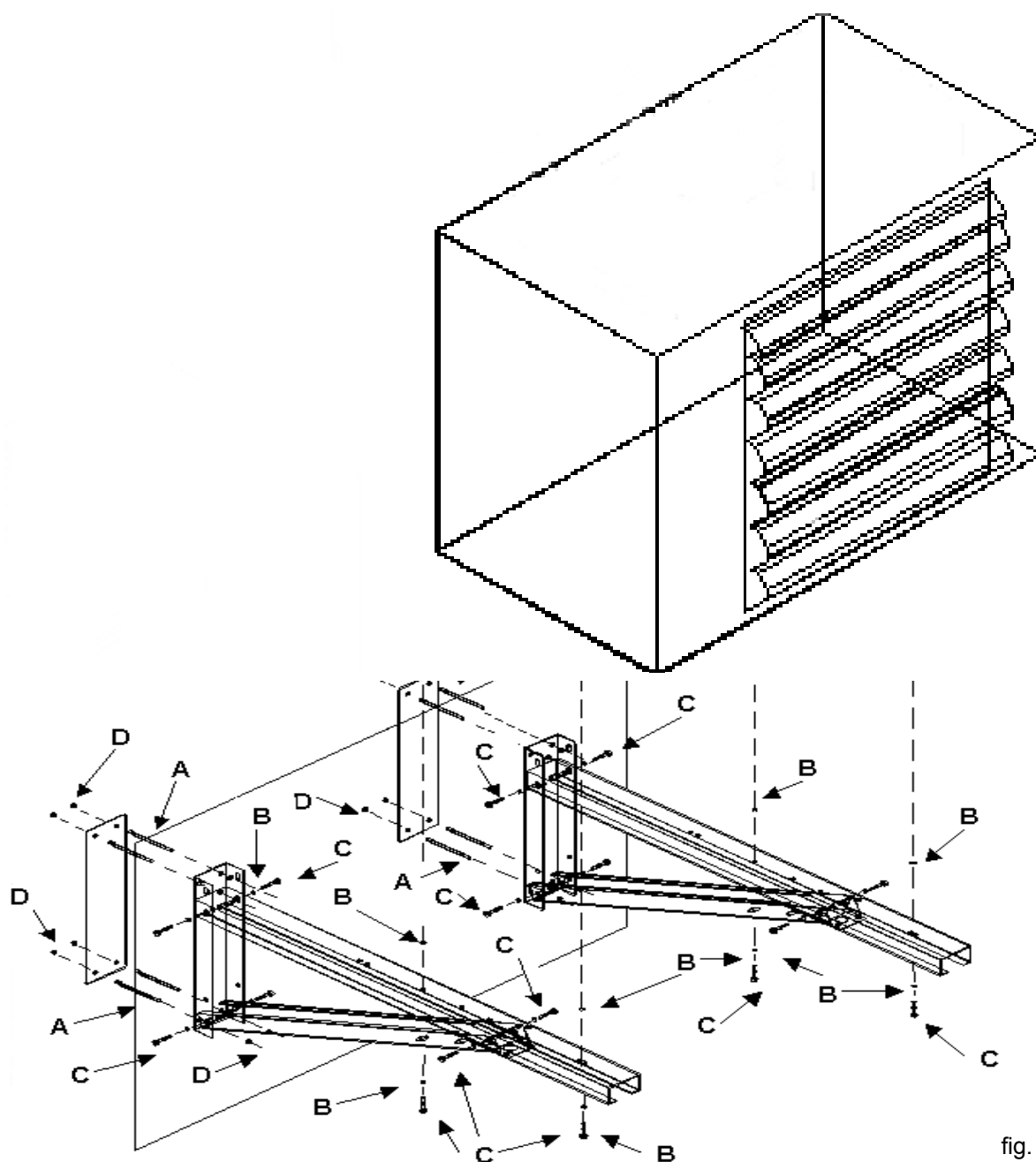


fig. 10

FASTENING ELEMENTS:

- A:** M10 galvanized threaded bar elements, 1-meter long (Code 9VI6506) (Tot. 2 pcs to be cut in 8 sections)
- B:** M10 oversize plain washer, galvanized UNI 6593 (Code 9VI5230) (Tot. 40 pcs)
- C:** M10x25 8.8 hexagon head screw, galvanized UNI 5737 (Code 9VI1075) (Tot. 16 pcs)
- D:** M10 UNI 7473 nut with respective M10 galvanized plain washer (Code 9VI1075) (Tot. 32 pcs)
- E:** M8x30 4.8 hexagon head screw, galvanized UNI 5739 (Code 9VI1060) (Tot. 4 pcs)
- F:** D9x24x2 oversize plain washer, galvanized (Code 9VI5228) (Tot. 4 pcs)

3.3.3 SWIVEL BRACKET FOR IHP T 20-55H

The heater's wall mounting must be carried out by professionally qualified personnel authorized by FRACCARO only, namely FRACCARO Servicing Centers.

To perform installation correctly, we strongly advise you to comply with the following instructions:

- ✓ Choose which wall you want to install the heater on.
- ✓ Determine what procedure for fastening the bracket to the wall best suits the consistency of the wall in question. Only use the anchor screws supplied if you believe they are suitable for safe installation. If the standard-issue screw anchors are unsuitable, use other, stronger kinds deemed fit for the task. If screw anchors are not sufficient for your particular case, we recommend using two thick steel counterplates to be placed on the other side of the wall. They should be fastened to the two elements making up the two individual bracket units by means of a threaded bar.
- ✓ Drill the required holes in the chosen wall as illustrated in fig.11.

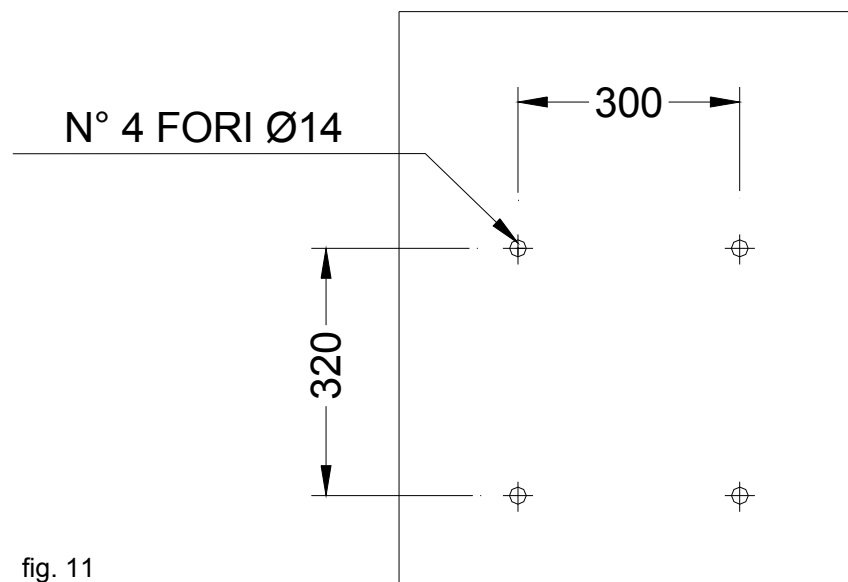


fig. 11

- ✓ Assemble the brackets' various component elements using the screws supplied as illustrated in fig. 12.
- ✓ Fasten the bracket to the wall to assure the heater a secure support. The resulting support for the heater turns on a central pivot.
- ✓ Lift the warm-air heater with appropriate hoisting means, taking care not to endanger people, animals or property in any way.
- ✓ Position the heater under the previously attached brackets safely.
- ✓ Secure the heater to the brackets, making sure the four M8x30 screws are tightened on the brass-coated inserts on the heater's upper face.
- ✓ Level the heater correctly by adjusting the brackets' tightening-compensating devices.

Fig. 12 illustrates the brackets' assembly and how to secure the heater correctly to said brackets.

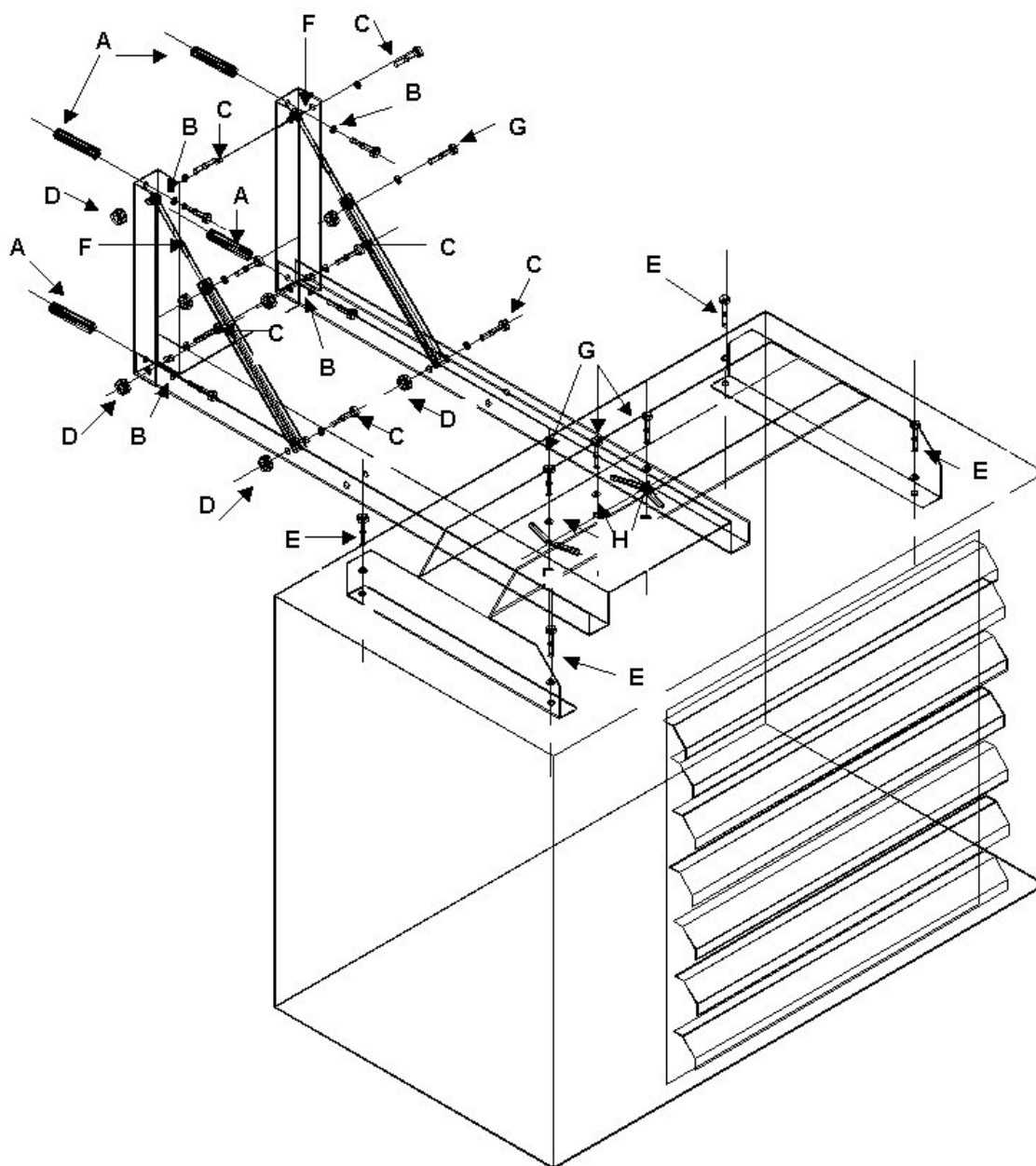


fig. 12

FASTENING ELEMENTS:

- A:** FISCHER SLM 8 wall screw-anchor with respective M8 - Ø14 screw (Code 9VI7308) (Tot. 4 pcs)
- B:** M8 oversized plain washer, galvanized UNI 6593 (Code 9VI5205) (Tot. 4 pcs)
- C:** M10x70 8.8 hexagon head screw, galvanized UNI 5737 (Code 9VI1284) (Tot. 6 pcs)
- D:** M10 UNI 7473 self-locking nut with respective M10 galvanized plain washer (Code 9VI5207) (Tot. 6 pcs)
- E:** M8x30 4.8 hexagon head screw, galvanized UNI 5739 (Code 9VI1060) (Code 9VI5228) (Tot. 4 pcs)
- F:** 8MA double-eyed screw coupling, galvanized, 110 mm long (Code 9TE0508) (Tot. 2 pcs)
- G:** M10x30 4.8 hexagon head screw, galvanized UNI 5739 (Code 9VI1076) with respective M10 galvanized plain washer UNI 6592 (Code 9VI5207) and M10 self-locking nut UNI 7473 (Code 9VI3026) (Tot. 5 pcs)
- H:** D11x30x2.5 plain washer, galvanized UNI 6593 (Code 9VI5230) (Tot. 6 pcs)

3.3.4 STANDARD FIXED BRACKET FOR IHP T 20-95 C AND C FOR OUTSIDE USE

The heater's wall mounting must be carried out by professionally qualified personnel authorized by FRACCARO only, namely FRACCARO Servicing Centers.

To perform installation correctly, we strongly advise you to comply with the following instructions:

- ✓ Choose which wall you want to install the heater on.
- ✓ Check the consistency of the wall in question to determine how to perform installation.
- ✓ Drill the required holes in the chosen wall as illustrated in fig.13.

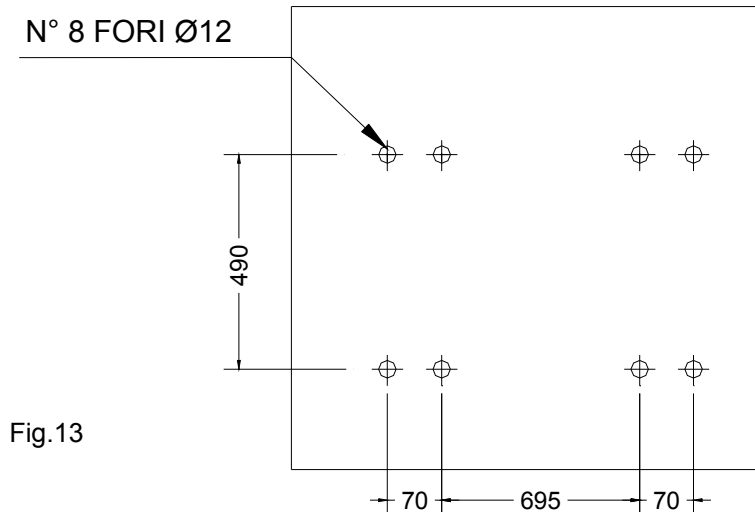


Fig.13

- ✓ Cut the two $\varnothing 10$ L=1000mm threaded bars supplied into 8 parts to a length equivalent to the wall's thickness plus 50 mm.
- ✓ Secure the vertical profiles making up the bracket to the wall. Do this by positioning the counterplates on the other side of the wall and tightening the M10 bolts supplied to bring the profiles and counterplates together with the aid of the bar lengths.

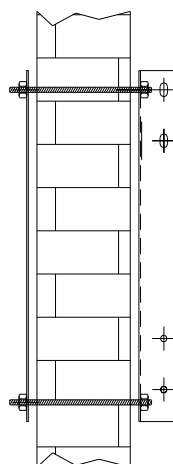


Fig.14

- ✓ Use the relevant screws and bolts (see fig. 15-16) to join the horizontal profile and sloping profile together. Next, fasten the assembly to the vertical profiles previously fastened to the wall. Make sure you use the lower pair of holes for centrifugal versions (see fig. 15), whilst the higher ones should be used for centrifugal versions for outside use (see fig. 16).

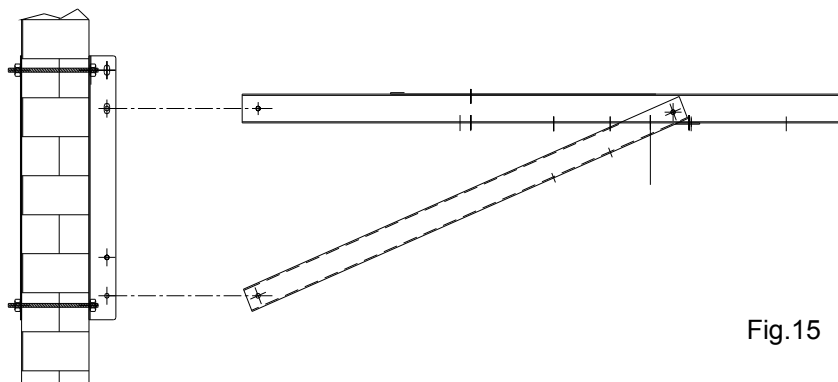


Fig.15

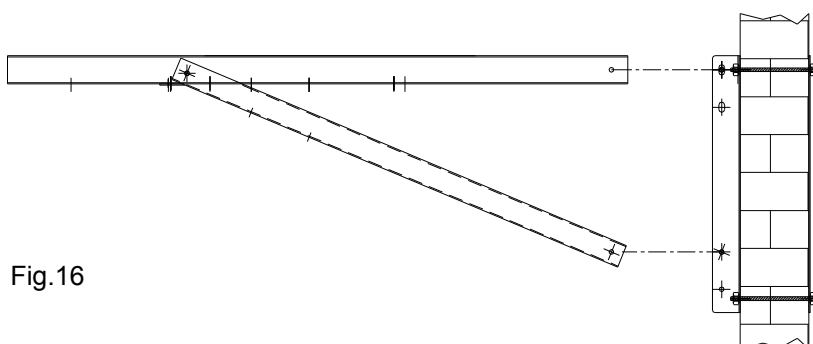


Fig.16

- ✓ Lift the warm-air heater with appropriate hoisting means, taking care not to endanger people, animals or property in any way.
- ✓ Position the heater on top of the previously attached brackets safely.
- ✓ Secure the heater to the brackets, making sure you tighten the screws with the relevant washers and bolts.
- ✓ Level the heater by adjusting the angle of the horizontal profile. The slot in the vertical profile the horizontal profile is fastened to makes this operation possible.

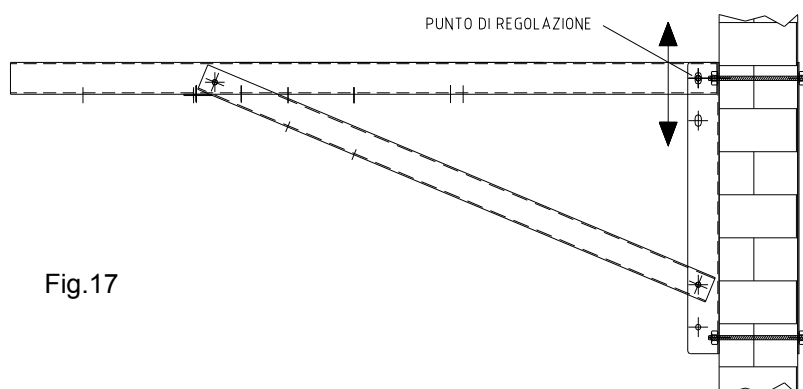


Fig.17

Fig.18 and 19 illustrate the brackets' assembly and how to secure the heater correctly to said brackets.

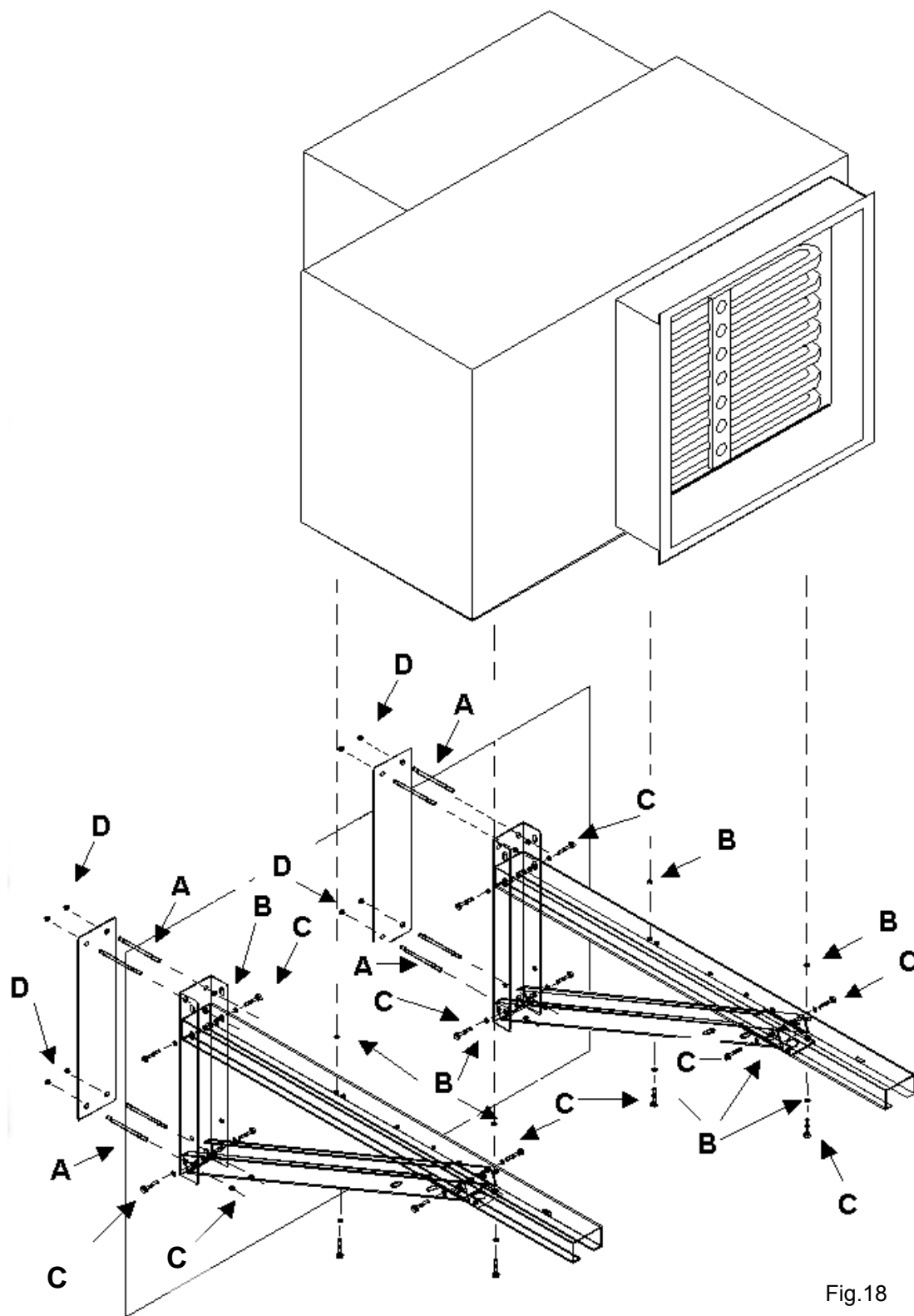
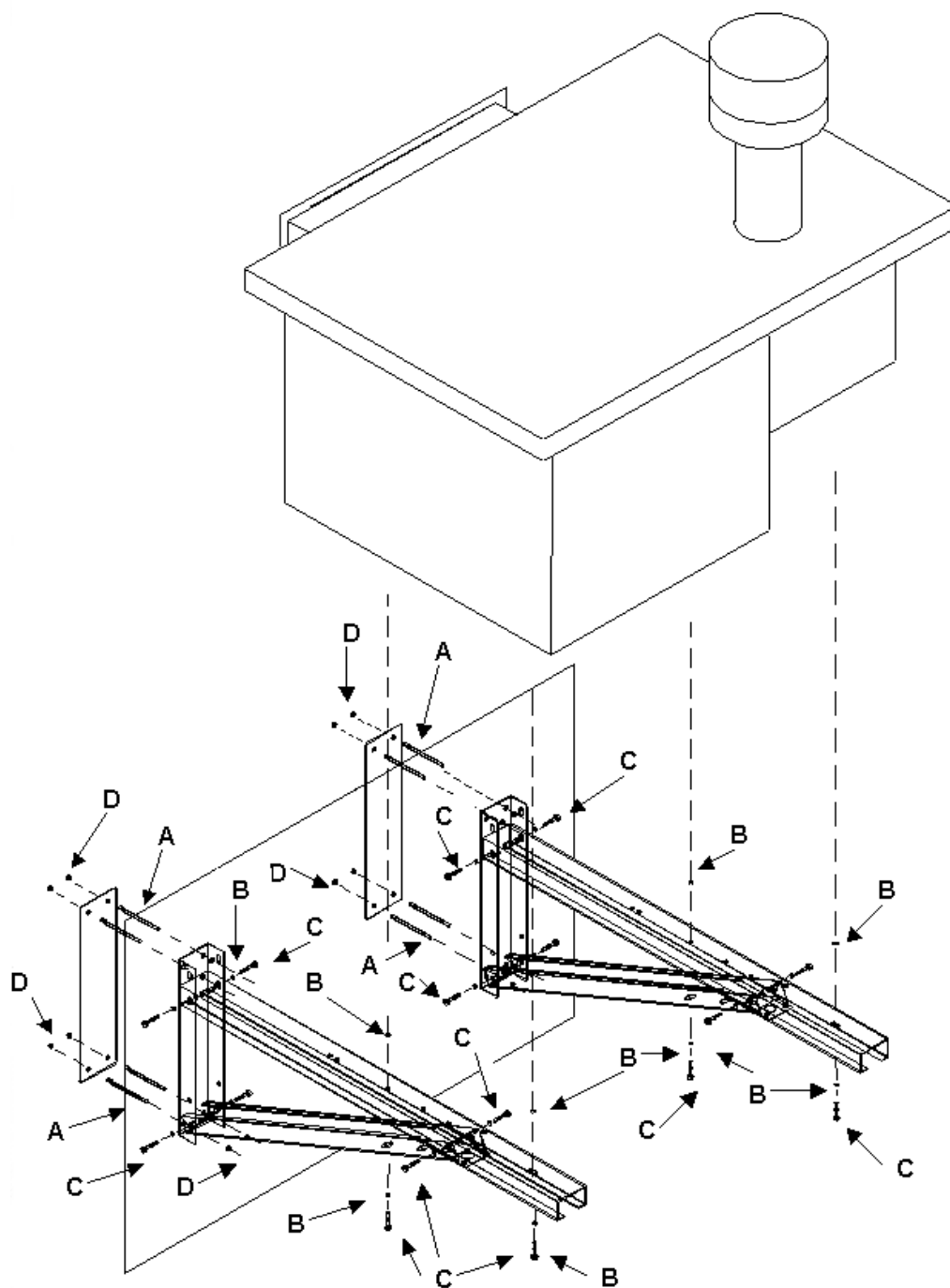


Fig.18



FASTENING ELEMENTS:

Fig.19

- A:** M10 galvanized threaded bar elements, 1-meter long (Code 9VI6506) (Tot. 2 pcs to be cut in 8 sections)
- B:** M10 oversize plain washer, galvanized UNI 6593 (Code 9VI5230) (Tot. 40 pcs)
- C:** M10x25 8.8 hexagon head screw, galvanized UNI 5737 (Code 9VI1075) (Tot. 16 pcs)
- D:** M10 nut UNI 7473 with respective M10 galvanized plain washer (Code 9VI1075) (Tot. 32 pcs)
- E:** M8x30 4.8 hexagon head screw, galvanized UNI 5739 (Code 9VI1060) (Tot. 4 pcs)
- F:** D9x24x2 oversize plain washer, galvanized (Code 9VI5228) (Tot. 4 pcs)

3.4 CONNECTION TO INTAKE AND EXHAUST DUCTWORK

The various kinds of exhaust the IHP T-series heaters feature are described below.

3.4.1 C12C – CONCENTRIC WALL CONNECTION FOR IHP T 20-28-35H and C

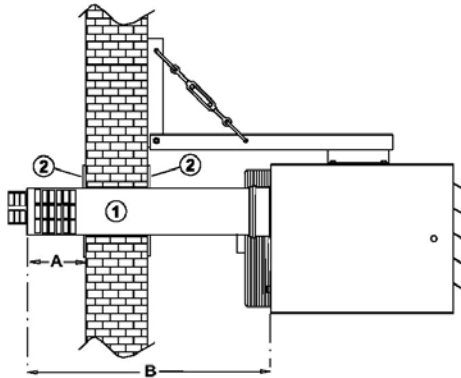


fig. 20

The combustion air intake and flue gas exhaust connection is a sealed, concentric model with a horizontal outlet outside the environment being heated.

The connection's diameter is 80/125 and the coupling is concentric straight from the heater's socket.

The kit (item number 6SC0021) comprises:

- a coaxial tube complete with weather shield cap (1).
- two cover plates (2) to provide a good finish masking the hole made in the wall.

Distance A, indicated in fig.20, must be in the range 200 to 350 mm. Distance B is a set distance in installations with the fixed bracket, with item number 6ST0025, namely 820 mm.

The intake and exhaust connection can be shortened, lengthened or diverted with accessories such as concentric 45° or 90° elbows, and straight concentric extensions 500 or 1,000 mm long.

WARNING: couplings between tubes must be rigid and airtight. Total length of the circuit must not exceed 6 meters. For each 45° or 90° elbow, bear in mind that equivalent length is 0.5 and 1 meter respectively. For greater lengths, contact the manufacturer.

3.4.2 C32 – CONCENTRIC ROOF CONNECTION FOR IHP T 20-28-35H and C

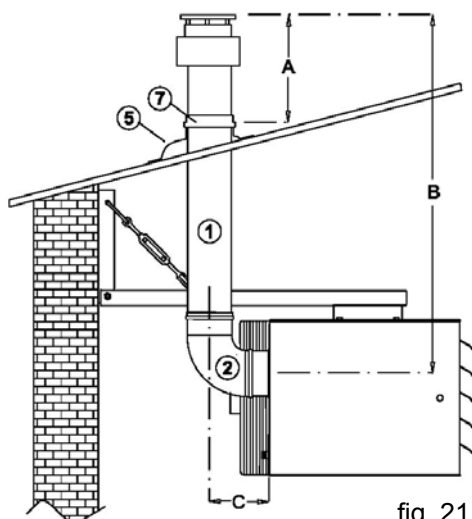


fig. 21

The combustion air intake and flue gas exhaust connection is a sealed, concentric model with a vertical flue leading outside the environment being heated to an outlet above the roof.

The tube's diameter is 80/125 and the coupling is concentric straight from the heater's socket.

The kit (item number 6SC6024) comprises:

- a coaxial elbow (2).
- a straight coaxial tube section (1).
- a roof intake and exhaust terminal.
- flashing (5), supplied together with the terminal, for covering the hole made in the roof to keep the installation waterproof.

Distance A, indicated in fig.21, must be at least 250 mm. With the 6SC6024 kit, the distance B you can achieve is 1,195 mm.

The intake and exhaust connection can be shortened, lengthened or diverted with accessories such as concentric elbows and straight concentric extensions 500 or 1,000 mm long.

WARNING: couplings between tubes must be rigid and airtight. Total length of the circuit must not exceed 8 meters. For each 45° or 90° elbow, bear in mind that equivalent length is 0.5 and 1 meter respectively. For greater lengths, contact the manufacturer.

3.4.3 B22 – ROOF FLUE GAS EXHAUST CONNECTION FOR IHP T 20-28-35H and C

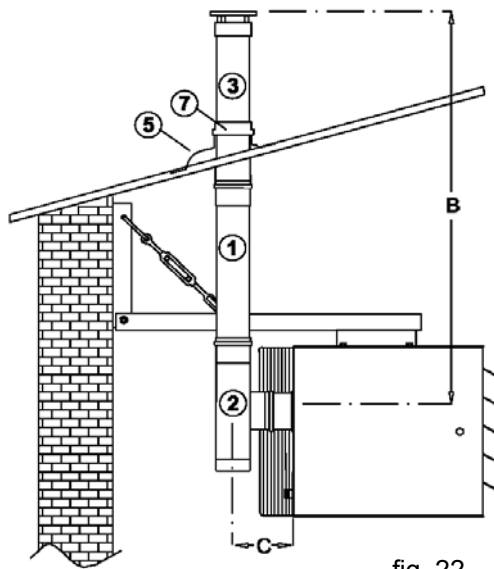


fig. 22

This kind of connection involves a vertical flue through the roof whilst air is drawn in directly from the room. In this case, the combustion circuit is not isolated from the environment being heated in an airtight manner - only the flue gas exhaust system is sealed.

The exhaust tube's diameter is 80 mm.

The kit (item number 6SC0026) comprises:

- a capped tee (2).
- a plain straight tube section 1 meter long (1).
- a roof outlet terminal (3).
- flashing (5), supplied together with the roof terminal, for covering the hole made in the roof to keep the installation waterproof.

The flue gas outlet must be at least as high as the roof's ridge.

Distance B, in fig.22, is 2,150 mm and the flue gas path can be lengthened or diverted with accessories such as elbows and straight extensions 500 or 1,000 mm long.

You must guarantee a sufficient air supply. The required supply rate for each heater is at least 100 m³/h net.

WARNING: the cross-sections of the flue tubes must be at least the same size as the socket on the heater in diameter. The flue must be vertical, or at no more than a 45° angle. The tube will need to be twin-walled if the section outside the building is more than 2 meters long.

3.4.4 C12C – CONCENTRIC WALL CONNECTION FOR IHP T 45-55-75-95H and C

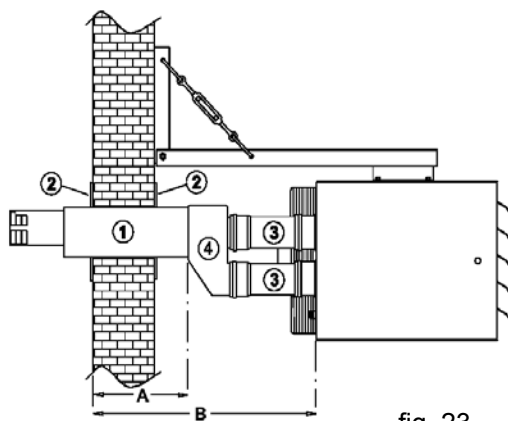


fig. 23

The combustion air intake and flue gas exhaust connection is a sealed, concentric model with a horizontal outlet outside the environment being heated. The kit for heater IHP T 45 is coaxial with a 100/150 diameter (item n° 6SC6045), whilst for IHP T 55-75-95, it is coaxial with a 130/200 diameter (item n° 6SC6046).

This kind of kit comprises:

- two straight tubes (3) 250mm long.
- a coaxial tube (1) complete with a weather shield cap at one end and concentric adapter (4) at the other.
- two cover plates (2) to provide a good finish masking the hole made in the wall.

These kits are designed for use with walls no more than 270 mm thick and a distance of 550 mm for B. The path can be shortened, lengthened or diverted with accessories such as elbows and straight extensions 500 or 1,000 mm long.

WARNING: couplings between tubes must be rigid and airtight. Total length of the circuit must not exceed 6 meters. For each 45° or 90° elbow, bear in mind that equivalent length is 0.5 and 1 meter respectively. For greater lengths, contact the manufacturer.

N.B. The figure gives the installation diagram for types IHP T 45 and 55H and C. Types IHP T 75 and 95H and C differ only in that they are fastened on top of the supporting brackets.

3.4.5 C12C – CONCENTRIC ROOF CONNECTION FOR IHP T 45-55-75-95H and C

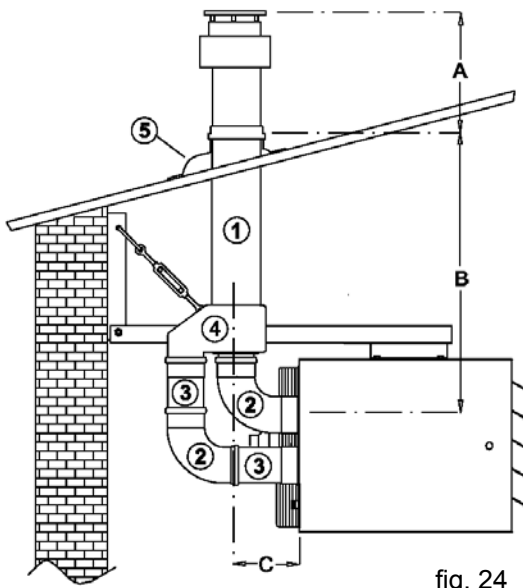


fig. 24

The combustion air intake and flue gas exhaust connection is a sealed, concentric model with a vertical flue leading outside the environment being heated to an outlet above the roof.

For the IHP T 45 heater, the kit's number is 6SC0048, it has a 100/150 diameter and comprises:

- a section of tube with roof outlet terminal (1).
- two 90° elbows, diameter 100 mm (2).
- two plain tubes 250mm long (3).
- an adapter from a coaxial tube to twin pipe arrangement (4).

For the IHP T 55-75-95 heater, the kit's number is 6SC0049, it has a 130/200 diameter and comprises:

- a section of tube with roof outlet terminal (1).
- two 90° elbows, diameter 130 mm (2).
- one plain tube 250 mm long (3).
- one plain tube 500 mm long (3).
- an adapter from a coaxial tube to twin pipe arrangement (4).

The intake and exhaust connection can be shortened, lengthened or diverted with accessories such as concentric elbows and straight extensions 500 or 1,000 mm long.

With kit 6SC0048 (for IHP T 45H and C), you can achieve a distance of 460 mm for A and 930 mm for B.

With kit 6SC0049 (for IHP T 55-75-95H and C), you can achieve a distance of 900 mm for A and 1,500 mm for B.

WARNING: couplings between tubes must be rigid and airtight. Total length of the circuit must not exceed 8 meters. For each 45° or 90° elbow, bear in mind that equivalent length is 0.5 and 1 meter respectively. For greater lengths, contact the manufacturer.

N.B. The figure gives the installation diagram for types IHP T 45 and 55H and C. Types IHP T 75 and 95H and C differ only in that they are fastened on top of the supporting brackets.

3.4.6 B22 – ROOF FLUE GAS EXHAUST CONNECTION FOR IHP T 45-55-75-95H and C

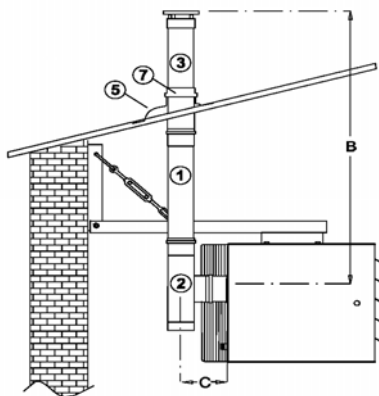


fig. 25

This kind of connection involves a vertical flue through the roof whilst air is drawn in directly from the room. In this case, the combustion circuit is not isolated from the environment being heated in an airtight manner - only the flue gas exhaust path is sealed.

The kit with item n° 6SC0026 for type IHP T 45, and n° 6SC0035 for types IHP T 55-75-95 comprise:

- a capped tee (2) or, alternatively, a 90° elbow.
- a plain straight tube section 1 meter long (1).
- a roof outlet terminal (3).
- flashing (5), supplied together with the roof terminal, for covering the hole made in the roof to keep the installation waterproof.

Distance B with kit 6SC0026 is 2,320 mm, whilst with kit 6SC0035 it is 2,600 mm.

The intake and exhaust connection can be shortened, lengthened or diverted with accessories such as concentric elbows and straight extensions 500 or 1,000 mm long.

You must guarantee a sufficient air supply. The required supply rate for each heater is at least 100 m³/h net.

WARNING: the cross-sections of the flue tubes must be at least the same size as the socket on the heater in diameter. The flue must be vertical, or at no more than a 45° angle. The tube will need to be twin-walled if the section outside the building is more than 2 meters long.

N.B. The figure gives the installation diagram for types IHP T 45 and 55H and C. Types IHP T 75 and 95H and C differ only in that they are fastened on top of the supporting brackets.

3.4.7. ROOF AND FLUE KIT FOR IHP T TYPES FOR OUTSIDE USE

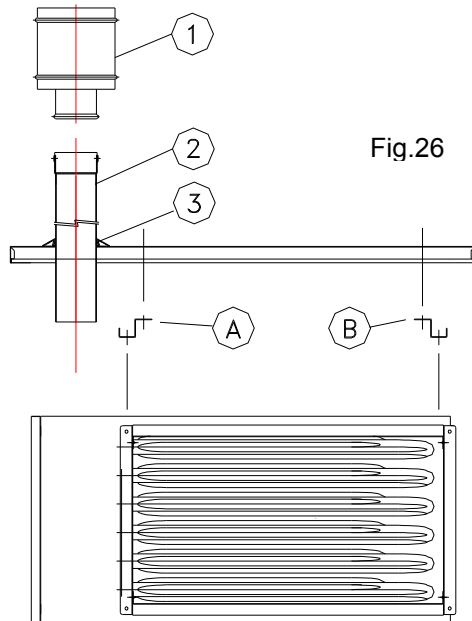


Fig.26

- ROOF KIT

To fit the heater's roof, proceed as follows:

- ✓ Fasten the two roof support profiles (see (A) and (B) in fig.26) on the top of the heater's shell using four M8x20 screws.
- ✓ Make sure screws are fastened securely.
- ✓ Set the rainshield/roof down on the profiles you have just fastened on, being careful to line up the holes in the roof with the holes in the two profiles.
- ✓ Fasten the rainshield/roof to the profiles using the relevant screws supplied.

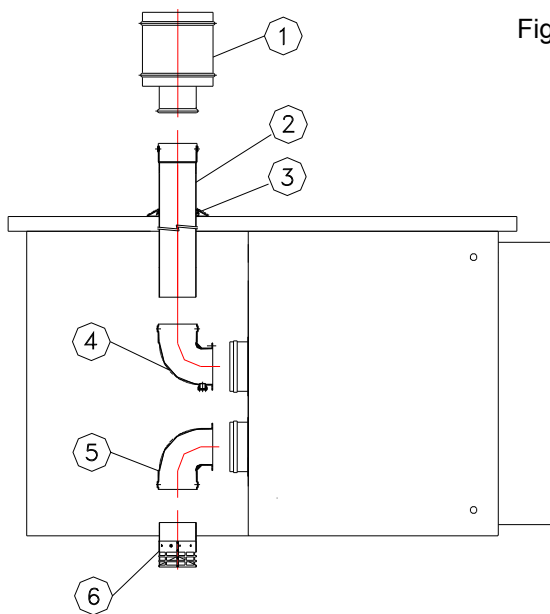


Fig.27

- EXHAUST DUCTS

Assemble the exhaust ducts (as indicated in fig.2). Proceed as follows:

- ✓ Insert the 90° elbow on the socket already fitted on the rear of the heater.
- ✓ Insert the silicone rubber roof flashing (3) on the straight tube section.
- ✓ Feed the tube, now coupled with the flashing, through the hole in the previously mounted rainshield and push it all the way into the elbow fitting.
- ✓ Arrange the flashing properly so that it makes a tight seal between the tube and rainshield.
- ✓ Insert the stainless steel flue gas outlet terminal (1)
- ✓ To fasten the various parts properly, you should use self-threading screws.

- AIR INTAKE

Heaters feature a special intake terminal on the air intake. It can either be ready-fitted on the heater or it can consist in a suitably perforated box or a kit to be fitted by the installer, made up of components (5) and (6) in fig. 27.

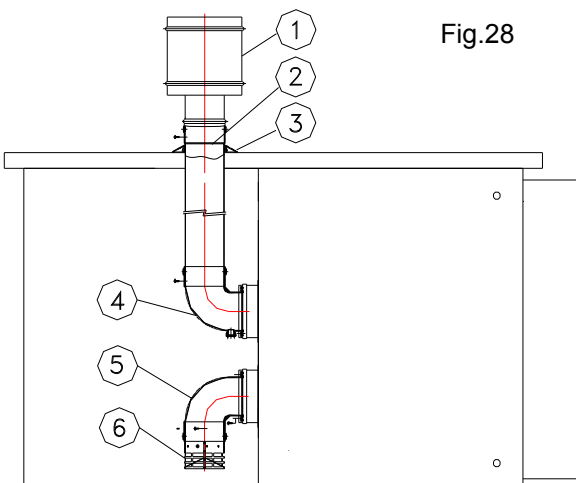


Fig.28

Type IHP T 45 C for outside use is illustrated in fig.28 on the left, featuring the relevant exterior mounting kit.

3.5 ELECTRICAL CONNECTION

The IHP T-series warm-air heaters' electrical connection must be made according to the instructions and wiring diagrams given herein, and by authorized personnel only.

The system must be installed to CEI regulations and must be in compliance with Italian law n° 186 of 1 March 1968.

Proceed as follows:

- Make sure the electricity supply available is the 230V ~ / single-phase / 50Hz kind.
- For connection, use H05 VVF 3x1.5 mm² cable only.
- When making the connection, make sure the earth wire is longer than the power wires. This precaution means that if the power lead is pulled by accident, the earth connection will be disconnected last, thus ensuring any current is earthed.
- The power supply line must be fitted with a bipolar thermomagnetic circuit breaker with at least a 3mm gap between contacts.
- To control the unit's operation, it is essential you use the room thermostat (item n° 6TA0010) or programmable thermostat (item n° 6TA0011) supplied by FRACCARO as accessories for the units in question.

WARNING!

To connect the unit safely, an effective earthing system is vital, and it must meet the requirements of the regulations in force. Under no circumstances should gas connection pipes be used to earth the units.

WARNING!

Make sure you respect phase and neutral polarity or you are in danger of damaging the control equipment.

3.6 GAS CIRCUIT

The IHP T-series warm-air heaters' gas connection must be made according to the instructions given herein, and by authorized personnel only.

The system must be installed in conformity with UNI CIG (Italian Gas Committee) regulations 7129/'92 and 7131/'72, and must be in compliance with the Italian Ministry of the Interior decree dated 12 April 1996.

Important pointers:

- Connect the gas supply line to the threaded connection on the heater by means of a removable rigid coupling, a three-piece union.
- Fit a manual gas shutoff valve in an easily accessible position near the unit.
- Once the connection has been made, check gas pipes are gastight in accordance with the regulations in force.
- Make sure there is an adequate gas supply and gas pipe network.
For G20, supply pressure, with the unit running, must be adjusted to around 20 mbar, the tolerated range being 17-25 mbar.
For LPG mixtures, a first-stage pressure reducer must be fitted near the gas tank (for reducing pressure to 1.5 bar), with a second-stage reducer near the unit. The latter reduces pressure from 1.5 bar to 30 mbar, the tolerated range being 20-35 mbar. When using pure propane, the tolerated range is 25-35 mbar.

4 SERVICING

4.1 WARNINGS FOR CUSTOMER SERVICE CENTER

Read the warnings contained herein as they provide important information on how to install, use and maintain the unit safely.

Before commencing cleaning or maintenance work of any kind, wait for the unit to cool down, disconnect it from the power mains using the system's master switch and cut off supplies to the unit with the relevant shutoff devices fitted.

Never obstruct the intake grille protecting the fan or the heater's outlet for any reason. This can result in irreparable damage to the unit and endanger people, animals and property.

If products need repairing, this must be performed only by a Servicing Center authorized by the Manufacturer, using Original Spare Parts only.

Failure to comply with the above instructions may compromise the unit's safety.

If you decide not to use the unit, all parts that may constitute a potential source of danger must be rendered harmless.

If the unit is sold or transferred to a new owner, always make sure this manual goes with the unit so that it can be consulted by the new owner and/or maintenance operative.

When replacing parts on any unit featuring accessories or kits (electrical ones included), use Original Fraccaro Accessories only.

4.2 ROUTINE MAINTENANCE

Appropriate use and correct maintenance are essential if the unit is to work reliably and provide lasting service. Any work on the units must be performed once they have been allowed to cool, and the first steps are to disconnect the power supply and close the gas cock. Hence, you are advised:

1. **Never to disconnect the heater's power supply while it is running: if you do, the fan stops and the combustion chamber is not cooled properly, meaning it overheats owing to heat inertia. This may result in irreparable damage.**
2. Check the burner's setting at regular intervals, examining the flue gases: when set correctly, fuel economy is optimized and pollutant emissions are controlled better, mitigating effects on the environment.
3. If the heater draws in dusty air, make sure too much dust is not allowed to build up in the fan and on external exchange surfaces - if buildup is excessive, clean the exchanger.
4. Clean exchange surfaces on a regular basis - this may be once a year when the heating season ends. To clean, proceed as follows:
 - remove the burner;
 - clean the individual pipes making up the exchange surfaces with a new steel pipe pig;
 - clean each single pipe, vacuuming up soot that might have fallen off the exchange elements;

NOTE: during the above operation, make sure you replace any deteriorated seals when refitting the individual parts.

5. Clean the individual torch burners, intake and exhaust tubes, air fan and flue gas exhaust fan at regular intervals.
6. Check the gas supply manifold and gas solenoid valve for leaks at regular intervals.
7. Disconnect the power supply when the unit is not going to be used for some time.

4.3 GAS VALVE

IHP T-series heaters use the kinds of gas valves listed below:

- the SIT 840 SIGMA valve is used for IHP T 20-75
- the SIT 822 NOVA valve is used for IHP T 95

They should really be called “gas-units” as they are actually die-cast units comprising:

- a gas intake filter
- a pressure regulator
- two solenoid valves with class B shutoff devices

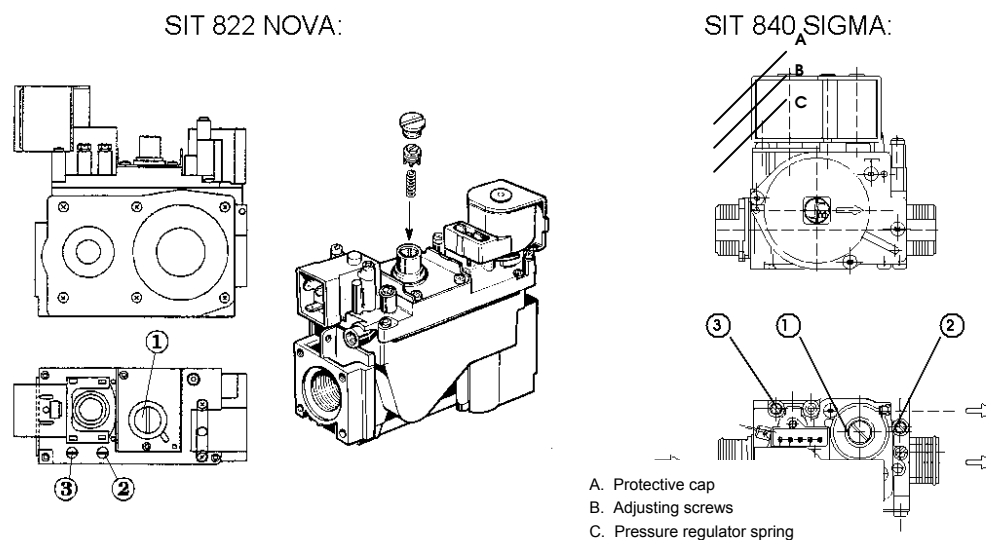


fig. 29

For the unit to work properly, pressure supplied to the burner must match the values given in the table on page 40. The heaters come factory set to the pressure required for the gas they are due to be fuelled with. Nonetheless, if adjustment is required, this must be done with the heater on using the valve adjusting screw.

Proceed as follows:

- 1) Remove the cover protecting the adjusting screw so that you can use a flat-tip screwdriver to do the adjusting.
- 2) Connect a pressure gauge to the downline pressure test point once you have removed or loosened the relevant sealing screw.
- 3) Switch on the heater.
- 4) Adjustment:
for heaters fuelled with G20 (methane): turn the screw clockwise to increase pressure to the burner, anticlockwise to decrease, depending on the pressure gauge reading and setting value to be reached (see setting pressures in table on page 38).
for heaters fuelled with G30-G31 (LPG): turn the adjusting screw all the way so as to bypass the pressure regulator. Burner pressure now depends directly on the pressure of the gas entering the valve. Hence you should make sure pressure is 30 mbar for G30 gas or 37 mbar for G31 gas. If pressure adjustment is necessary, this is done using the second-stage reducer on the system (see setting pressures in table on page 38). Indeed, if the system has been installed correctly, it should have:
 - a first-stage reducer near the liquid gas tank, required to reduce pressure to 1.5 bar
 - a second-stage reducer to reduce pressure from 1.5 bar to 30 or 37 mbar, depending on the kind of gas.
- 5) Switch the unit on and off two or three times to make sure the setting is stable.
- 6) Once you have finished adjusting, disconnect the pressure gauge and tighten the pressure test point sealing screw.

WARNING!

- Once setting is done, the valve adjusting screw must be sealed and the upline and downline pressure test points checked for leaks with soapy water or an appropriate spray.

Note: Pressure values the burner must be adjusted to are given in the table on page 38. When consulting the table, you must take into account the type of heater and kind of gas the burner has been supplied for use with.

4.4 CHANGING GAS TYPE

IHP T-series gas heaters feature natural draught torch burners and can run off methane, propane, butane, and propane-butane mixtures (LPG).

The combustion circuit has been designed to assure excellent flame stability without the problems of flame lift or flashback.

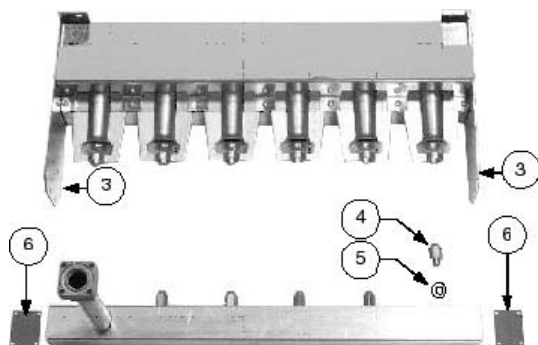


fig.30

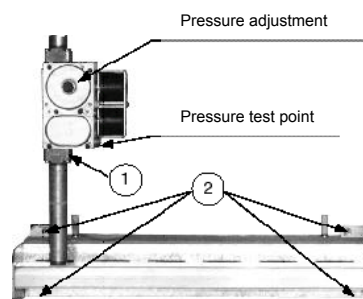


fig.31

1. The gas type should be changed as follows:
2. Cut off the power supply and shut the gas supply cock.
3. Release the multi-torch burner, disconnecting it from the gas valve (in fig.31 see point 1) and removing the four screws (in fig.31 see points 2) used to secure it (in fig.30 see points 3).
4. Replace the nozzles as indicated in the table below.
5. Screw on the new nozzles (in fig.30 see 4), replacing the relevant metal gaskets (in fig.30 see point 5)
6. Refit the gas train, replacing the gaskets on the manifold's heads (in fig.30 see point 6) and check for leaks.
7. Adjust gas train supply pressure with the pressure regulator.
Warning! Adjustment must be performed with the burner working.

Types	Adjustment for G20			Adjustment for G25			Adjustment for G31		
	Pressure	Nozzles	Venturi Ring	Pressure	Nozzles	Anello Venturi	Pressure	Nozzles	Venturi Ring
IHP T 20	9 mbar	5xAL 1.90	40	12 mbar	5xAL 1.90	40	30 mbar	5xAL 1.10	40
IHP T 28	9 mbar	5xAL 2.20	27	12 mbar	5xAL 2.20	27	30 mbar	5xAL 1.30	27
IHP T 35	9 mbar	6xAL 2.20	30	12 mbar	6xAL 2.20	30	30 mbar	6xAL 1.30	30
IHP T 45	9 mbar	8xAL 2.20	nil	12 mbar	8xAL 2.20	nil	30 mbar	8xAL 1.30	nil
IHP T 55	9 mbar	10xAL 2.20	nil	12 mbar	10xAL 2.20	nil	30 mbar	10xAL 1.30	nil
IHP T 75	9 mbar	12xAL 2.20	nil	12 mbar	12xAL 2.20	nil	30 mbar	12xAL 1.30	nil
IHP T 95	9 mbar	16xAL 2.20	27	12 mbar	16xAL 2.20	27	30 mbar	16xAL 1.30	30

For methane-LPG conversion, the amount of nozzles given in the above table is therefore supplied for each model. For the IHP T 95 heater, you must replace the Venturi rings as well as the nozzles, switching from the 27mm diameter model to a 30mm diameter one (item number 9VE0050).

Two kinds of nozzles can be supplied in the kit:

- AL 1.10 (item number 9UG0254) for the IHP T 20 heater only
- AL 1.30 (item number 9UG0255) for IHP T 28-95 heaters

WARNING: Before starting this conversion, you must disconnect the power supply and close the gas cock.

4.5 COMBUSTION ADJUSTMENT

Optimal combustion has the following advantages:

- lower consumption and hence **the best possible operating economy**.
- minimum emission of substances harming the environment and hence **minimal environmental impact**.
- regular operation and hence **the utmost safety**.

If the burner is adjusted properly, resulting combustion parameters should be as follows:

for G20:

Flue gas exhaust temperature - Ambient temperature = 170° - 195°C

Carbon monoxide CO < 30 ppm

Carbon dioxide CO₂ in the range 7% to 8% in dry gas.

Nitric oxides NOx < 70 ppm.

for G30-G31 mixtures:

Flue gas exhaust temperature - Ambient temperature = 170° - 195°C

Carbon monoxide CO < 30 ppm

Carbon dioxide CO₂ in the range 9% to 9.7% in dry gas.

Nitric oxides NOx < 70 ppm.

4.6 TROUBLESHOOTING GUIDE

TROUBLE	POSSIBLE CAUSES	REMEDY
Unit does not work	<ul style="list-style-type: none"> - no power - unit lockout - room thermostat has not taken over - safety thermostat tripped 	<ul style="list-style-type: none"> - check power is being supplied - select higher room thermostat setpoint - reset safety thermostat
No ignition spark produced <i>- flue gas exhaust fan not working</i> <i>- no indicator light on</i>	<ul style="list-style-type: none"> - electronic equipment fault - flue gas exhaust fan fault 	<ul style="list-style-type: none"> - replace - replace
No ignition spark produced <i>- flue gas exhaust fan working</i> <i>- no indicator light on</i>	<ul style="list-style-type: none"> - too much resistance in intake and exhaust ducts - flue gas exhaust fan defective - air pressure switch disconnected - pressure switch connection pipe defective - air pressure switch fault - electronic equipment fault 	<ul style="list-style-type: none"> - check intake and exhaust ducts - replace exhaust fan - connect air pressure test pipe - make sure connection pipe is working properly - replace air pressure switch - replace electronic equipment
Burner lights and flame control device locks out within 5 seconds (red warning light on)	<ul style="list-style-type: none"> - ignition spark incorrect - detection electrode defective - detection electrode not positioned correctly - gas flow rate insufficient (may be because of air in piping) - phase and neutral inverted - no neutral - gas solenoid valve defective - flame control device defective 	<ul style="list-style-type: none"> - check - replace - check - check pressure (bleed piping where necessary) - invert as appropriate - fit isolating transformer - replace - replace
Unit locks out during operation (red warning light on)	<ul style="list-style-type: none"> - gas supply cut off during operation 	<ul style="list-style-type: none"> - restore supply and reset with reset button

TROUBLE	POSSIBLE CAUSES	REMEDY
burner shuts down unexpectedly at intervals	<ul style="list-style-type: none"> - air/flue gas ducts obstructed - flue gas pressure switch defective - room thermostat directly in airflow's path - voltage between neutral and earth too high - flame control device defective - flame detection defective 	<ul style="list-style-type: none"> - check ductwork - replace - change position of room thermostat - check - replace equipment - check ionization current and connections
Safety thermostat trips	<ul style="list-style-type: none"> - pressure to burner too high - wrong nozzles - fan dirty - fan motor defective - fan motor capacitor defective - FAN thermostat defective - delivery channels or outlet obstructed - return air intake channels or opening obstructed 	<ul style="list-style-type: none"> - check and set - replace - clean - replace - replace - replace - remove obstruction - remove obstruction
Burner has trouble lighting	<ul style="list-style-type: none"> - ignition electrode defective - ignition spark incorrect - gas pressure setting incorrect - heat exchanger clogged 	<ul style="list-style-type: none"> - replace - check - check - clean exchanger
Flame control device cannot be reset	<ul style="list-style-type: none"> - device defective 	<ul style="list-style-type: none"> - replace
Fan operation is discontinuous	<ul style="list-style-type: none"> - FAN thermostat setting incorrect - FAN thermostat defective - gas flow rate insufficient 	<ul style="list-style-type: none"> - replace, or restore correct setting - replace - check
Fan not working	<ul style="list-style-type: none"> - FAN thermostat defective - fan motor defective - fan motor capacitor defective 	<ul style="list-style-type: none"> - replace FAN thermostat - replace fan motor - replace

4.7 SPARE PARTS

N°	CODICE	DESCRIZIONE	MODELLI IHP T						
			20	28	35	45	55	75	95
1	9AP0091	ELECTRONIC BOARD WITH SWITCHES	✓	✓	✓	✓	✓	✓	✓
2	9AP0092	CONTROL BOX SKG mod. 0052580040 tw10 ts5	✓	✓	✓	✓	✓	✓	✓
3	9PR0135	AIR PRESSOSTAT HUBA CONTROL 605.99623 125/95Pa	✓	✓	✓	✓	✓	✓	✓
4	9EL0227	IGNITION ELECTRODE	✓	✓	✓	✓	✓	✓	✓
5	9CA0571	CABLE FOR ELECTRODE OF IGNITION	✓	✓	✓	✓	✓	✓	✓
6	9EL0226	DETECTION FLAME ELECTRODE	✓	✓	✓	✓	✓	✓	✓
7	9CA0572	CABLE FOR DETECTION FLAME ELECTRODE	✓	✓	✓	✓	✓	✓	✓
8	9EL0086	SIT 840 SIGMA GAS VALVE	✓	✓	✓	✓	✓	✓	
9	9EL0070	SIT 822 NOVA GAS VALVE							✓
10	9VE0187	EXHAUST GAS FAN LN E25 CO 001N 230V AC 50Hz 55W	✓	✓					
11	9VE0188	EXHAUST GAS FAN E30 CO 001N 230V AC 50Hz 80W			✓	✓	✓		
12	9VE0186	EXHAUST GAS FAN OS133.240.05 230V AC 50 Hz 80W						✓	
13	9VE0189	EXHAUST GAS FAN A4 S60 145.OR.60 230V AC 50Hz 100W							✓
14	9VE0360	HELICAL FAN ER6P5P40S.06 230V~50/60Hz 0.60/0.65A 950-1100 rpm 120/145W	✓						
15	9VE0361	HELICAL FAN ER6P5P40T.06 230V~50/60Hz 0.75/0.92A 900-1000 rpm 165/210W		✓					
16	9VE0362	HELICAL FAN ER6G6P45T.06 230V~50/60Hz 1.45A 950-1100 rpm 215/250W			✓				
17	9VE0364	HELICAL FAN ER6G6P50T.06 230V~50/60Hz 1.60A 925-1050 rpm 285/365W				✓			✓ 2 Pz.
18	9VE0359	HELICAL FAN ER4G6P50V.06 230V~50/60Hz 2/2.3A 1425-1650 rpm 380/510W					✓		
19	9VE0358	HELICAL FAN ER4G6P50S.06 230V~50/60Hz 2.1/2.7A 1400-1650 rpm 440/600W						✓	
20	9TE0037	SAFETY THERMOSTAT LS1 100°C	✓	✓	✓	✓	✓	✓	✓
21	9TE0018	FAN AND LIMIT THERMOSTAT TR2 90°C	✓ 2 Pz.	✓ 2 Pz.	✓ 2 Pz.	✓ 2 Pz.	✓ 2 Pz.	✓ 2 Pz.	✓ 2 Pz.
22	9UG0252	NOZZLE AL 1.90 FOR G20 SUPPLY	✓ 5 Pz.						
23	9UG0253	NOZZLE AL 2.20 FOR G20 SUPPLY		✓ 5 Pz.	✓ 6 Pz.	✓ 8 Pz.	✓ 10 Pz.	✓ 12 Pz.	✓ 16 Pz.
24	9UG0254	NOZZLE AL 1.10 FOR G30/G31 SUPPLY	✓ 5 Pz.						
25	9UG0255	NOZZLE AL 1.30 FOR G30/G31 SUPPLY		✓ 5 Pz.	✓ 6 Pz.	✓ 8 Pz.	✓ 10 Pz.	✓ 12 Pz.	✓ 16 Pz.
26	9VE0053	VENTURI RING D =27mm		✓					✓ (G20)
27	9VE0050	VENTURI RING D =30mm			✓				✓ (G30-31)
28	9VE0054	VENTURI RING D =40mm	✓						
29	9VE0205	CENTRIFUGAL FAN BD25/25 M6 0.33CV (9/9)	✓						
30	9VE0234	CENTRIFUGAL FAN BD28/28 M6 0.5CV (10/10)		✓	✓				
31	9VE0236	CENTRIFUGAL FAN BD33/33 M/C 1CV (12/12)				✓	✓		
32	9VE0212	CENTRIFUGAL FAN DDE 12/9 515-550W 6P							✓ 2 Pz.
33	9VE0237	CENTRIFUGAL FAN BD33/33 M6 1.5CV (12/12)						✓	
34	9BR0031	TORCH BURNER	✓ 5 Pz.	✓ 5 Pz.	✓ 6 Pz.	✓ 8 Pz.	✓ 10 Pz.		
35	9BR0032	TORCH BURNER						✓ 12 Pz.	✓ 16 Pz.

4.8 WARRANTY

FRACCARO warrants IHP T-series warm-air heaters against possible trouble encountered during the stated coverage period. Each product is shipped with the relevant Warranty certificate. This certificate consists of two parts:

- the first lists general warranty terms.
- the second is a form to be filled out by the Technical Service Center responsible for the unit's first startup. It must be filled out in full, the label featuring the product's serial number etc. must be attached to it, and it must then be sent to FRACCARO. This card must be filled out properly and sent or the warranty shall not be valid.

FRACCARO only warrants the warm-air heaters provided installation is carried out by professionally qualified personnel, namely its own authorized Technical Service Centers. For the warranty to be effective, the following requirements must be met:

- 1) Installation must conform to the regulations in force and to any additional instructions given herein.
- 2) The unit must be put into service, used and maintained in a thoroughly professional manner and in conformity with the provisions laid down in this manual.
- 3) The product must not be modified in any way.
- 4) Servicing must be performed by authorized customer service centers only.



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Technical specifications and measurements are not binding. The Company reserves the right to make changes without prior notice. We decline all responsibility for inaccuracies contained herein if they are the result of misprints or clerical errors.